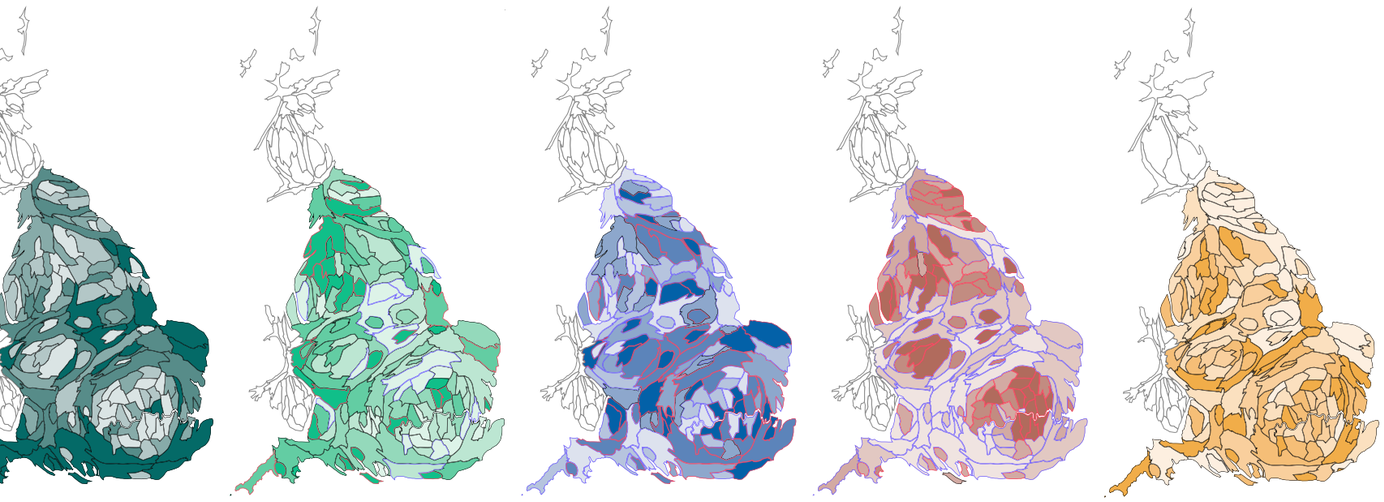
Annual Report of the Chief Medical Officer

Volume One, 2011
On the State of the Public's Health



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Dear Reader

My annual report will be published in two volumes. This, the first volume, focuses on epidemiology and surveillance of the public's health. The second volume will be an indepth review into 'Infections and Infectious Diseases', pulling together expert advice so that I can provide clinical and policy recommendations, along with advice to the public.

This volume develops a picture of the public's health in England throughout the chapters. It contains information that takes a 'broad brush' view of the health of our nation while also considering many aspects in detail. It provides a clear picture of our current health and highlights areas where we are improving health and public health services, and areas where we can do better. In addition, all the data used to produce this report are available in Microsoft Excel files, by local authority (where possible) at data.gov.uk

Yours ever

Sally C

Prof Dame Sally C Davies

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Origins of the Chief Medical Officer's Report

The role of the Chief Medical Officer was first conceived in the mid 19th century and grew out of an ever increasing interest by government in the need for better public health. 1848 saw the establishment of the General Board of Health, a national board with a primary focus on sanitation and the environment. In 1847 and 1848 local Acts were passed in Liverpool and London establishing the first Public Health Departments and appointing the first Medical Officers of Health. It was only in 1855, that the General Board of Health received any medical representation.

Following his appointment as the first Medical Officer of Health for London, Sir John Simon was appointed the first Medical Officer for the General Board of Health. This appointment made him the de facto Chief Medical Officer. Following the dissolution of the General Health Board, the role transferred to the Privy Council in 1858.

In his role of Chief Medical Officer to the Privy Council, Sir John started the tradition of a Chief Medical Officer annual report. The purpose was to provide an independent assessment of the state of the public's health.

Chief Medical Officers have produced their annual reports in different ways, but each with the aim of highlighting a limited number of issues which were, in their opinion, the ones that should be the current focus for policy and action to improve the health of the nation. There has been a natural shift in the content of these annual reports, from the greatest concerns of the mid 19th century, such as industrial health, sanitation and housing conditions, to more recent concerns around obesity, alcohol and tobacco. However, there are also some common themes running through the reports, such as child and occupational health and the training and education of healthcare professionals.

I find that Sir John Simon set an excellent precedent for the position of the role of Chief Medical Officer. He was well known for his use of statistical information to inform policy and the advice he gave to the Government of the time. I also strongly believe that data and scientific evidence should be at the heart of policy making and advice to government and have reflected this in my approach to the Chief Medical Officer annual report. Data should be used to inform our prioritisation of action and to evaluate the effectiveness of such action, scientific evidence should be used to determine what actions should be taken.

Mapping, innovation and public health intelligence

A major emphasis of this, my first annual report volume one, is geographical differences. The default geographical units used, where information was available at that level, is upper tier local authority. This is intended to be of particular value to Directors of Public Health (DsPH). The report is a tool to help examine what local DsPH should prioritise and to help support their Joint Strategic Needs Assessments.

The use of innovative mapping techniques to analyse data and convey messages is far from a new idea in public health. Historically it was perhaps most famously used by John Snow to show the relationship of the 1854 Broad Street cholera outbreak with the sources of the outbreak, including the Broad Street pump. At that time many people, including leading doctors of the day, did not accept germ theory and showing this link was an important step forward in saving lives. In recent years, there has been growing emphasis on the use of geographical data, both in point data analysis and in more ecological analyses, as in this report. As data, access to data and methods to analyse and present data have improved, our understanding of patterns of disease, risk factors for ill health and the social determinants of health have also improved.

This report presents geographical data using 'cartograms'. The cartograms display data in the form of maps of England, in which the size of a particular area has been adjusted to reflect the size of its population. Visualisation in this way means that the data can be interpreted both in terms of the size of the population affected and the geographical distribution. Wherever possible the unit of area used has been upper tier local authority and the data used to produce the maps are available at data.gov.uk for anyone wishing to examine or use the underlying data.

It must be remembered that variability between areas may not necessarily be due to different rates of occurrence of, for example, disease. Causes of variation in health care are generally due to artefacts in the data or differences in supply, demand, or need. Where differences in prevalence or incidence are seen and these have been estimated from routinely collected service data, differences can also be affected by these factors. However, for mortality data, it is only artefacts in the data that is really a potential problem. In most cases, high rates will be an accurate reflection of public health in the area and thus should inform the spending of health and public health resources. Where an area is shown to have a high rate of a particular condition, risk factor or social determinant, I encourage the health professionals responsible for that area to understand the cause of this high rate.

My future annual reports will develop the analysis of data so that they can be used to provide a more detailed picture of public health, especially with regard to co-morbidities and the co-occurrence of risk factors and social determinants.

Editors

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This report could not have been produced without the generous input of the following editors and their teams.

Editor in Chief

Tom Fowler[1,2]

1 Locum Consultant in Public Health, Department of Health
2 Honorary Research Fellow, University of Birmingham

Project Manager

Orla Murphy[1]

1 Chief Medical Officer's Events and Project Manager, Department of Health

Chapter Editors

Chapter 1

Deborah Chase[1], Tom Fowler[2,3]

1 Specialty Registrar in Public Health, University of Southampton
2 Locum Consultant in Public Health, Department of Health
3 Honorary Research Fellow, University of Birmingham

Advised by: Andrew Nash, Office for National Statistics

Chapter 2

Paul Cleary[1], Tom Fowler[2,3], Lucy Irvine[4], Clare Jones[5], Monica Roche[6]

1 Regional Consultant Epidemiologist, Health Protection Agency North West
2 Locum Consultant in Public Health, Department of Health
3 Honorary Research Fellow, University of Birmingham
4 Senior Information Analyst, National Cancer Intelligence Network (NCIN)
5 Statistician, Department of Health
6 Medical Director, Oxford Cancer Intelligence Unit

Chapter 3

Robert Kyffin[1]

1 Senior Public Health Intelligence Officer, Department of Health South East Public Health Group

Chapter 4

Justine Fitzpatrick[1], Ed Klodawski[2]

1 Deputy Director, London Health Observatory
2 Ethnic Health Information Analyst, London Health Observatory

Chapter 5

Sadhana Bose[1], Alison Hill[2], Monica Roche[3], Jo Watson[4]

1 Consultant in Public Health, South East Public Health Observatory
2 Director, South East Public Health Observatory
3 Medical Director, Oxford Cancer Intelligence Unit
4 Principal Public Health Intelligence Analyst, South East Public Health Observatory

Summary

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Key Findings

Throughout this summary I have included specific recommendations that I would like action to be taken on. I want to draw attention to three key issues which have emerged from this volume, liver disease, access to healthcare and surveillance and intelligence systems.

Liver disease

Liver disease has emerged as a key theme from international comparisons which show that this is the only major cause of mortality and morbidity which is on the increase in England whilst decreasing among our European neighbours.

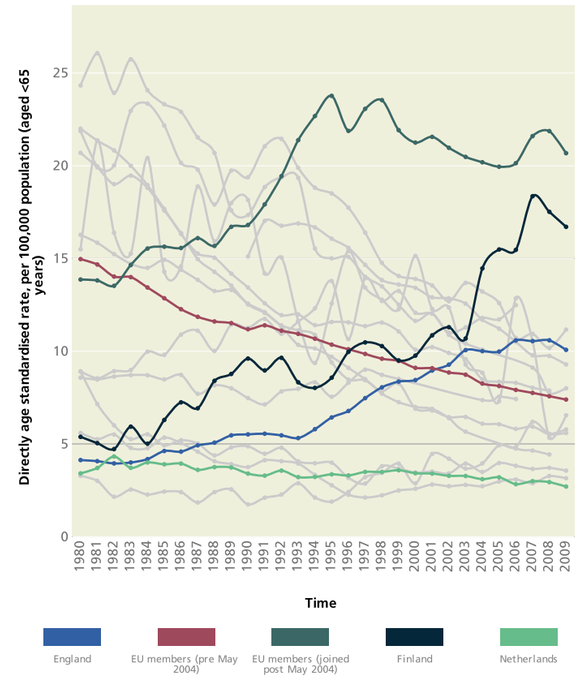
Among the causes of the increasing numbers of people with liver disease are

- obesity,
- undiagnosed hepatitis infection, and increasingly,
- harmful alcohol use.

These causes are all preventable but the individual's role in responding to the threat of liver disease is often undermined by the fact that it progresses unnoticed for many years. Liver disease does not manifest with obvious symptoms or signs until a relatively late stage. Preventative measures should involve a combination of public health policy initiatives (action on obesity and harmful alcohol use) and better awareness amongst the public of their liver health. Equally important, service providers should continue to improve their efforts to detect early signs of liver disease. This will entail appropriate risk assessment strategies in their populations, and use of appropriate tests to identify liver disease that can be reversed or treated. These measures need to be integrated across all aspects of service provision for optimum efficacy but in particular, a proactive approach needs to be adopted so that we reduce presentations at a late stage of disease.

Recommendation **Action on preventing, identifying and treating liver disease is a priority and needs to be included in local health and wellbeing strategies.**

Trend in premature mortality (ages under 65) from chronic liver disease and cirrhosis, England and EU countries, 1980 to 2009



Source: EU: WHO, Health For All data set; England: ONS.

Access to healthcare

Ensuring that local populations are receiving appropriate, cost effective healthcare is an important public health challenge. Access to care emerges as a key issue from the analysis in Chapter five, which reveals that, while there are some notable successes, there are still a number of areas where we find apparently unexplained variation in good quality care and in the numbers of people accessing and receiving care.

Diabetes is an example where we see marked variation in people receiving optimum care. Only 50.1% of registered diabetics are receiving all nine NICE recommended diabetes care processes and, when considering the ranges of the different quintiles into which Primary Care Trusts are grouped for mapping, the bottom quintile (the 5th of PCTs with the lowest rates) alone ranges between 43.8% and 6.4%. It is not always clear whether the variations seen result from different levels of provision or underlying variation in prevalence, but where we see differences it is vital that we understand the reasons in order to address any inequalities in provision of healthcare.

Where there is variation in access or outcome between different population groups, the contributory factors include delayed presentation, delayed diagnosis, and delayed entry into care. Improvement in access to health care services and early detection and diagnosis improves outcomes, reduces unwarranted variations, and reduces costs.

Recommendation **Both Chapter 5 of this report and the NHS Atlas of Variation[1] are key tools in examining variation and I encourage both commissioners and clinicians to use these to improve outcomes.**

Surveillance and intelligence systems

The final theme emerging from the analysis presented in this volume is the need for more robust systematic surveillance of health and disease at the national level, particularly in respect of those diseases which are a major burden on the population in terms of clinical morbidity and diminished wellbeing, but with relatively low mortality. Examples include musculoskeletal diseases, skin diseases, cognitive impairment, incontinence and loss of hearing or sight.

The importance of 'fit for purpose' surveillance systems cannot be overemphasised. If we are to benefit from a quick response to new and emerging health threats, or even important changes in old ones, it is essential to have an adequate national early warning system. This means establishing a limited number of reliable surveillance mechanisms that could alert us to those changes that would require a response, if they were present. As this report demonstrates many of the data required already exist, in which case it is a question of systematically examining them, in other cases certain new data collections are required. Surveillance approaches need to justify their cost on a case by case basis, however the cost of late detection of a threat can be very high indeed, for example when the impact of thalidomide went undetected for much too long. The history of public health suggests that it is not enough to prepare for the health problems we already know about.

In considering how to strengthen surveillance across the board, there is a need to look first at some of our existing information systems, many of which are international exemplars of good practice. One such system is that in place for cancer, through the work of the cancer registries, ONS and the National Cancer Intelligence Network. The Health Protection Agency is also a world leader in surveillance.

With the changing health and social care system, this is the right time for us to comprehensively review our information needs and to seek intelligent, cost effective ways to improve the standard of surveillance nationally. These must revolve around not just the needs of commissioners, but also make data available and usable to health professionals, patients, and the public.

Recommendation **Public Health England needs to develop and implement a set of coherent national surveillance systems for non-communicable diseases, congenital anomalies and important medical, environmental and lifestyle risk factors.**

Chapter summaries

In considering the main findings from each of the chapters, I have the following observations.

Chapter 1 – Demography

In order to better understand our health and social care needs and plan for the future, my report begins with data on the size and characteristics of our population. Projections of population change will help us plan services for the future. It has long been recognised that our population is aging, what is often overlooked is that it is also expanding. For example, it is projected that more people will be born in England in 2020 than 2010 and services will need to plan for changes of this type.

Chapter 2 – Mortality, morbidity and wellbeing

When considering the broader, summary measures of mortality, morbidity and wellbeing, it is clear we have had real successes. Life expectancies at birth and at 65 have increased, all cause mortality rates have decreased, as have infant mortality rates. Much of our success has been due to the reductions in cardiovascular mortality (particularly coronary heart disease and stroke) and cancer, in which reductions in smoking, high blood pressure and cholesterol have all played an important role. There still remain, however, large inequalities in health for almost every disease examined. Geographical differences in rates often reflect patterns of deprivation.

Particularly interesting is the analysis of life expectancy and years lived in disability. This shows that people living in the areas with the greatest life expectancy tend to be those with the least number of years lived with disability or limiting long term illness (difference between life expectancy and disability-free life expectancy). Life expectancy is lower in more deprived areas, so this relationship is likely to be due to deprivation; however, the data shows us that it is possible for people to live long lives without substantial disability.

I find it disappointing that there is a lack of information available at a national level on 'wellbeing' and resilience, which needs to be included at the core of all public health action. The Office for National Statistics (ONS) is working to improve this situation. However action is also needed by the public health community to put wellbeing at the heart of their actions.

Recommendation **Public Health needs to encompass not only physical health but also mental health and wellbeing. All current interventions should be reviewed to consider how improving wellbeing can be incorporated.**

Chapter 3 – Risk factors

Much of the available information on the health behaviours of the population of England focuses on the prevalence of specific individual risk factors. While this provides a useful insight, often these risk factors occur alongside one another. The World Health Organisation (WHO) national burden of disease toolkit[2] estimates the main risk factors for early death and disability in the UK. They can be divided into lifestyle, medical and environmental risk factors and are, in order of impact;

- tobacco use
- harmful alcohol use
- high blood pressure
- high cholesterol
- overweight and obesity
- physical inactivity
- illicit drug use
- low fruit and vegetable intake
- occupational risks
- unsafe sex

Chapter 3 considers each of these in turn, with the exception of occupational risks (addressed in Chapter 4). Replacing this is urban outdoor air pollution, which is estimated by the toolkit to be among the top ten causes of mortality in the UK.

Chapter 3 considers the most important issue related to risk that health professionals should be aware of: the clustering of lifestyle with medical risk factors. The data available allows us to look at smoking, binge drinking, low fruit and vegetable consumption, obesity, diabetes†, high blood pressure and raised cholesterol‡. Approximately 68% of those aged 16 and over report the presence of two or more of these risk factors.

I can think of no stronger reason for the services addressing these issues to move to a more integrated approach, one that takes into account the likely co-occurrence of many major risk factors that we need to address. We need services that treat us as a whole person.

Recommendation **Medical, environmental and lifestyle risk factors should be addressed using a range of evidence based interventions by a variety of community providers e.g. GPs, pharmacies and local authorities. This should be done in an integrated manner, taking into account that many people will present with several risk factors at once.**

† Not included as a risk factor in the national burden of disease tool kit but identified as important for high income countries in the Global Health Risks report[3]

‡ Changes to the way the Health Survey for England measures physical activity levels meant it was not possible to include this risk factor in the analysis.

Chapter 4 – Social determinants of health

The social determinants of health are the conditions of daily life and the fundamental drivers that give rise to them. Social determinants impact on all aspects of health, as shown by the consistent relationships of risk factors and disease with deprivation. This chapter specifically considers five of the six areas of action highlighted in the *Fair Society, Health Lives* review[4] led by Sir Michael Marmot, examining the trends and inequalities in the social determinants of health.

The action areas considered are:

- Early years (child development)
- Cognitive skills (educational attainment)
- Employment and work (unemployment, work related ill health and health risks, working conditions)
- Healthy standard of living (income, poverty, fuel poverty, deprivation)
- Sustainable communities, places and vulnerability (green space and green infrastructure, housing conditions, homelessness, crime and fear of crime, social inclusion)

The importance of creating the right environment to enable healthy behaviours cannot be overstated. The links between good quality green space and the likelihood of people engaging in physical activity is just one example of this. However providing the right environment is only part of the answer. The 2012 Olympics and Paralympics legacy provide a great opportunity to make people aware of, and encourage the use of, many existing high quality facilities and green spaces.

Recommendation **All local authority organisations should maximise the 2012 Olympic and Paralympic legacy by promoting physical activity and the use of green space.**

Many groups present a poor picture across a range of indicators. For example:

- Children who receive free school meals have:
  - » a lower than average percentage assessed as ready for school at age 5
  - » a lower than average percentage achieving required educational attainment levels at each subsequent key stage and
  - » a higher percentage are not in education, employment or training (NEET) at age 19.
- Single adults with children have:
  - » lower than average income levels
  - » a large proportion of children living in poverty
- Single pensioners have
  - » lower than average income levels and
  - » a high percentage are living in fuel poverty.

While this work identifies some particularly vulnerable groups, it is clear to me from the data that it is important to address the social determinants across the whole social gradient. We should not focus solely on the worst off or most deprived areas.

Chapter 5 – Healthcare

Good population health outcomes, including reducing health inequalities, depend not only on preventing communicable disease, and improving health through promoting positive health behaviours and healthy environments, but also on the quality and accessibility of healthcare services provided by the NHS.

The effectiveness of healthcare interventions should not be underestimated. Over the last ten years, the mortality rate for conditions amenable to healthcare has declined faster than both preventable and avoidable mortality. Between 2001 and 2010, mortality considered amenable to healthcare decreased by 35%, preventable mortality by 23%, and avoidable mortality by 25%. This demonstrates the impact that can be had. When considering the cancer survival outcomes it is clear we can do better.

Recommendation **Survival from some cancers, such as lung cancer, is still poor, with even the best English survival rates well below the European average. While mortality rates from many cancers are falling, in some we have had little substantial impact, for example, pancreatic cancer mortality rates. Prevention and early diagnosis are a priority for joined up working between Clinical Commissioning Groups and Directors of Public Health.**

I have already discussed the importance of access to care as one of my key messages. The other area focused upon in this chapter is the provision of effective preventive services such as screening and immunisation. In general these have been great success stories in England. Since 2000, a number of new preventive and screening programmes have been introduced such as NHS smoking cessation services, newborn bloodspot screening, routine HPV immunisation for girls aged 12-13 years, and diabetic retinopathy screening.

The past decade has seen an improvement in coverage of routine childhood (pre-school) immunisations. Coverage of breast and cervical screening programmes has also improved. Other successes include more than 380,000 people in England successfully quitting smoking with NHS Stop Smoking Services in 2010/11. Despite this there still remains marked geographic variation in provision of these services. This can be seen in immunisation uptake of MMR in young children, HPV, and influenza in older people. Access to specialist services such as alcohol treatment, drug treatment services, and operations for morbid obesity vary across England.

Postscript – Public health research funded by the Department of Health

The need for a stronger arsenal of evidence based interventions to address public health challenges is clear. This postscript identifies a number of the initiatives our National Institute for Health Research (NIHR) has funded to help address this issue. I believe this will be of interest to the public health community, but also I hope it will help to improve the dialogue between those delivering public health services, academic public health staff and those funding public health research. There is a long way to go before we really understand and have the evidence to impact on the behavioural and social factors underlying the multiple "risk" behaviours so many adopt, to the detriment of their health and longevity.

The life course model

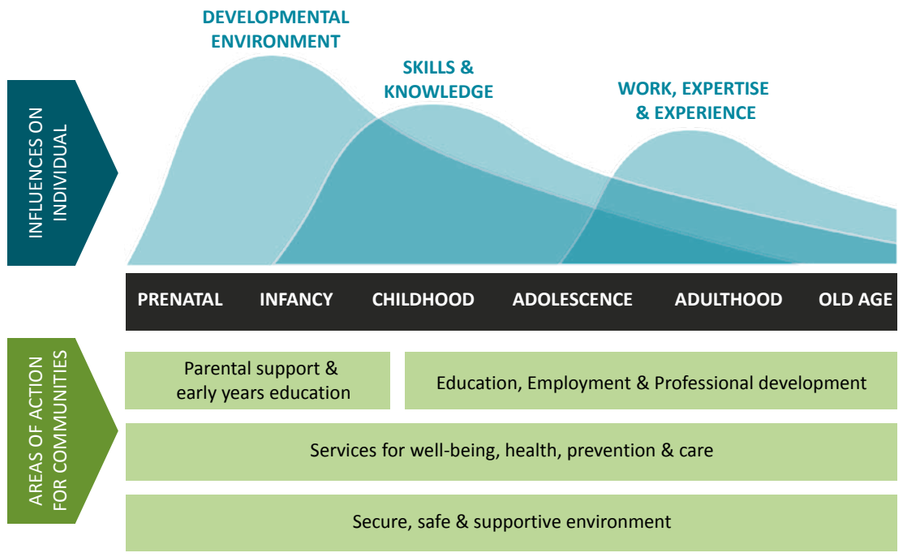
Following the publication of *Fair Society, Healthy Lives*, led by Sir Michael Marmot, public health professionals regularly frame health inequalities using the life course model proposed. This model notes that disadvantages start before birth and accumulate throughout life. Many localities in England have been successfully using the model to frame or structure their health and wellbeing strategies.

The re-organisation of the public health function in England, in particular the new responsibilities for health improvement in local authorities, provides a prompt to review where current priorities lie. My report, providing an evidence base for local as well as national decision making, will also inform reviews and developments of health and wellbeing strategies.

I believe a focus on the action areas outlined in the life course model is central to implementing effective change. I have developed representation of the life course model further, explicitly emphasising where action on individual experiences and wider social determinants can be most effective during the life course (see model "Influences and actions along the life course").

This new representation seeks to reflect our changing demographic and economic circumstances. It is likely that an increasing proportion of our population will work to a later retirement age. This is likely to result in more people experiencing ill health before retirement, as some age related patterns of illness currently seen in the retired population will be more evident in the working population. Periods of paid employment interspersed with periods of unpaid employment/worklessness (due to illness or choice) are likely to become more common into older age. This is important for how we represent the life course model, as action to improve health in the workplace will become even more necessary and may need to have a wider focus.

Recommendation **Health and Wellbeing Boards should work with local employers to optimize the health outcomes of their employees and, where possible, their families.**



"Influences and actions along the life course"; model inspired by Fair Society, Healthy Lives

'Influences and actions along the life course' demonstrates potential areas of action relating to both the *individual* and the *community*. This model maintains the emphasis on the accumulation of effects on health and wellbeing starting before birth seen in the *Fair Society, Healthy Lives* life course model.

Life course stages are positioned centrally across the diagram and represent the life course stages of an individual from 'prenatal' to 'old age'. Clearly not all individuals will pass through all life course stages. Causes of death that are predominant in different life course stages will require different action.

The top section depicts areas of activity experienced by an individual that influence his or her development along the life course. The curves represent the significance on health and wellbeing of each individual activity, which are large in earlier years and taper off in later life. These influences are:

- **Developmental environment;** the environment into which a child is born, including the nurture they receive, socioeconomic conditions, nutrition pre and post birth, imprinting and epigenetic influences and the psychosocial and developmental support received influence a child's life course.
- **Skills & Knowledge** include all life skills (from social skills and resilience, to vocational skills), and knowledge gained through all forms of direct and indirect education.
- **Work, expertise, and experience** indicate the acquisition of expertise and experience through all forms of paid and unpaid work and work-related activity.

The lower section of the diagram depicts areas of action at the community level, i.e. where action needs to be taken at the group rather than individual level, and often focused towards specific communities. These will (in part) determine the societal influences on individuals and action here is essential for the healthy development of society. These areas of action include:

- **Parental support and early years education** includes family building in a more holistic sense, such as interaction with parents and/or caregivers, as well as targeted education on the importance of parenting, nutritional, and developmental support.
- **Education, employment and professional development** includes the need for policy action in providing opportunities for continuous education and development at work.
- **Services for well-being, health, prevention and care** including basic physical, mental, emotional, and preventative health measures by and for communities, including the need for policy action in providing services for early diagnosis and treatment. 'Care' includes all aspects of health and social care across the life stage from a policy perspective, but equally empowering families and communities to create caregiving environments.
- **Secure, safe and supportive environment** not only alludes to the idea of creating supportive and caregiving environments, but ensuring that policy action is taken to ensure the safety and security of communities as a basic requirement.

1. QIPP Rightcare. The NHS Atlas of Variation in Healthcare: Reducing unwarranted variation to increase value and improve quality. London 2011 http://www.rightcare.nhs.uk/index.php/nhs-atlas/

2. WHO. National Burden of Disease ToolKit . http://www.who.int/healthinfo/global_burden_disease/tools_nbd_toolkit/en/index.html

3. WHO. Global health risks: mortality and burden of disease attributable to selected major risk. 2009.

4. Marmot Review Team (2010) Fair Society, Healthy Lives: Strategic review of health inequalities in England post-2010 (The Marmot Review). London: Marmot Review Team.

Contents

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How to use this report

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1. What is the purpose of this report?

The main purpose of this report is to serve as a compendium providing information and key facts on a very broad range of topics to health and social care professionals, policy makers and elected representatives.

It has been designed to allow people to selectively focus on specific issues.

2. What is the report content?

The summary contains those issues the Chief Medical Officer would particularly like to highlight.

In the body of the report, as a general standard, readers can expect a two page spread including a short summary of the issue examined and relevant charts and maps of data. The report includes a focus on change over time and age, allowing mapping of issues to life stages.

A major innovation in the way this Chief Medical Officer's report has chosen to represent geographical data is the use of cartograms for mapping; as this may be unfamiliar to many, map 'keys' are provided in the following pages to help readers identify specific geographical areas.

The use of cartograms has been pioneered in the UK by Professor Danny Dorling and much of the inspiration for this report comes from his book 'The Grim Reaper's Road Map: An atlas of mortality in Britain'[1]. It adds a unique perspective, showing maps where the area is proportional to the resident population rather than the geographical area, in contrast to conventional maps where urban centres that are represented by small geographical areas contain substantial resident populations.

Like all data focused reports, particularly those using routine data, there are caveats and limitations to the data that should be borne in mind. These are discussed further in 7.1. All of the data that has been mapped is also available in Microsoft Excel format for people who require the specific values (see below).

2.1. How are the topics sequenced?

The report seeks to achieve the following:

- define how the population of England is changing (Chapter 1)
- identify the current patterns of disease (Chapter 2)
- examine the current epidemiology of those specific risk factors with the largest impact on health (Chapter 3)
- describe a number of social determinants of ill health (the causes of causes) that pertain specifically to the action areas identified in *Fair Society, Healthy Lives*[2] (Chapter 4)
- assess the performance of current preventative services in the NHS while also considering issues of access to care (Chapter 5).

Each chapter has an internal rationale for the sequencing of topics. This is particularly evident for the ordering chapters 2 and 3. In chapter 2, more high level measures of health (with the exception of infant mortality) are presented first, such as wellbeing, life expectancy, all cause mortality, international comparisons and winter deaths. Disease topics are presented in the order of the Global Burden of Disease Study[3], which is approximately the order of the International Classification of Diseases.

In Chapter 3, key risk factors are presented in order of importance in terms of their contribution to the overall UK health burden (as assessed by the WHO National Burden of Disease Toolkit). As this uses data from 2004 and new evidence has arisen around the health impact of different risk factors (e.g. the impact of physical inactivity), this should be interpreted with caution. However it remains a useful guide for prioritising action.

2.2. Does this report include official statistics?

Strict rules cover the production of official statistics; information governance is in place is to ensure confidence in the collection, methods of analysis and interpretation of statistics produced and that they are free from political interference. This is a key professional duty of statisticians working within government. As the Chief Medical Officer's report is an independent report by the Chief Medical Officer to Government it is not covered by these governance procedures. However, the production of this report has been in line with the spirit of those regulations. Statisticians have been involved in the conceptual design and production of the report, they have advised on the methods used both for representing and analysis within the report.

3. What does the text in the report tell me?

There is minimal written content as the report focuses on the visual representation of a wide range of data, and making this data available. The short passages of text accompanying images cover the general messages arising from the data shown, but specific charts or maps are not discussed in detail and may not be discussed. Various academic and clinical experts and national policy leads have been asked to contribute to, and comment on, text in the report (see Acknowledgements).

3.1. What do the "Key facts" tell me?

Unless otherwise stated, the 'key facts' boxes in Chapter 2 summarise the number of potential years of life lost (PYLL) and number of hospital bed days due to the broad disease groupings considered on that page.

Using mortality rates alone emphasizes the most common causes of death in older people, because the risk of death increases with age. PYLL gives more weight to deaths among younger individuals. It is an estimate of the number of years a person would have lived if they had not died prematurely. Its use in the key facts gives an indication of the relative important of the disease in terms of premature mortality. Similarly, the number of bed days gives an indication of the importance of the disease in terms of NHS hospital resources. While useful, neither of these measures would reflect the

importance of diseases that are primarily non-fatal or not requiring hospital admission.

The data shown in the key facts boxes are based on the primary diagnosis recorded as cause of death or as reason for admission. The proportion this represents of the total number of deaths and hospital is also given. For the analysis in this report dying prematurely was defined as death before the age of 75 years and calculations of PYLL were based on five year age bands rather than individual years

If appropriate, subcategories of the broad disease grouping are considered. The PYLL and number of hospital bed days are then given for each subcategory accounting for the largest proportion

4. How were the images in the report produced?

Due to the large number of graphs and charts in the report, these were produced in an automated fashion based on standardised data sheets and a limited number of options of chart and map style. For low-level visualisation d3.js[4], a JavaScript library for manipulating documents based on data, was used. The chart and map automation was customised and all visualisations were produced by Iconomical[5].

For the cartograms, Local Authority and Primary Care Trust maps shape files were those made publically available by Professor Dorling and colleagues[6]. Regional and cancer network shape files were specifically created for the report but used the same methodology[7], i.e. using the algorithm developed by Michael Gastner and Mark Newman[8] and transformed using the utility developed by scapetoad[9]. Before transformation all map boundaries were based on boundary lines products available as part of Ordnance Survey Open Data[10].

All line charts have had a smoothing function applied. The function used was a low level Cardinal spline. Splines are mathematical functions to interpolate (constructing new data points) between several values The general approach when applying spline functions is that a curve is constructed that closely follows, or as in this case goes through, the sequence of data point.

4.1. What conventions were used in image titles etc?

Titles, labels and sources have been produced as consistently as possible for ease of use. These are designed to provide enough relevant information to allow readers to understand a broad definition of the indicator and the units in which it is being examined. If necessary, more detailed information regarding the indicator is included in the text and as part of the data sheets made available at data.gov.uk.

In titles and labels the following conventions are used:

- For trend over time data the title will include the full start and end date linked by the word 'to', e.g. 2001 to 2010.
- For data averaged over a time period the title will include the full start date and a partial end data linked by a '-', e.g. 2007-09.
- For financial years the title will include both years covered, separated by a '/', e.g. 2011/12.
- For data grouped by national deprivation quintile (based on IMD), these have been labelled 'Most deprived' 'NQ2, 'NQ3', 'NQ4', 'Least deprived'. A similar convention is used for national deprivation deciles

An abbreviated source of the data is given for all graphics.

- Where data has been directly obtained from a data source, the source alone is referenced.
- Where a third party has provided the data the original source is referenced and the provider is acknowledged. *(Provided by ….)*
- Where data has been specifically analysed for the report, the source of the numerator and the source of the denominator (if appropriate) is referenced and the organisation that has undertaken the analysis is acknowledged. *(Analysis by….)*

A list of abbreviations is also included at the end of the report (see Abbreviations). Abbreviations are generally avoided unless also given in full in nearby text. The exception is abbreviations for organisations when quoted in the source of the data.

4.2. What is variation and how do you show it?

There is a growing emphasis on examining variation in health and healthcare. In health, variation can reflect issues of health inequalities, potentially due to differences in behavioural and wider determinants of health. It may also reflect different intrinsic risk (due to genetic predisposition).

As provision of effective healthcare, tailored to the needs of the population, is one of the most effective public health interventions (even for those affected by a genetic predisposition, e.g. there are interventions for familial hypercholesterolaemia and for those at risk of familial breast cancer), differences can also reflect issues of access and provision of care.

It should also be noted that variation is sometimes seen due to normal chance. Throughout the report we have used, where available, methods to help quantify if the variation seen is due to chance.

This is dealt with below in more detail but, for example, where appropriate information exist we not only show the geographical spread, but also if areas are statistically significantly above or below the national average.

4.3. What are confidence intervals and how do you show them?

Wherever available 95% confidence intervals have been provided as part of the data underlying the maps and charts presented. Decisions on displaying confidence intervals have depended on their availability and the impact on the readability of the chart or map. Wherever shown, confidence

intervals are 95% confidence intervals.

A confidence interval is a range of values that is used to quantify the imprecision, due to random error (natural variation), in the estimate of a particular value. If a data point falls outside the range, there is a high chance that this is not just due to random variation, and this is a prompt to look for a reason or cause for this different result.

The wider the confidence interval, the greater the uncertainty in the estimate.

With the exception of the cancer statistics, confidence intervals were calculated as outlined using the methods described in The Network of Public Health Observatory Technical Briefings[11]. More information on confidence intervals is available from the briefings. Confidence intervals for cancer statistics were calculated using ONS standard methods, to ensure consistency with ONS published cancer statistics.

4.4. What is the difference between a rate, incidence and prevalence?

A rate is a measure that relates the number of cases (frequency of a phenomenon) during a certain period of time to the size of a population. It can be defined as the number of cases of interest divided by the number of persons at risk over a specific time period. E.g. it can be used to describe how many people have died from liver disease over one year in the English population. As a general convention in the report where rates are given it is for a year period and is described in terms of a nominal population, i.e. per 1000 population. For the majority of rates reported the populations from which the numbers of persons at risk are taken are open populations (i.e. in any specific year the English population changes due to births, deaths and migration), as such mid year estimates of these population are used.

Rates allow comparisons between groups, e.g. if the rate is higher in one age group compared to another.

Where appropriate rates may be described in terms of:

- incidence, the frequency of new cases of a disease in the population, or
- prevalence, the frequency of existing cases of a disease in a defined population at a notional point in time (point prevalence) or at any time during a specified time period (period prevalence).

This is where the data available allows such inferences and the convention is to describe the rates as such.

4.5. What is age standardisation and how is it used?

Disease and mortality rates may vary widely by age. Such variation complicates any comparisons made between two populations that have different age structures. For example, an area may have less actual deaths because it has a younger population age structure than an area with an older population age structure because the risk of dying increases as people get older. When taking age structure into account the first area may actually have a relatively worse mortality experience

Standardisation allows like to be compared with like, by making sure that observed differences in the number of events (e.g. deaths or infections) in two or more populations are not due to differences in the age and sex profile between the different populations.

The main method of age standardisation used in this report is direct standardisation, where the age-specific rates of the subject population are applied to the age structure of the standard population. This gives the overall rate that would have occurred in the subject population if it had the standard age-profile. It is the preferred method for comparing populations against each other, and over time.

Unless stated otherwise, five year age bands were used to calculated the age specific rate which were then applied to a standard population.

An alternative to age standardising rates is to give a series of age specific rates (i.e. calculating the rate in a series of specific age group rather than adjusting for age to produce one rate). As such an approach makes clear the age profile, this has also been done throughout the report and most often displayed visually with population pyramids (see below).

For further details of approaches to standardisation and the advantages and disadvantages of each see the methods described in The Network of Public Health Observatory Technical Briefings[12].

5. MAPS: how do I read the maps?

5.1. What is a cartogram map?

A major innovation in the way this Chief Medical Officer's report has chosen to represent geographical data is the use of cartograms for mapping, as this may be unfamiliar to many, map 'keys' are provided in the following pages to help readers identify specific geographical areas.

The mapping methods used in this report are different from conventional mapping. Cartograms have been used where the size of each area mapped is approximately proportional to the area's population. As far as possible the cartograms also maintain the original shape of the geographical areas. For this to be possible minor size adjustments for areas with especially high population, high density or low population and small geographical area are also implemented. This approach means that both the proportion of people affected and their geographical location can be surmised at a glance.

5.2. What do the shading and different coloured borders indicate?

Map colours relate to the chapter they appear in and, for consistency, the same shadings have been used throughout.

- Where high rates are of particularly interest (e.g. cancer mortality rates), the shading is ordered from dark=high to

light=low, to draw attention to those areas with higher rates.

- Where areas with low rates are potentially of more interest (e.g. life expectancy), the shading is reversed.
- Where there is no clear consensus on whether a high score or a low score is of greater interest, the ordering is also from dark=high to light=low.

For each map the indicator values of the geographies units (e.g. the Upper Tier Local Authorities) are ordered and split into 5 groups of approximately equal size. This means each quintile group has roughly the same number of data points but the range of covered will depend on the distribution of indicator values.

Quintile ranges are defined by either the mid point between the top and bottom of the indicator values in two adjoining quintiles or the top and bottom value of all the indicator values. The number of decimal places shown in the quintile range is automatically assigned dependent on the overall range of the data. In some maps where the range is small this leads to there being several decimal places. As such the number of decimal places shown should not be taken as reflecting greater accuracy, but rather are a reflection of the distribution of the data.

The map legend is a colour key that allows the identification of which quintile a particular geographical unit belongs to. This key also gives the range covered by each quintile, a smoothed histogram displaying the spread of the individual indicators and the individual data points.

In a number of cases data providers did not feel it appropriate to provide confidence intervals around area estimates. This was for a variety of reasons. Where a statistical analysis has been undertaken to examine which geographical units in a specific map are significantly higher or lower than the national average, these are identified on the map by the boundary of the geographical unit being coloured blue or red. To assess whether an area was significantly different from the national average, local area rates with confidence intervals and the national rate was calculated. Areas were classed as significantly above or below the national average if the confidence intervals did not encompass the national average. Due to the differences in population size, some geographical units with small populations may have high rates and not be significantly different from the national average (i.e. as there is a smaller population there is greater uncertainty around the indicator value). Similarly where a geographical unit has a large population (i.e. which will result in more certainty around the indicator value) it may have a rate that is significantly different from the national average but be closer to it than other geographical units that are not significantly different.

Overall the map and legend indicates how much variability there is, which areas are above or below the national average and what belonging to a particular quintile means. Often outliers can have a large impact on the range of the top and bottom quintile. Rather than remove these, by including them but showing the distribution, this gives a fuller picture of all the data.

5.3. Why do you use different geographical areas in the maps?

Throughout the report there are maps with 4 different sets of geographical boundaries: The geographical units of these different maps are:

- upper tier local authorities;
- primary care trusts (PCTs);
- cancer networks;
- government office regions.

As a standard, upper tier local authorities are the default geography used, however in many cases data is not collected at this level, e.g. currently immunisation coverage rates is only available at the PCT level. The following four map keys identify specific geographical units within the maps and can be used to identify local areas.

5.4. Is any map data missing or suppressed?

Where data is unavailable, this is identified in the maps by the area being filled by a dark gray colour. Data may not be available because it has not been collated for that area, or is considered unreliable for inclusion by the data provider (for statistical or quality assurance reasons). For example, cancer age-standardised rates are calculated over a three year period (2008, 2009 and 2010), rates were not calculated if there were fewer than 10 individuals affected in any particular year as low numbers may be susceptible to inaccurate interpretation. Data may also have been suppressed due to low numbers which may mean individuals could be identified, generally this was where less than five people were affected.

Decisions on suppression or non provision of data were at the data provider's discretion such that it met their local data governance requirements. All information provided for the report that has been mapped has been made available.

6. CHARTS: how do I read the charts?

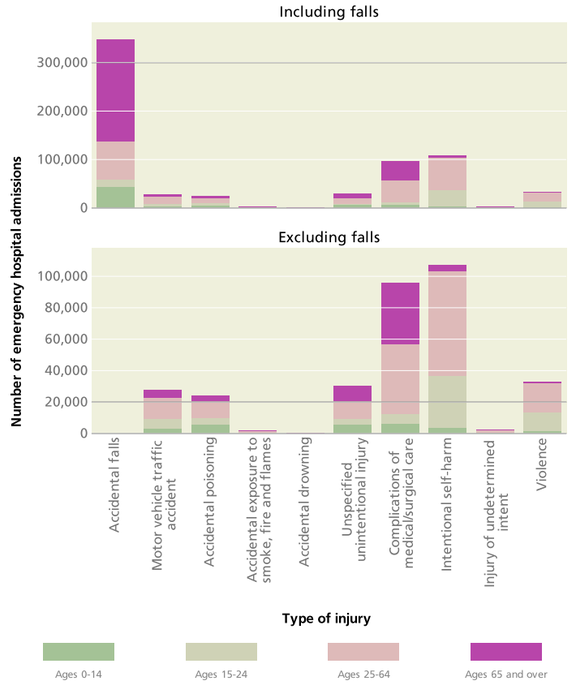
6.1. What types of charts are used?

There are four main types of chart used in the report;

- Population pyramids
- Bar and column charts
- Line charts
- Stacked area charts

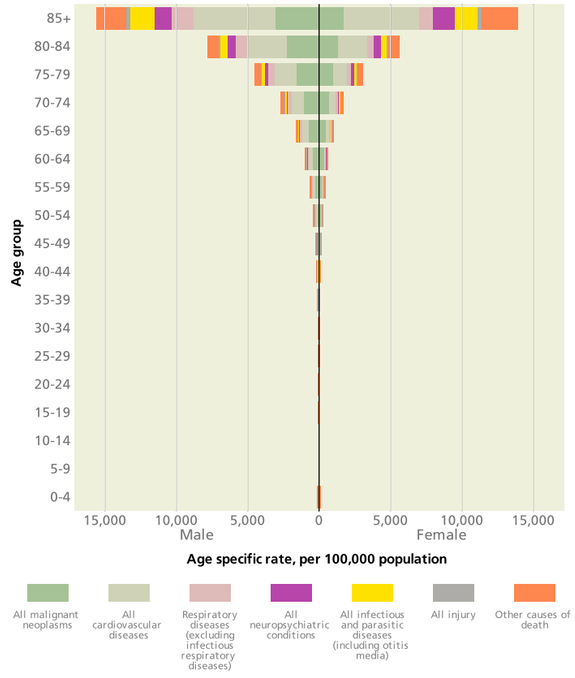
The main additional method used is faceting of graphs, where more than one graph is shown as part of a series. These have a particular function, to aid comparison between different sets of data. An example of this is *Emergency hospital admissions due to injuries by type and age, England, 2010/11*, which is displayed with and without falls. This is to demonstrate the importance of falls as a cause of mortality, while also ensuring the pattern of other accidental causes of mortality is made clear. Where facetted charts have the same x-axis, these are given at the bottom of set of facets.

Emergency hospital admissions due to injuries by type and age, England, 2010/11



Source: Hospital Episode Statistics (HES), Health and Social Care Information Centre. © Crown Copyright 2012. 2010 population estimates supplied by ONS. (Analysis by PHOs, led by EMPHO)

Mortality due to all causes (and sub-categories) by age and sex, England, 2008-10



Source: Death registrations and 2008 to 2010 population estimates, ONS. (Analysis by DH)

Population pyramids, in general, give the age and sex specific rate for the indicator considered. For a number of indicators where these can be further subdivided into categories, these are shown as subsections, giving the age specific rates for the subsections. For all population pyramids the time period covered, the geographical area covered and a brief description of the subject area (in conjunction with the legend for charts with subcategories) are included in the title.

By using population pyramids this allows at a glance an understanding of differences between males and females at different life stages. As in *Mortality due to all causes (and sub-categories) by age and sex, England, 2008-10*, this will often emphasise the importance of the disease/issue at older age. Where sub-categories are shown the changing proportional importance of those sub-categories by age, such as the importance of infectious and parasitic diseases as a cause of mortality in older people, is also identified.

The age groupings used are not always uniform as they are constrained by data availability and sometimes it was considered important to include an additional group of children under the age of 1 year. For population pyramids without subcategories, if appropriate and available 95% confidence intervals are displayed. For those with subcategories, this information is available as part of the raw data made available from data.gov.uk.

Bar charts are the main charts used in the report. The length of the bar is proportional to the value being displayed. A number of these charts contain sub-categories (stacked bar charts), grouped bar charts (data is grouped by two or more categories) and faceted bar charts (charts facetted by sex, deprivation quintile, etc). Gridlines are included to help interpretation of differences between bars or columns. In some instances the English average is presented as a line for comparison. In all instances the use of bar charts is to facilitate comparisons between different groups and highlight were differences occur, but also were there are no differences. Similar to population pyramids charts, confidence intervals are provided where appropriate. These cannot be shown for charts with subcategories but are included in the raw data.

Line Charts have been used to show change over time data and in certain instances the change between age groups. In general age standardised rates are shown, however the x or y label (as appropriate) will always identify the units of measurement. In line charts, when included, 95% confidence intervals are displayed as shaded areas around the line.

Similar to bar charts, several of these are presented as facetted charts. Where there are a large number of facetted line charts displaying change over time, rather than the X axis of the time period, the grouping variables are displayed. The purpose of these charts is to aid comparisons of changing patterns in the different groups. As can be seen in *Trends in smoking prevalence by age and sex, England, 1993 to 2010*,

rates are high in younger people (excluding those aged 11-15) and there is a general downward trend in all age groups.

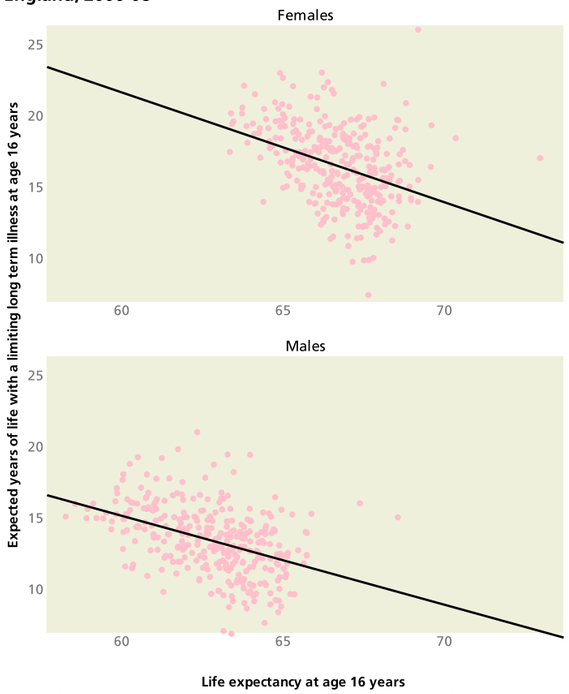
Stacked area charts have been used to show change over time data where there is an overarching variable of interest (e.g. age standardised mortality due to respiratory illness) but this comprises of several sub-categories which are also of interest. *Trend in Mortality due to respiratory diseases (and sub-categories) by deprivation, England, 2001 to 2010* reflects this, in that it shows the relative importance of infectious respiratory diseases, COPD, asthma and other respiratory diseases, the small overall decrease over time and the much higher rates seen in the more deprived areas.

There are also a small number of more specialist charts, these include scatter plots with lines of best fit, a quadrant plot and an infographic (which combines a form bubble chart with a Sankey diagram), as well as several pie charts.

Scatter plots allow an assessment of the relationship between two variables by considering the:

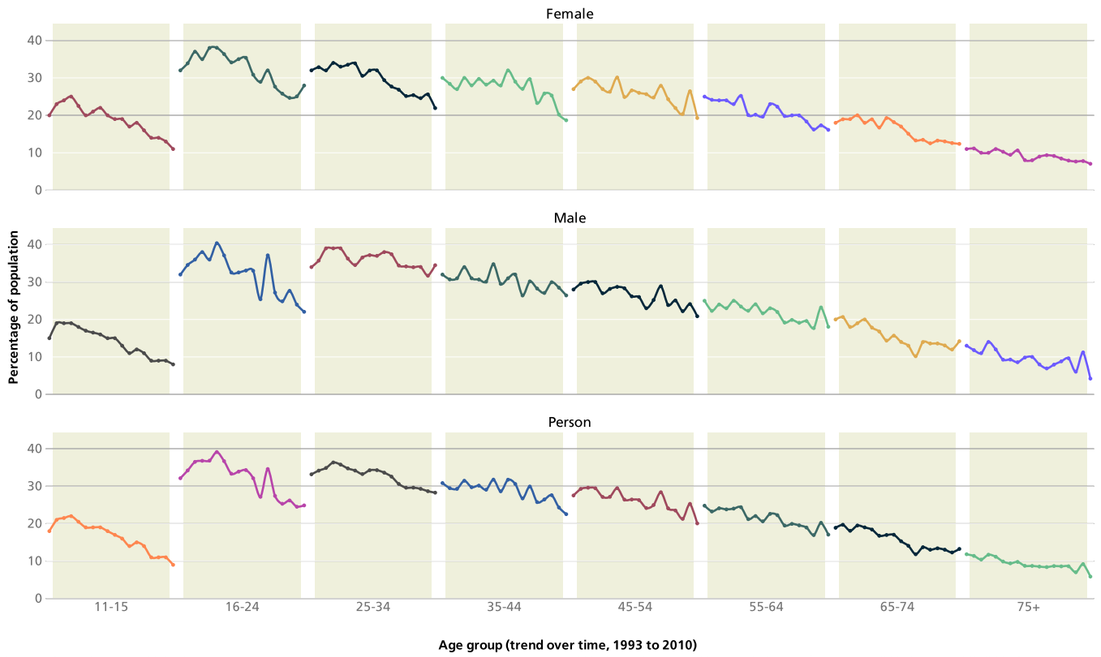
- Direction of the relationship - does one variable increase as the other increases (a positive relationship) or does it decrease (a negative relationship)?
- Form of the relationship - is the relationship best described by a linear/straight line, a curve, etc?
- Strength of the relationship - is the pattern of data clustered around the underlying form or does it seem at random?

Comparison of life expectancy and expected years of life spent with a limiting long-term illness or disability for local authorities, England, 2006-08



Source: Life expectancy (LE) and Disability-free life expectancy (DFLE) experimental statistics, ONS.

Trend in smoking prevalence by age and sex, England, 1993 to 2010

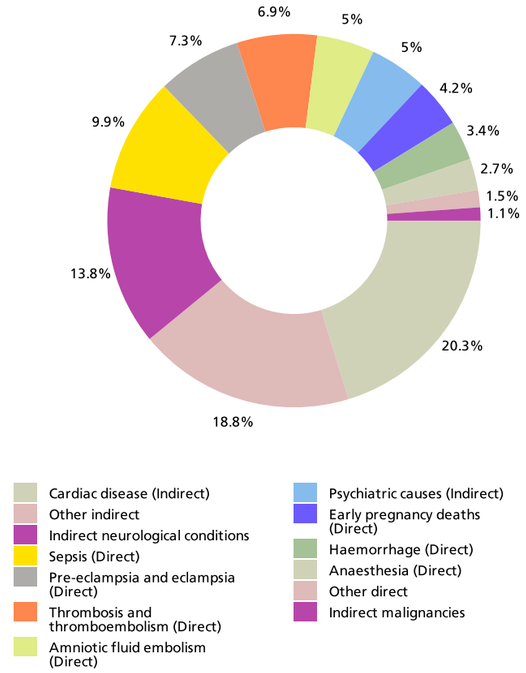


Source: Population aged 11-15: Smoking, drinking and drug use among young people in England in 2010; Population aged 16+: Health Survey for England 2010; Copyright © 2011. Re-used with the permission of The Health and Social Care Information Centre. All rights reserved. Note: Figures for 11-15 age group include 'regular' and 'occasional' smokers

Scatter plots can also identify whether there are important outliers that do not fit the overall pattern of the rest of the data. In this report the scatter plots display the individual data points and a line of best fit (which assumes a linear relationship) to help more clearly show the direction of the relationship and allow an assessment of its strength (by making it easier for readers to examine how clustered data is around the line).

Quadrant plots are essentially scatter plots but can be used to consider and compare the distribution of data within particular categories (i.e. the different quadrants of the plot).

Maternal mortality due to different direct and indirect causes, United Kingdom, 2006-08



Source: CMACE. Saving Mothers' Lives: reviewing maternal deaths to make motherhood safer: 2006-08. The Eighth Report on Confidential Enquiries into Maternal Deaths in the United

Pie charts illustrate the proportion of the whole that each category displayed represents. The area (and arc length and central angle) is proportional to the quantity it represents.

The infographic uses "bubble chart" techniques where numeric quantities are represented by the area of a circle. In this case for each infectious disease the area of the inner circle is proportional to the number of notifications which have a linked travel history and the inner and outer circle areas combined is proportional to all notifications of that disease. This gives an instant impression of the relative number of notifications of different key imported infections and the proportion of those notifications that have a definite linked travel history. Different colours are used to identify the predominant mode of transmission of the key imported infections, giving an overall impression of the mode of transmission that is predominant for these infections. The overlap of non-concentric circles is due to issues of space and has no specific meaning. The second part of the infographic is a Sankey diagram. Sankey diagrams are a specific type of flow diagram in which the width of the arrows are proportional to the flow quantity. Within the infographic they are used to show the travel to and from different geographical areas around the world but are also split by colour to identify the overall proportion of travel to those areas which are considered to be are high, medium or low risk for gastrointestinal illnesses.

7. What data did you use?

7.1. What is the source of the data used in the report?

The source of data is given at the bottom of each image. A list of websites that provide access to additional sources of information are also given at the back of the report. Two major sources of information used in this report are:

- Death registrations based on the details collected when deaths are certified and registered. Most deaths are certified by a medical practitioner though in some cases deaths are referred to a coroner. Cause of death is coded using the Tenth Revision of the International Statistical Classification of Diseases and Related Health Problems. When registered information is also collected from the informant. Further information is available from the Office for National Statistics[13]
- Hospital Episode Statistics (HES) contain details of all admissions to NHS hospitals in England and is used for a wide range of healthcare analysis for the NHS including assessing use of healthcare (in particular secondary care). The Health and Social Care Information Centre liaises closely with NHS trusts and PCTs to encourage submission of complete and valid data and seeks to minimise inaccuracies and the effect of missing and invalid data via HES processes[13].

A variety of other sources of information are also used which includes a mixture of surveillance and routine data.

7.2. Are there limitations on the interpretation of the data?

There are a number of limitations to any data available; although care has been taken to use the data source most likely to be of high quality in this report, some caveats do remain.

As a general rule, where possible, routinely available information has been used throughout the report, such as data from death certificates, GP registers and hospital episode data. A key advantage of routinely available information is its regular collection, allowing assessment of change over time, and that it is often available at the local level, allowing local comparisons to the national situation. However, there are some common limitations that should be taken into consideration when interpreting the data.

- Statistics produced from routinely collected information will be affected by the completeness and accuracy of those recording the data. For example, different coding styles of medical practioners on death certificates or NHS coders for HES data could influence local and national estimates. Clinical coding is also often less accurate in older people with several co-mobidities.
- Changes in the system of collection or coding of data will impact on comparisons over time. For example higher rates of disease could reflect greater completeness of data rather than increasing incidence of a disease.
- Dependent on the source of data used, accuracy and completion of denominator data will impact on the accuracy of statistics produced. For example where data is taken from GP disease registers, even if all people with a disease are identified and correctly diagnosed, if GP list sizes are inaccurate this will bias estimates of prevalence.
- Where data analysis is the secondary use of data collected for other purposes, factors influencing the accuracy and completeness of primary use of the data will impact on any inferences that can be made.
- When using routine data that is primarily recording access to services, high rates could reflect that the system is treating high numbers, that there is a high local prevalence, or both.
- To use routine health data that is primarily recording access to services to estimate prevalence or incidence it must be assumed that people are equally likely to access those services, and that referral pathways are the same. However, it is known that certain groups such as the homeless, migrants and travellers may be less likely to access healthcare.

While the above caveats focus on routine health data, similar issues apply to all routinely available information used in the report.

A particularly important issue is that, unless otherwise stated, mortality and hospital episode data are analysed based on primary cause. While using the primary cause of death/ hospital admission is useful in understanding the overall pattern of mortality and morbidity, it does not address the issue or the causal role that other diseases may have had. As such this data is likely to under represent the total causal impact of chronic diseases.

Although routinely available information has been the default choice, much of the data used in the report is only available from surveys. These are also open to a variety of potential biases that could caveat any interpretation. Two major issues which particularly effect reported behaviour or lifestyle choices are:

- those who respond to the survey may not be typical of the population of interest (e.g. low representation of young people, homeless, ethnic minorities etc) and
- people may report different levels of behaviours (alcohol, smoking, sexual partners etc) than they actually exhibit.

Finally, for a number of maps, modelled estimates are presented for different areas. The accuracy of these estimates depends both on the accuracy of the model used and the accuracy of the local measures which are then used to predict local estimates.

7.3. Where can I find out more about the data used?

Key meta data has been included as part of each chart or map displayed. Taken as a whole, the title, x and y axis labels, legend and source of the data will allow readers to discern the time period, geographical area, a broad definition of the indicator examined and the units the indicator has been measured in.

The original source of the data is also given and where rates have been calculated specifically for the report, the source of the numerator and then the source of the denominator is given.

More detailed information is available as part of the Microsoft Excel files containing the data used in the report, including the specific definition used (as defined by the data providers).

7.4. Specific data caveats?

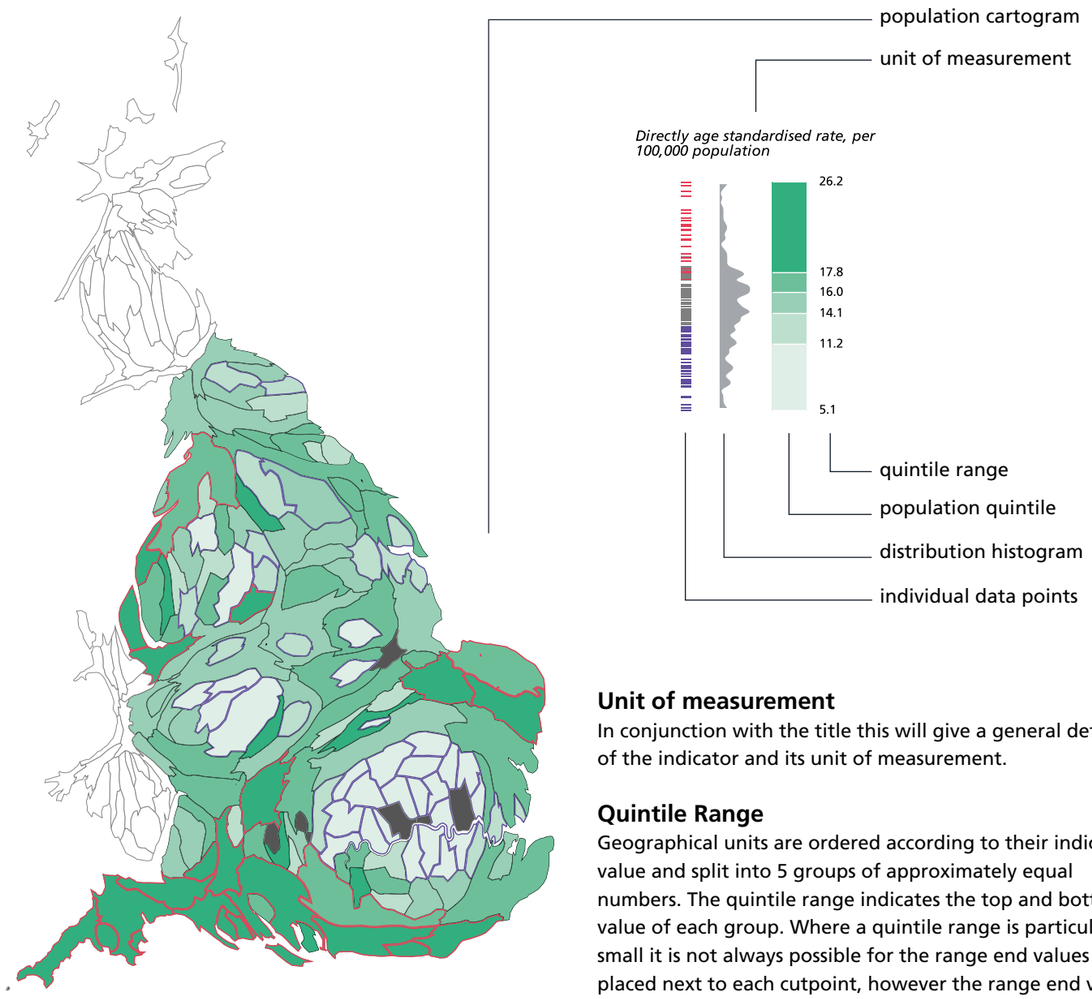
There are several specific caveats that data providers have asked us to make readers of the report aware of. In general, if these are likely to have a large impact on the interpretation of the data, reference has been made to them in the 200 word summary which accompanies each set of images in this report.

- Data presented from infectious disease surveillance underestimates the true prevalence of disease. This is particularly the case for gastrointestinal diseases such as *Campylobacter*, where many people with infection will not present to services.
- Data on key imported infections relies on the recording of a travel history. This is variable in its completeness and figures on foreign travel linked notifications should be considered a minimum of the actual number of travel related infections.
- The age and sex population profile of people with learning disabilities is estimated from case registers covering the City of Sheffield (all ages) and the City and County of Leicestershire (aged 20 and over) as at March 2012. Data from these two areas may not reflect exactly the pattern for England as a whole.
- The estimated average age of death for people with learning disabilities may be affected by the substantial under recording of 'Learning Disabilities' on the death certificate. This probably reflects many certifying doctors view that the learning disability was neither a direct or contributory cause of the death.
- Data on visual impartment is based on the number of people whose vision has fallen to certifiable levels and who have accepted the offer of registration for vision impairment made by a consultant ophthalmologist. It is thus an underestimate the true level of visual disability but is likely to reasonably estimate the level of social service resources needed by the visually impaired.
- Due to data constraints, the age groups used to calculated the age standardised rate in the map 'Certification of visual impairment rates by primary care trust, England, 2010/11' were 0-15, 16-64 and 65+. For the trend over time data for visual impairments, age standardised rates were based on 5 year age groups. Both were applied to was the 2010/11 England population to calculate the age standardised rates.
- For data regarding child dental health, the requirement for positive consent has introduced bias into these data, which means that they cannot be used in backwards comparisons. A summary of caveats and other issues affecting the data is available in the "NHS Dental Epidemiology Programme for England; Oral Health Survey of five year old children 2007 / 2008" report and the "Explanation of caveats for 2007/08 five-year-olds survey data" document[14].

1. Shaw M, Thomas B, Davey Smith G, Dorling D, (2008). *The Grim Reaper's road map: An atlas of mortality in Britain*, Bristol: Policy Press
2. Marmot Review Team (2010) F*air Society, Healthy Lives*: Strategic review of health inequalities in England post-2010 (The Marmot Review). London: Marmot Review Team.
3. WHO *The global burden of disease: 2004 update* (2008), http://www.who.int/healthinfo/global_burden_disease/2004_report_update/en/index.html
4. http://d3js.org/
5. http://www.iconomical.com/
6. http://sasi.group.shef.ac.uk/bankruptbritain/Material.html
7. Thomas B, Dorling D, (2011). *Bankrupt Britain: An atlas of social change*, Bristol: Policy Press
8. Gastner MT, Newman ME, (2004). Diffusion-based method for producing density equalizing maps, Proc Natl Acad Sci USA, vol 101 (20), pp7499-504.
9. http://scapetoad.choros.ch
10. As such all maps contain Ordnance Survey data © Crown copyright and database right 2012.
11. http://www.apho.org.uk/resource/view.aspx?RID=39306
12. IBID
13. Available at: http://www.ons.gov.uk/ons/guide-method/user-guidance/health-and-life-events/mortality-metadata.pdf and http://www.ons.gov.uk/ons/guide-method/method-quality/quality/quality-information/social-statistics/sqr-annual-mortality.pdf
14. Available at: http://www.nwph.net/dentalhealth/caveat.htm

How to use this report continued

How to read the maps



Population Cartograms

All maps in this report are population cartograms. A population cartogram, or *isodemographic map* is where each geographical unit has been scaled so that it is approximately proportional to the size of the resident population in that area, with minor size adjustments for areas with especially high or low population or density. Map keys for the different geographical units used are provided here.

Where analysis has been undertaken to determine which geographical units are significantly ($p<0.05$) greater or less than the national average, significantly different indicator values are identified by the boundary of the geographical unit being coloured red or blue.

Where no data is available, or data has been suppressed due to small numbers, geographical units are coloured dark grey.

Unit of measurement

In conjunction with the title this will give a general definition of the indicator and its unit of measurement.

Quintile Range

Geographical units are ordered according to their indicator value and split into 5 groups of approximately equal numbers. The quintile range indicates the top and bottom value of each group. Where a quintile range is particularly small it is not always possible for the range end values to be placed next to each cutpoint, however the range end values given and the order in which they appear is correct.

Population Quintile

This is the key to the map. It identifies which quintile a geographical unit is part of and illustrates the range of each quintile.

Distribution Histogram

This is a smoothed histogram displaying the distribution of the underlying indicator values for the different geographical units.

Individual data points

This is a plot of the indicator value for each of the geographical units. Where analysis has been undertaken to determine which geographical units are significantly ($p>0.05$) greater or less than the national average, significantly different indicator values are identified by being coloured red or blue.

1. North East
2. North West
3. Yorkshire and The Humber
4. East Midlands
5. West Midlands
6. East of England
7. London
8. South East
9. South West

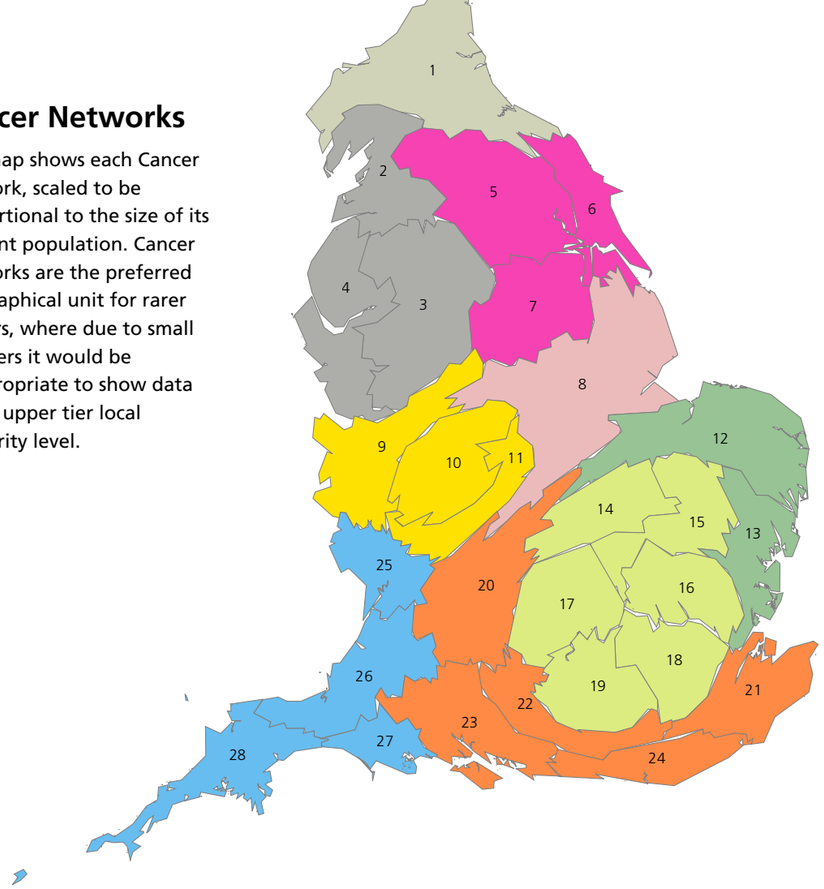
Regions

This map shows each Region, scaled to be proportional to the size of its resident population. 'Regions' are the highest tier of sub-national division in England.

1. North of England
2. Lancashire and South Cumb
3. Greater Manchester & Ches
4. Merseyside & Cheshire
5. Yorkshire
6. Humber & Yorkshire Coast
7. North Trent
8. East Midlands
9. Greater Midlands
10. Pan Birmingham
11. Arden
12. Anglia
13. Essex
14. Mount Vernon
15. North London
16. North East London
17. West London
18. South East London
19. South West London
20. Thames Valley
21. Kent & Medway
22. Surrey, West Sussex & Ham
23. Central South Coast
24. Sussex
25. 3 Counties
26. Avon, Somerset & Wiltshir
27. Dorset
28. Peninsula

Cancer Networks

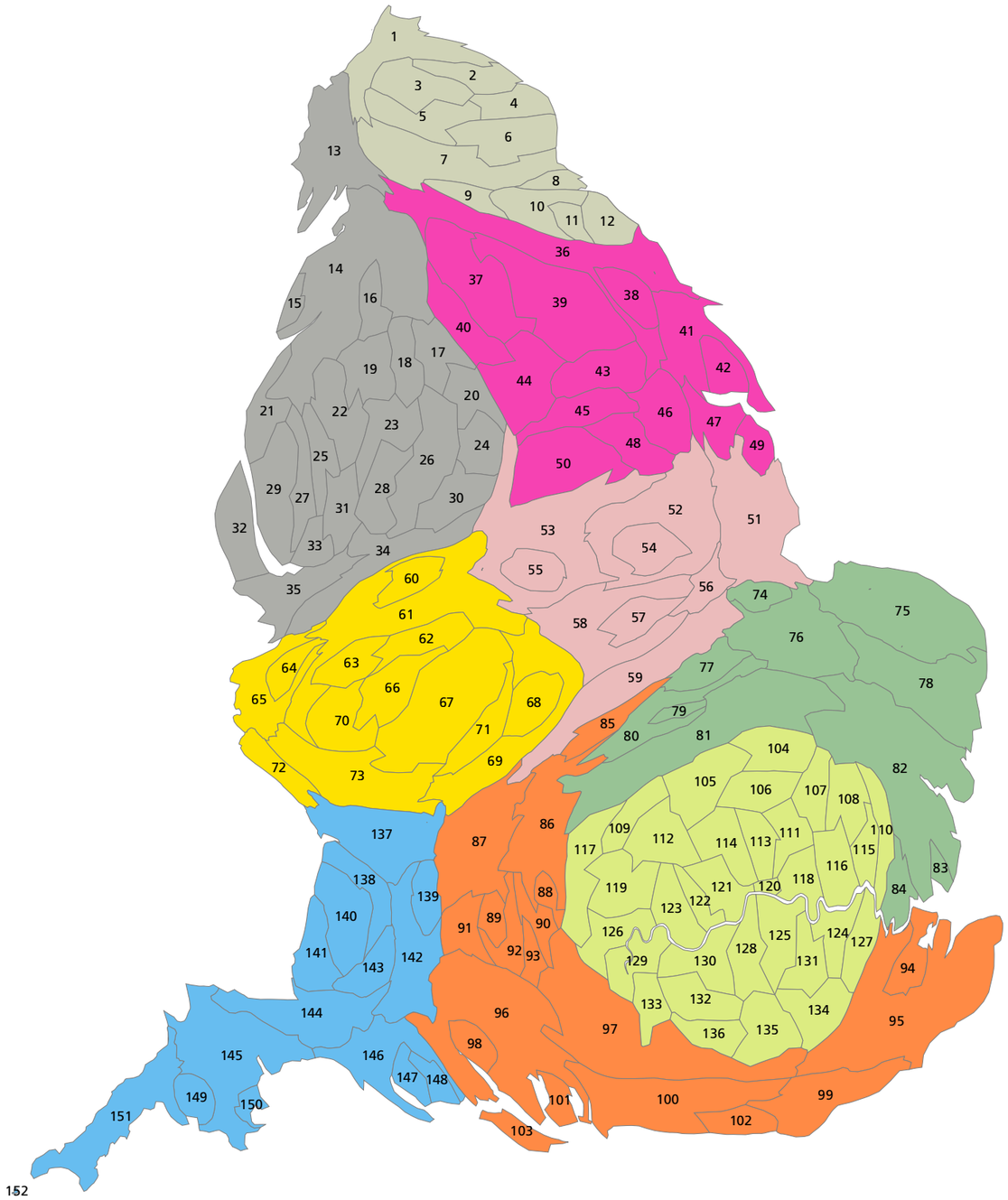
This map shows each Cancer Network, scaled to be proportional to the size of its resident population. Cancer Networks are the preferred geographical unit for rarer cancers, where due to small numbers it would be inappropriate to show data at the upper tier local authority level.



Upper Tier Local Authorities

UA = Unitary Authority
MD = Metropolitan District
CC = County Council
LB = London Borough

This map shows each Upper Tier Local Authority, scaled to be proportional to the size of its resident population. This is the default geographical unit used in the report.



1. Northumberland UA
2. North Tyneside MD
3. Newcastle upon Tyne MD
4. South Tyneside MD
5. Gateshead MD
6. Sunderland MD
7. County Durham UA
8. Hartlepool UA
9. Darlington UA
10. Stockton-on-Tees UA
11. Middlesbrough UA
12. Redcar and Cleveland UA

13. Cumbria CC
14. Lancashire CC
15. Blackpool UA
16. Blackburn with Darwen UA
17. Rochdale MD
18. Bury MD
19. Bolton MD
20. Oldham MD
21. Sefton MD
22. Wigan MD
23. Salford MD
24. Tameside MD
25. St Helens MD
26. Manchester MD
27. Knowsley MD
28. Trafford MD
29. Liverpool MD
30. Stockport MD
31. Warrington UA
32. Wirral MD
33. Halton UA
34. Cheshire East UA
35. Cheshire West and Chester UA

36. North Yorkshire CC
37. Bradford MD
38. York UA
39. Leeds MD
40. Calderdale MD
41. East Riding of Yorkshire UA
42. Kingston upon Hull UA
43. Wakefield MD
44. Kirklees MD
45. Barnsley MD
46. Doncaster MD
47. North Lincolnshire UA
48. Rotherham MD
49. North East Lincolnshire UA
50. Sheffield MD

51. Lincolnshire CC
52. Nottinghamshire CC
53. Derbyshire CC
54. Nottingham UA
55. Derby UA
56. Rutland UA
57. Leicester UA
58. Leicestershire CC
59. Northamptonshire CC

60. Stoke-on-Trent UA
61. Staffordshire CC
62. Walsall MD
63. Wolverhampton MD
64. Telford and Wrekin UA
65. Shropshire UA
66. Sandwell MD
67. Birmingham MD
68. Coventry MD
69. Warwickshire CC
70. Dudley MD
71. Solihull MD
72. Herefordshire County UA
73. Worcestershire CC

74. Peterborough UA
75. Norfolk CC
76. Cambridgeshire CC
77. Bedford UA
78. Suffolk CC
79. Luton UA
80. Central Bedfordshire UA
81. Hertfordshire CC
82. Essex CC
83. Southend-on-Sea UA
84. Thurrock UA

85. Milton Keynes UA
86. Buckinghamshire CC
87. Oxfordshire CC
88. Slough UA
89. Reading UA
90. Windsor and Maidenhead UA
91. West Berkshire UA
92. Wokingham UA
93. Bracknell Forest UA
94. Medway UA
95. Kent CC
96. Hampshire CC
97. Surrey CC
98. Southampton UA
99. East Sussex CC
100. West Sussex CC

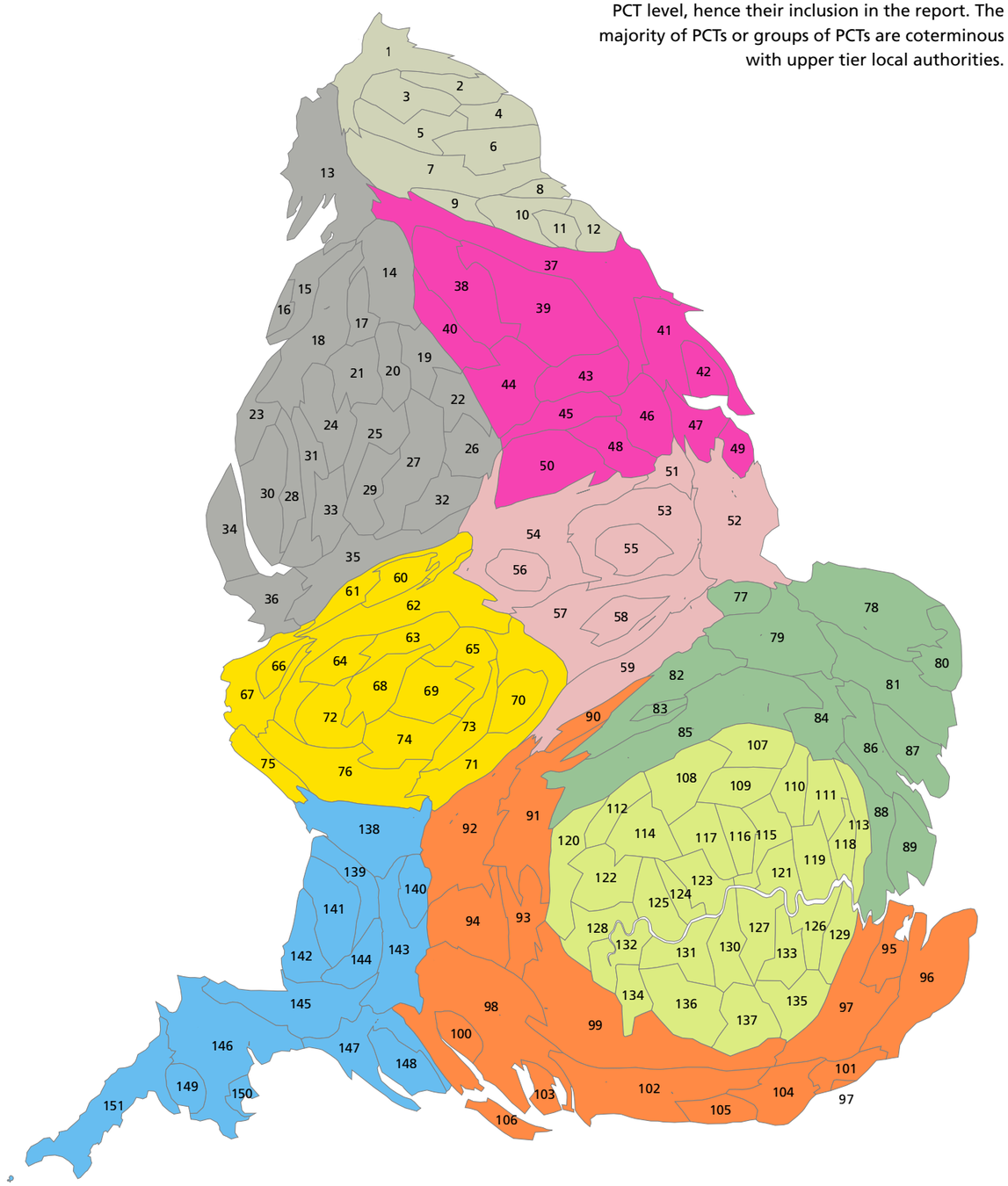
101. Portsmouth UA
102. Brighton and Hove UA
103. Isle of Wight UA

104. Enfield LB
105. Barnet LB
106. Haringey LB
107. Waltham Forest LB
108. Redbridge LB
109. Harrow LB
110. Havering LB
111. Hackney LB
112. Brent LB
113. Islington LB
114. Camden LB
115. Barking and Dagenham LB
116. Newham LB
117. Hillingdon LB
118. Tower Hamlets LB
119. Ealing LB
120. City of London LB
121. Westminster LB
122. Kensington and Chelsea LB
123. Hammersmith and Fulham LB
124. Greenwich LB
125. Southwark LB
126. Hounslow LB
127. Bexley LB
128. Lambeth LB
129. Richmond upon Thames LB
130. Wandsworth LB
131. Lewisham LB
132. Merton LB
133. Kingston upon Thames LB
134. Bromley LB
135. Croydon LB
136. Sutton LB

137. Gloucestershire CC
138. South Gloucestershire UA
139. Swindon UA
140. Bristol UA
141. North Somerset UA
142. Wiltshire UA
143. Bath and North East Somerset UA
144. Somerset CC
145. Devon CC
146. Dorset CC
147. Poole UA
148. Bournemouth UA
149. Plymouth UA
150. Torbay UA
151. Cornwall UA
152. Isles of Scilly UA

Primary Care Trusts

This map shows each Primary Care Trust (PCT), scaled to be proportional to the size of its resident population. PCTs are the unit of organisation of provision of primary care (GPs, Dentists, pharmacy services etc). These will be superseded by Clinical Commissioning Groups (CCGs). Currently a large proportion of health service data is collected at the PCT level, hence their inclusion in the report. The majority of PCTs or groups of PCTs are coterminous with upper tier local authorities.



1. Northumberland Care Trust
2. North Tyneside PCT
3. Newcastle PCT
4. South Tyneside PCT
5. Gateshead PCT
6. Sunderland Teaching PCT
7. County Durham PCT
8. Hartlepool PCT
9. Darlington PCT
10. Stockton-on-Tees Teaching PCT
11. Middlesbrough PCT
12. Redcar and Cleveland PCT

13. Cumbria Teaching PCT
14. East Lancashire Teaching PCT
15. North Lancashire Teaching PCT
16. Blackpool PCT
17. Blackburn with Darwen
18. Central Lancashire PCT
19. Heywood, Middleton and Rochdale PCT
20. Bury PCT
21. Bolton Teaching PCT
22. Oldham PCT
23. Sefton PCT
24. Ashton, Leigh and Wigan PCT
25. Salford PCT
26. Tameside and Glossop PCT
27. Manchester Teaching PCT
28. Knowsley PCT
29. Trafford PCT
30. Liverpool PCT
31. Halton and St Helens PCT
32. Stockport PCT
33. Warrington PCT
34. Wirral PCT
35. Central and Eastern Cheshire PCT
36. Western Cheshire PCT

37. North Yorkshire and York PCT
38. Bradford and Airedale Teaching PCT
39. Leeds PCT
40. Calderdale PCT
41. East Riding Of Yorkshire PCT
42. Hull Teaching PCT
43. Wakefield District PCT
44. Kirklees PCT
45. Barnsley PCT
46. Doncaster PCT
47. North Lincolnshire PCT
48. Rotherham PCT
49. North East Lincolnshire Care Trust Plus
50. Sheffield PCT

51. Bassetlaw PCT
52. Lincolnshire Teaching PCT
53. Nottinghamshire County Teaching PCT
54. Derbyshire County PCT
55. Nottingham City PCT
56. Derby City PCT
57. Leicestershire County and Rutland PCT
58. Leicester City PCT
59. Northamptonshire Teaching PCT

60. Stoke On Trent PCT
61. North Staffordshire PCT
62. South Staffordshire PCT
63. Walsall Teaching PCT
64. Wolverhampton City PCT
65. Birmingham East and North PCT
66. Telford and Wrekin PCT
67. Shropshire County PCT
68. Sandwell PCT
69. Heart Of Birmingham Teaching PCT
70. Coventry Teaching PCT
71. Warwickshire PCT
72. Dudley PCT
73. Solihull
74. South Birmingham PCT
75. Herefordshire PCT
76. Worcestershire PCT

77. Peterborough PCT
78. Norfolk PCT
79. Cambridgeshire PCT
80. Great Yarmouth and Waveney PCT
81. Suffolk PCT
82. Bedfordshire PCT
83. Luton PCT
84. West Essex PCT
85. Hertfordshire PCT
86. Mid Essex PCT
87. North East Essex PCT
88. South West Essex PCT
89. South East Essex PCT

90. Milton Keynes PCT
91. Buckinghamshire PCT
92. Oxfordshire PCT
93. Berkshire East PCT
94. Berkshire West PCT
95. Medway PCT
96. Eastern and Coastal Kent PCT
97. West Kent PCT
98. Hampshire PCT
99. Surrey PCT
100. Southampton City PCT

101. Hastings and Rother PCT
102. West Sussex PCT
103. Portsmouth City Teaching PCT
104. East Sussex Downs and Weald PCT
105. Brighton and Hove City PCT
106. Isle Of Wight NHS PCT

107. Enfield PCT
108. Barnet PCT
109. Haringey Teaching PCT
110. Waltham Forest PCT
111. Redbridge PCT
112. Harrow PCT
113. Havering PCT
114. Brent Teaching PCT
115. City and Hackney Teaching PCT
116. Islington PCT
117. Camden PCT
118. Barking and Dagenham PCT
119. Newham PCT
120. Hillingdon PCT
121. Tower Hamlets PCT
122. Ealing PCT
123. Westminster PCT
124. Kensington and Chelsea PCT
125. Hammersmith and Fulham PCT
126. Greenwich Teaching PCT
127. Southwark PCT
128. Hounslow PCT
129. Bexley Care Trust
130. Lambeth PCT
131. Wandsworth PCT
132. Richmond and Twickenham PCT
133. Lewisham PCT
134. Kingston PCT
135. Bromley PCT
136. Sutton and Merton PCT
137. Croydon PCT

138. Gloucestershire PCT
139. South Gloucestershire PCT
140. Swindon PCT
141. Bristol PCT
142. North Somerset PCT
143. Wiltshire PCT
144. Bath and North East Somerset PCT
145. Somerset PCT
146. Devon PCT
147. Dorset PCT
148. Bournemouth and Poole Teaching PCT
149. Plymouth Teaching PCT
150. Torbay Care Trust
151. Cornwall and Isles Of Scilly PCT

How to use this report continued

Chapter 1

Demography

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Populations are the product of births, deaths and migration patterns. They are constantly changing in size and composition. This is a result of many factors impacting on the number of children we have, how long we live for and where we reside. Health, culture and national policies are but a few of these factors. The health of individuals is also influenced by their genetics and their past and present experiences and environments, including those in early life.

This demography chapter focuses on what we can currently say about how the population is changing. It considers birth rates, fertility, ethnic distribution and migration patterns. We know that different populations have different health needs. Some groups have greater behavioural risks or are exposed to different social determinants. Others are at greater biological risk or may simply require specific services (such as pregnant women). By analysing population data from the past, we can begin to anticipate future needs. We can forecast the composition of our population to plan for the population's future health and healthcare needs.

This chapter includes population statistics from the Office for National Statistics and the University of Leeds (ethnicity projections). These are the most complete and accurate data we have on the demographic composition of England in May 2012. By understanding the current population make-up we can help to ensure that current health, public health and social services are meeting the needs of the population. By understanding how our population is likely to change, we can plan future service development. Whilst the results of the 2011 census will lead to changes to some of our population estimates, the broad messages on which future planning should be based are likely to remain the same.

Forecasting future health is challenging. Our rates of birth and death and migration patterns are all determinants of our current population. It is therefore important to take account of the delicate balance of all factors to anticipate need. What we do know is that with positive net migration, increased fertility rates and declining mortality rates our population is increasing in size and ageing. When a population is already ageing but has a low fertility and mortality rate, changes in death rate in the older age groups are the major determinant of further population ageing.

- With an ageing population, health and healthcare needs will also increase, both for the elderly and for those reaching retirement age. It is well known that older people make much heavier demands on health and social services than young adults. The most elderly make the heaviest demands of all. As the elderly population increases their healthcare needs will outstrip the current provision of care. To address this the focus must be on public health, in conjunction with social care, to increase disability free years through preventative efforts. Stronger mental health support, fracture prevention and 'warm front' initiatives are just a few of the approaches that can make a big difference to quality of life.
- The sex composition in the oldest age groups is changing, with males living for longer than previously. The medical and social implications of a more elderly male population are yet to be realised. However, their needs are likely to be different to those of elderly females. Geographical movement within our population is also sizeable, with large numbers of people moving around local areas. Much of the care and support given to elderly people is provided informally by their children or other relatives. With an increase in the ratio of dependent to working age people in the population, and potentially fewer people living near their relatives, family support networks will be tested in their provision of care to the elderly.
- Fertility rates are a critical component in forecasting future needs. There are a huge range of social, economic, cultural and psychological factors that affect the decision to have children. Data show an increase in birth rates at older ages, accompanied by higher risk for both mother and baby. Maternity services will need to adapt to provide for the changing demographic and the risks associated with pregnancy and birth at an older age. Higher risk is also associated with giving birth under 18 years. Encouragingly, we see a reduction in conception and birth rates for this age group.
- Lastly, the demographic data show that our population is becoming more ethnically diverse. We have seen an increase in the contribution of black and minority ethnic groups to our population, particularly Asian people. We have also seen an increase in the number of people from Eastern European countries. This has further implications on health needs and the way we provide healthcare.

This chapter provides a basis on which to build a picture of the health of our nation. Information on mortality and morbidity, risk factors, social determinants of health and healthcare provision should be considered in light of our demographic change.

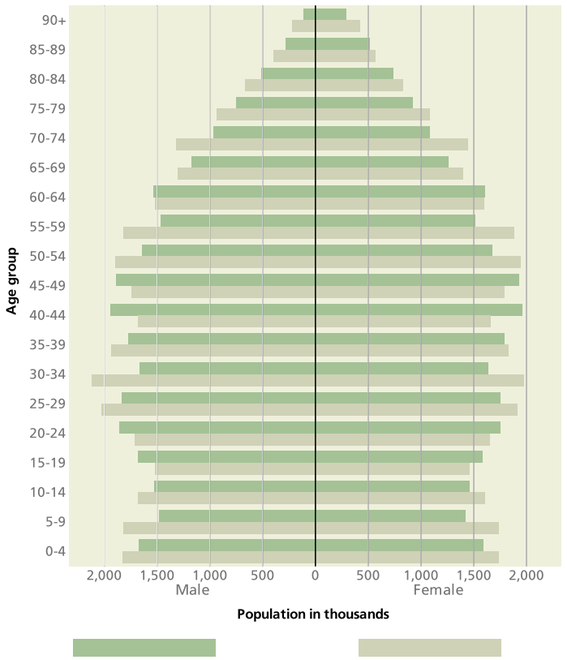
Projected population growth – population size, structure and fertility

Our population is growing and ageing. There will be an increase in the number of males and females in most age groups by 2020. This rise will be most apparent in the older age groups (70 years and over).

Since 2001, the number of babies born has gradually risen. Current figures suggest that women have, on average, two babies in their lifetime. Complication rates, and lifelong health impact, for both mother and child are highest when women fall pregnant under 18 years and over 35 years. Women are more likely to give birth at older ages than a decade ago. In 2000, fertility rates were highest in the 25-29 year age group, whereas in 2010 they are highest between 30-34 years. The number of pregnancies in under 18 year olds has fallen during this time period, with 50% of conceptions leading to abortion (rate 16.6 per 1000 women aged under 18 years in 2010).

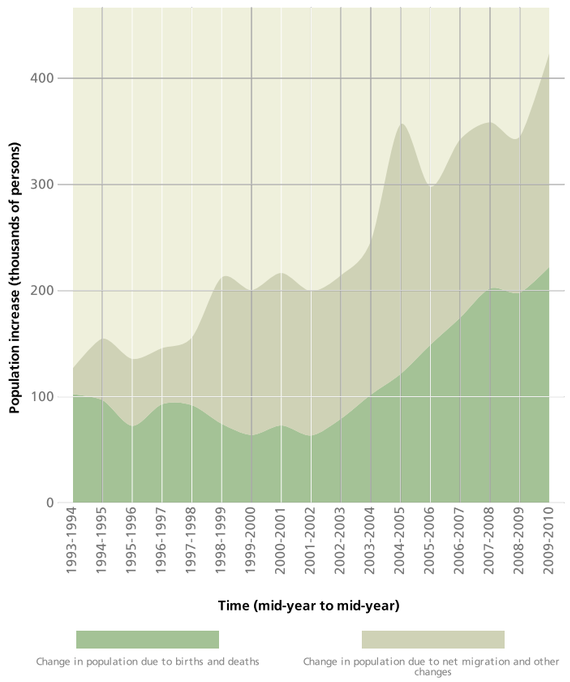
There are wide variations in projected population growth across local authorities, ranging from over 20% to under 5% rises over the next 10 years. There is also wide variation in estimated change by age group. Local healthcare planning of provision should hence be tailored to the future composition of its population.

Population England, 2010, 2020



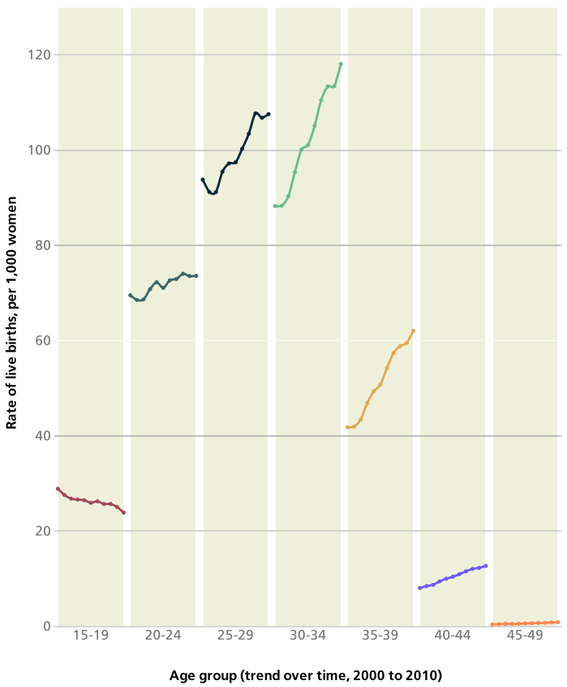
Source: Population estimates and 2010-based population projections, ONS.

Trend in population change by cause, England, 1991 to 2010



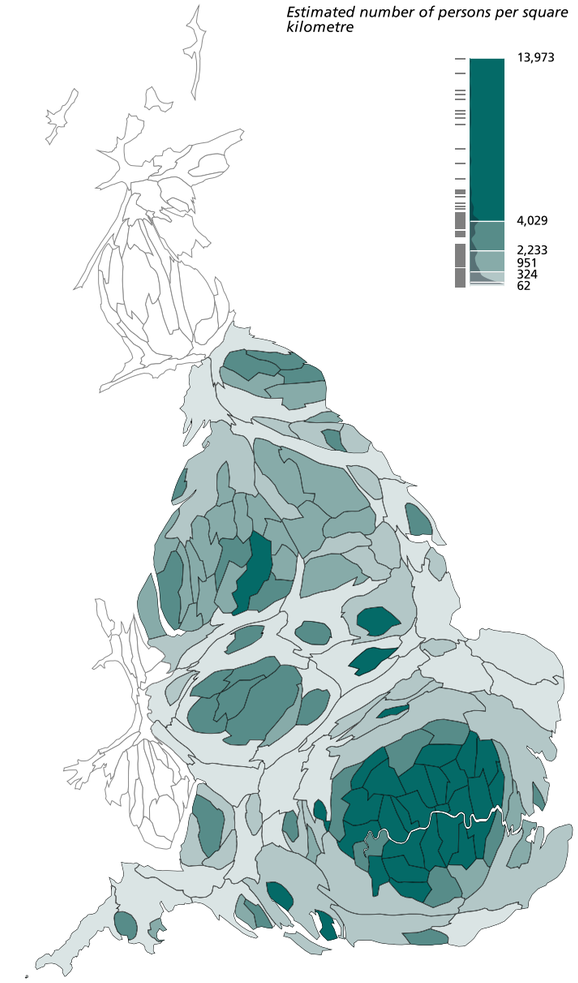
Source: Population estimates, ONS.

Trend in fertility rates by age, England, 2000 to 2010



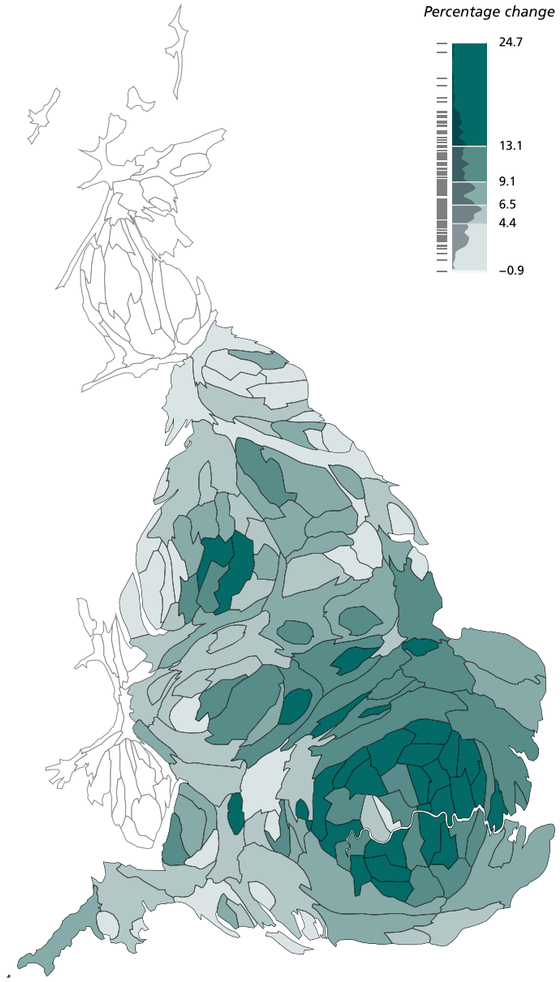
Source: Fertility statistics, ONS.

Population density by upper tier local authority, England, 2010



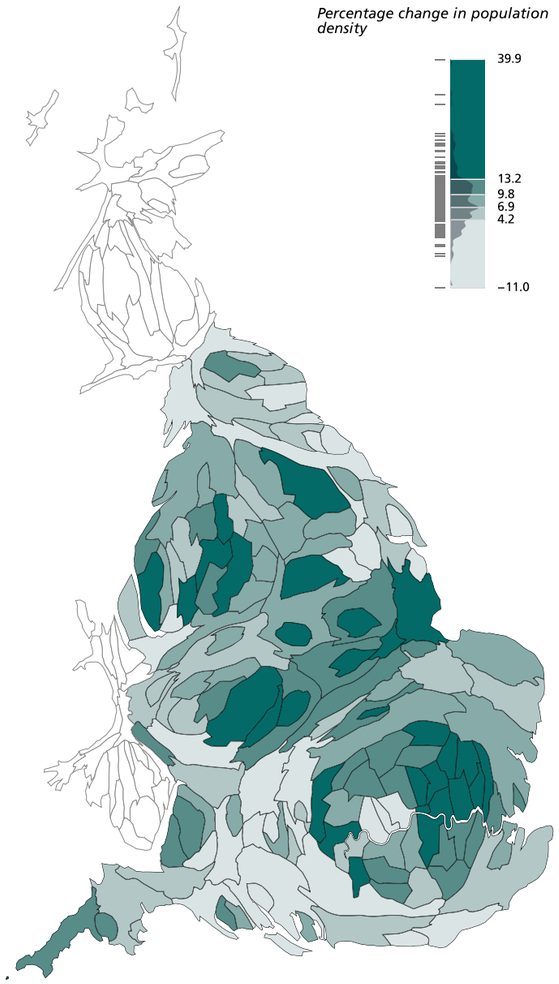
Source: Population estimates, ONS.

Projected change in population by upper tier local authority, England, 2010 to 2020



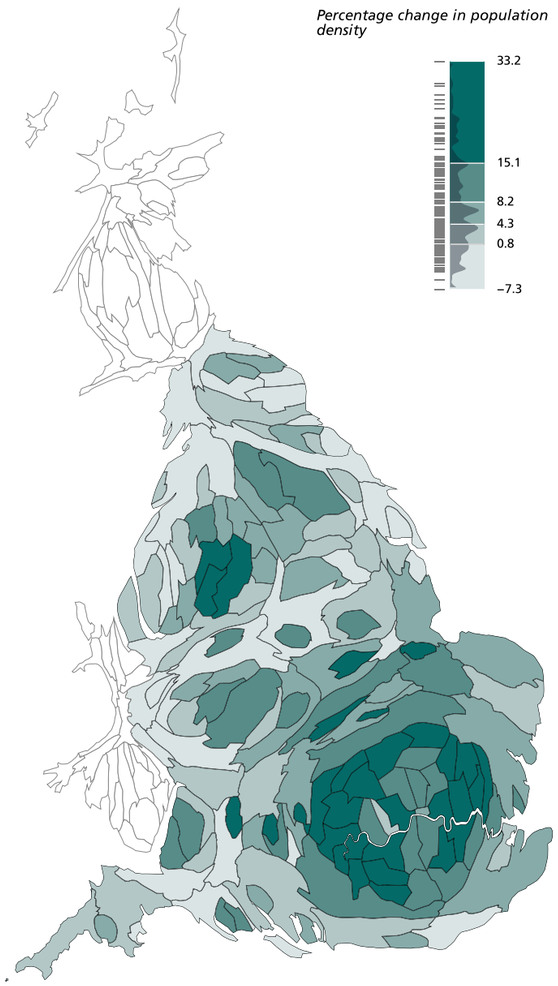
Source: Population estimates and 2010-based population projections, ONS.

Age specific (0-4 years) projected change in population by upper tier local authority, England, 2010 to 2020



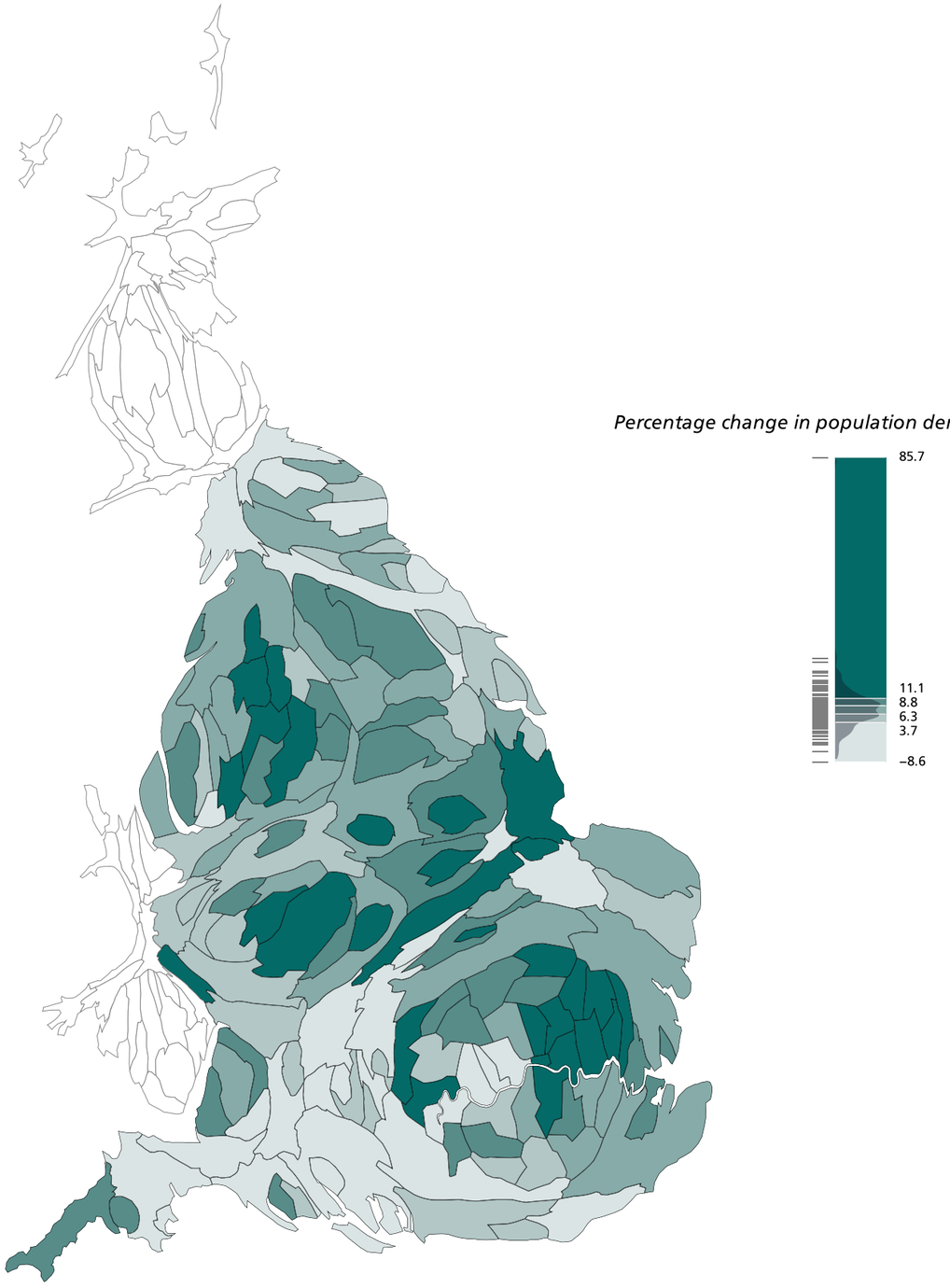
Source: Population estimates and 2010-based population projections, ONS.

Age specific (5-19 years) projected change in population by upper tier local authority, England, 2010 to 2020



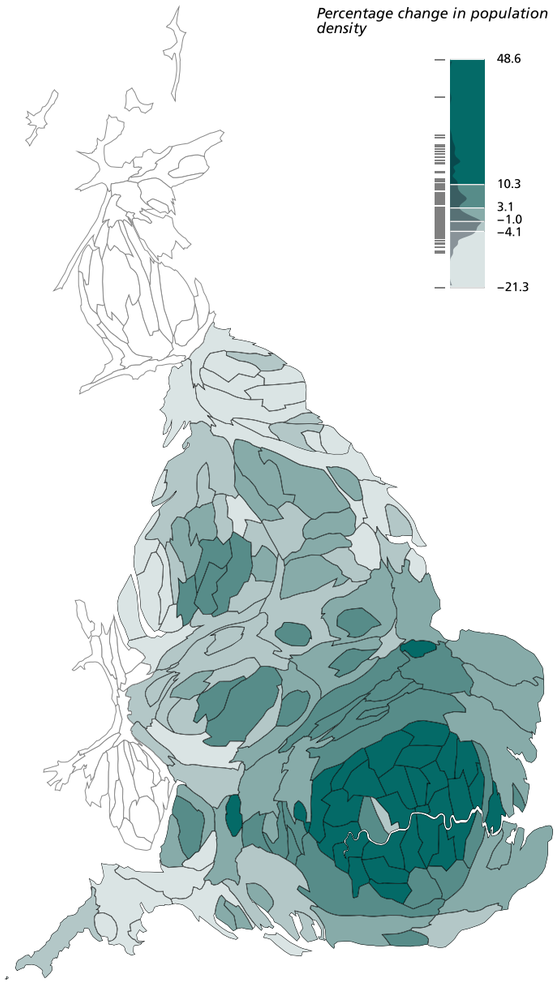
Source: Population estimates and 2010-based population projections, ONS.

Age specific (20-39 years) projected change in population by upper tier local authority, England, 2010 to 2020



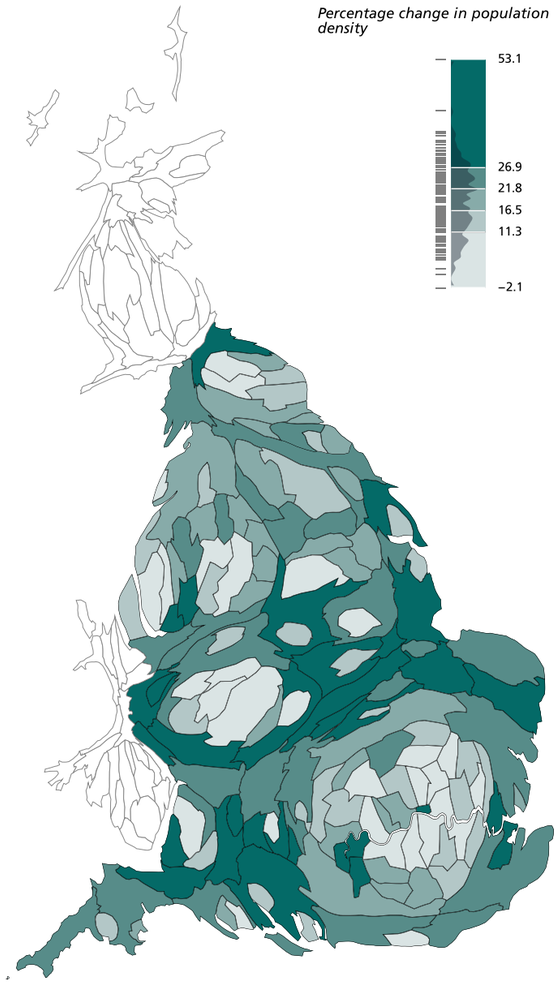
Source: Population estimates and 2010-based population projections, ONS.

Age specific (40-64 years) projected change in population by upper tier local authority, England, 2010 to 2020



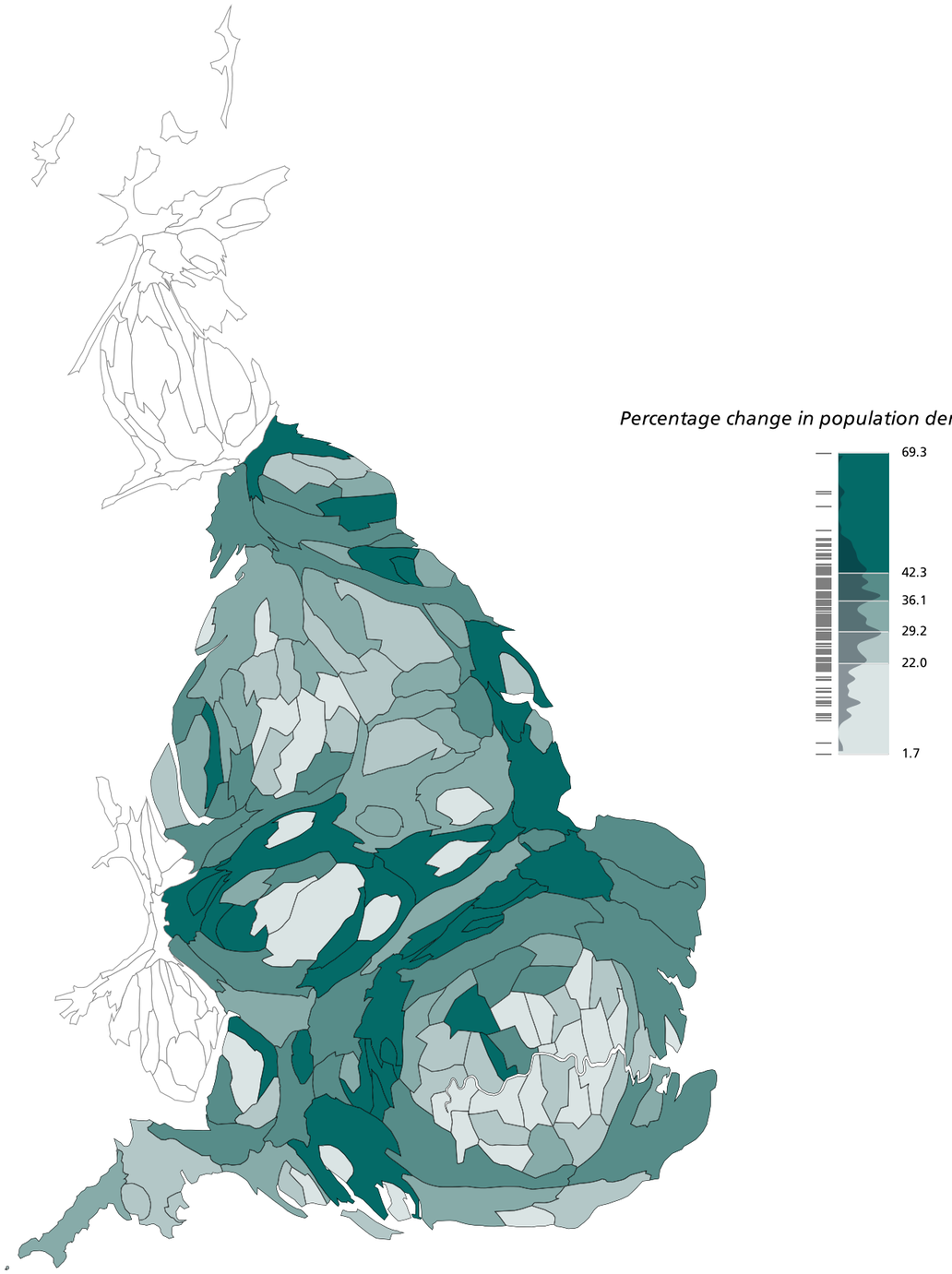
Source: Population estimates and 2010-based population projections, ONS.

Age specific (65-84 years) projected change in population by upper tier local authority, England, 2010 to 2020



Source: Population estimates and 2010-based population projections, ONS.

Age specific (85+ years) projected change in population by upper tier local authority, England, 2010 to 2020

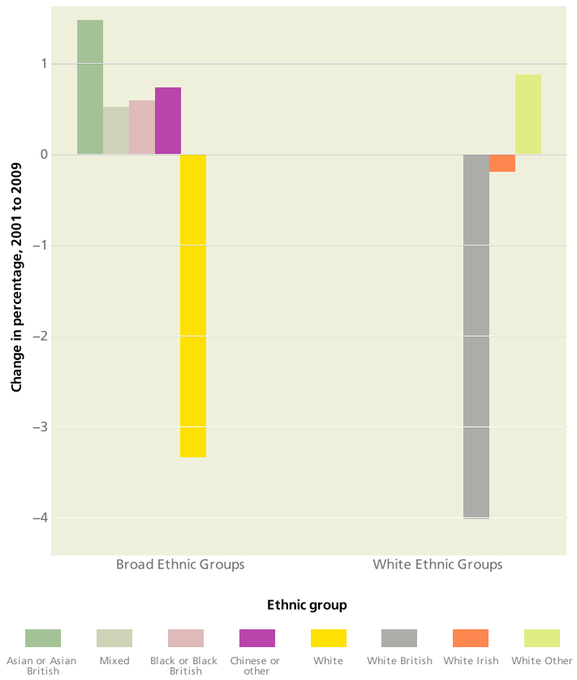


Source: Population estimates and 2010-based population projections, ONS.

Health and healthcare needs can vary by ethnicity. Healthcare delivery must be tailored to the ethnic composition of the local population. The majority of people in England are white (about 88%). However, our population is becoming more ethnically diverse. Here we refer to BME (black and minority ethnic groups) as all non-white residents. Asian or Asian British people represent the largest BME grouping, increasing from 4.6% in 2001 to 6.1% in 2009, they have also seen the largest increase in their share of the population. Other BME groups have also increased in their share of the population, albeit to a lesser extent.

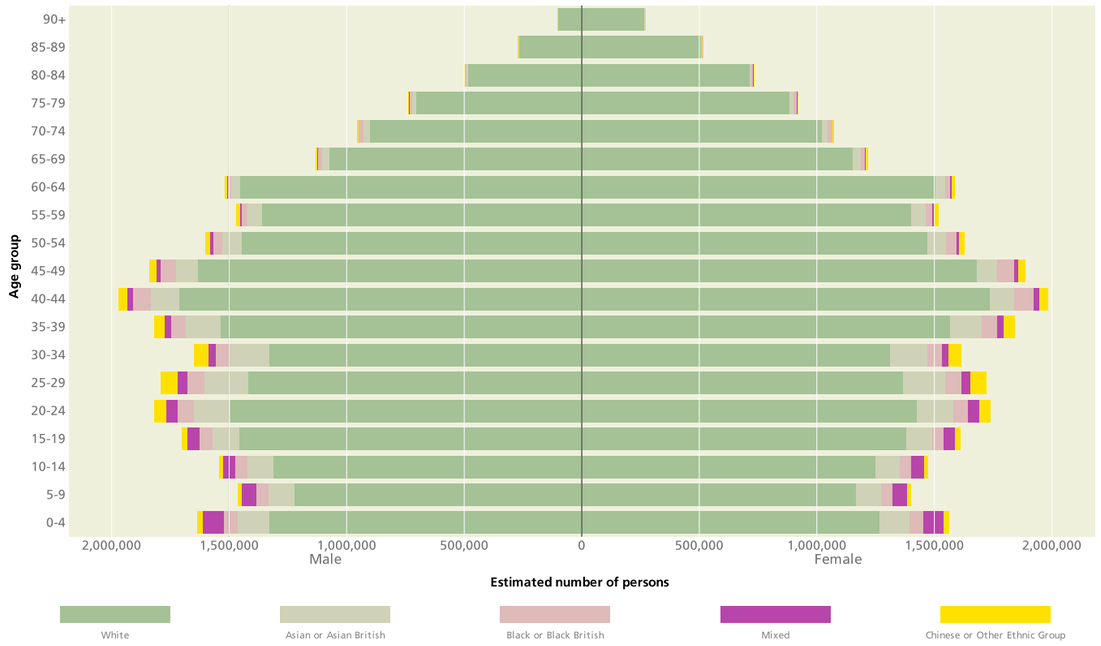
There is wide variation in the ethnic diversity of local populations, from under 10% to over 50% of local authority or unitary areas represented by BME groups. It is projected that over the next decade, there will be an increase in the proportion of BME groups in most local populations. Most people in BME groups are younger and of working age. Future planning for health services will need to take account of this expansion and change.

Change in the population ethnic make-up, England, 2001 to 2009



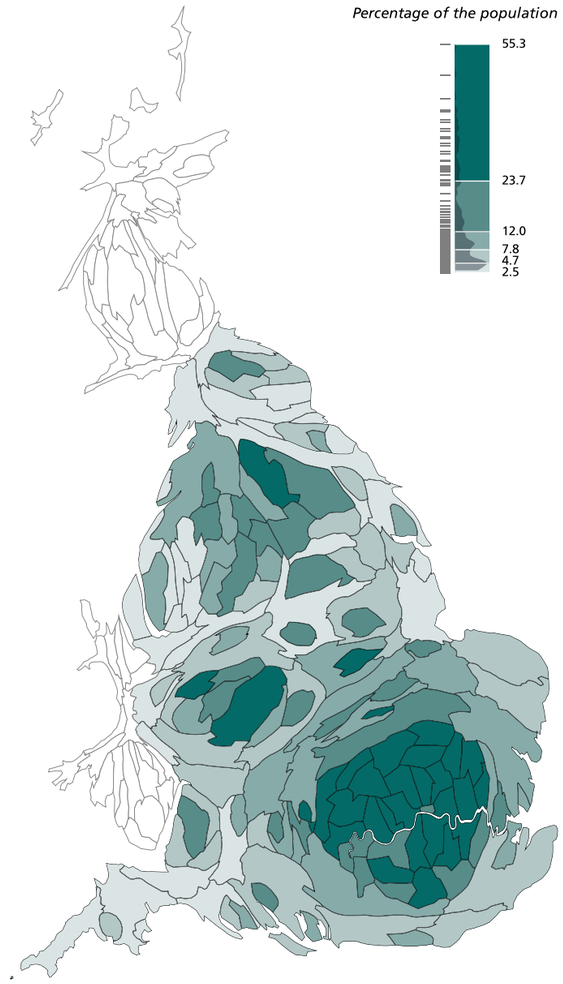
Source: Population estimates, ONS.

Ethnicity by age and sex, England, 2009



Source: Population estimates, ONS.

Black and Minority Ethnic persons by upper tier local authority, England, 2009



Source: Population estimates, ONS.

Projected change in the Black and Minority Ethnic population by upper tier local authority, England, 2010 to 2020

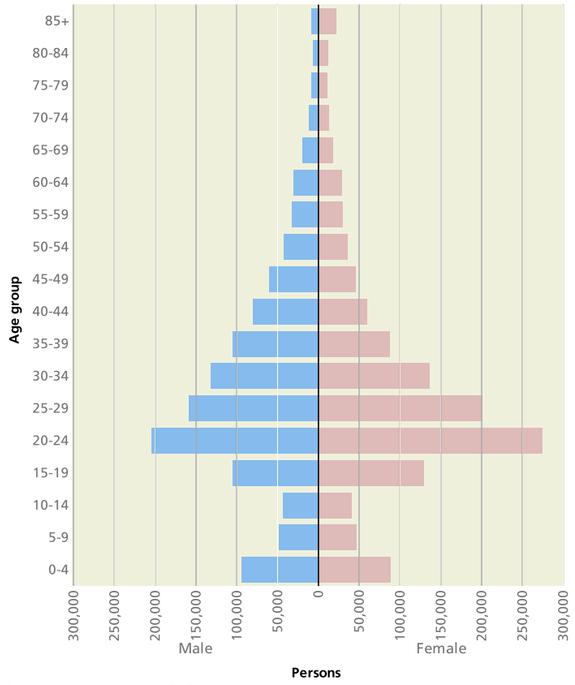
Source: Wohland P, et al. ETHPOP Database, ESRC Follow on Fund "Ethnic group population trends". www.ethpop.org. Date of extraction 23.04.2012. Note: Data for City of London and Westminster London Borough and for Isles of Scilly and Cornwall unitary authorities have been combined

Understanding population movement is essential to service planning. Migration can be both international and internal (moves around the UK).

New international immigrants may have specific health needs, dependent on their age and origin. The number of people immigrating to England has increased over the last 20 years, although in recent years this number has plateaued. Emigration is also higher than it was 20 years ago. There were fairly equal contributions of people immigrating from the EU, New Commonwealth and other foreign countries in 2010. Most immigrants are between 15 and 45 years. Future international immigration rates are difficult to predict, being influenced by factors both at home and abroad.

Internal migration is also important, potentially affecting continuity of care. Internal migration estimates are based on GP registrations. While young people move more than older people, the sex differences shown should be treated with caution as they will be influenced by the fact that young men are both less likely and slower to register with GPs. Projected migration between local areas varies, from estimated reductions to increases. However, given the extent of turnover (over 10% for some local authorities), it is crucial that local service planners take account of this in preparing for future need.

Internal migration flows across local authority boundaries by age and sex, England, 2010



Source: Migration statistics, ONS.

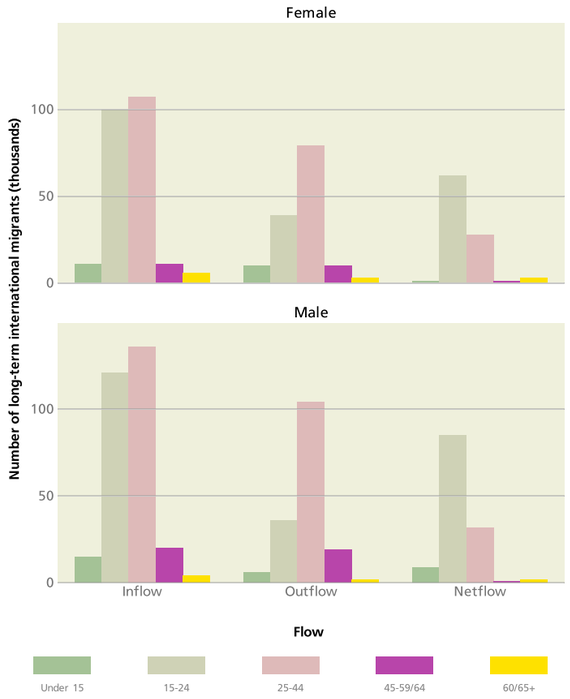
Net internal migration to/from other local authorities in the UK by upper tier local authority, England, 2009-10

Source: Migration statistics, ONS.

Net long-term international migration by upper tier local authority, England, 2009-10

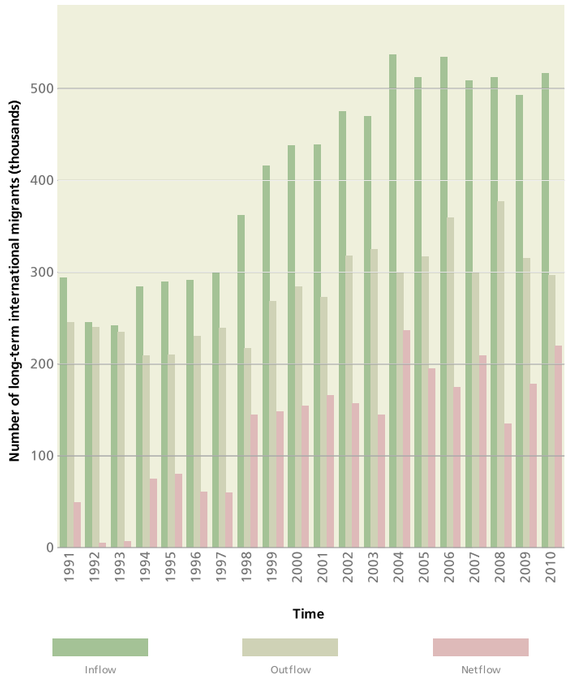
Source: Migration statistics, ONS.

Long term international migration by age and sex, England and Wales, 2010



Source: Migration statistics, ONS.

Trend in long term international migration, England and Wales, 1991 to 2010



Source: Migration statistics, ONS.

Chapter 2

Mortality, morbidity and wellbeing

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Surveillance and studying the epidemiology of diseases have been a driving force behind improvements to public health. They help to identify and prioritise where action is needed, characterise and inform our understanding of the drivers affecting public health and monitor the effectiveness of our interventions.

In this chapter the distribution of disease is considered, with a specific focus on change over time, the relationship with age and, where space allows and information is available, the relationship with deprivation and ethnicity. Mental wellbeing is also described, but due to the current paucity of data, information on this only comprises two pages.

As a general rule, routinely available information has been used, such as data from death certificates, GP registers and hospital episode data. Routine data commonly have limitations. For example, the QoF (Quality and Outcomes Framework) prevalence data of serious mental health problems will be affected by the completeness and accuracy of GP recording and the accuracy of the total practice list size. These limitations are addressed in more detail in the 'How to use this report' section of this report.

For the majority of diseases in this chapter there is a strong relationship with deprivation. People in the most deprived areas (the most deprived quintile) almost invariably have higher rates of disease and mortality due to disease than those living in the least deprived areas (the least deprived quintile).

There is evidence to support the fact that the health inequalities described are often also affected by the geographical areas considered. For example, the least deprived differ little geographically in life expectancy at birth, whereas the most deprived in the north and midlands have lower life expectancies than their counterparts in the south.

The negative correlation between life expectancy and years spent with a limiting long-term illness or disability shows that those living the longest are generally living the least amount of time with a limiting long-term illness or disability.

The international comparisons in this chapter, examining the trends over time for life expectancy at birth and 65, infant mortality, and mortality due to cardiovascular disease (CVD), cancer and liver disease, suggest we can do better in several areas. A real success in England is the improvement in male life expectancy at 65. However, liver disease mortality is increasing in England at a time when the average of our closest counterparts (EU members that joined pre 2004) is decreasing. Liver disease is considered in more depth later in this chapter. The rise in mortality due to different types of liver disease (cirrhosis of the liver, liver cancer, infectious hepatitis) suggests both a preventative approach, addressing the main underlying risk factors of obesity, alcohol use and hepatitis infection, and better early identification and treatment will be needed.

When considering England alone, the major driver of the reduction seen in 'all cause' mortality is the reduction in deaths from CVD. However, CVD remains the single most prevalent cause of death, accounting for almost a third of deaths.

Cancer accounts for around a quarter of deaths. More than 1 in 3 people will develop cancer at some point in their life. In 2009, around 265,000 cancers were diagnosed in England and cancers of the lung, bowel, breast and prostate accounted for over half the total number of cases. It has been estimated that in 2011 around 1.8 million people in England were living with cancer or were cancer survivors.

More than three in five cancers occur in people aged 65 and over; cancer incidence rates are, however, rising at a rate over and above that caused by the ageing population alone. There have been significant rises in lung cancer and uterine cancer in women, prostate cancer in men, and in melanoma skin cancer, liver cancer, kidney cancer and cancers of the mouth and salivary glands in both sexes.

Both CVD and cancer are linked to numerous risk factors. It has been estimated that 43% of new cases of cancer are linked to lifestyle and environmental factors, with smoking alone accounting for almost 20% of new cases (23% in men and 16% in women). After smoking, dietary factors, being overweight or obese and harmful alcohol use are the biggest risk factors.[1]

For CVD, 16.2% of deaths have been attributed to high blood pressure, with smoking, high cholesterol, and being overweight or obese as the next biggest risk factors.[2] Physical inactivity has recently been estimated to account for 10.5% of coronary heart disease, and 16.9% of all cause mortality in the UK[3]. It is also a major risk to overall physical and mental wellbeing. Key risk factors for mortality and morbidity are examined in Chapter 3.

Mortality due to infectious diseases is declining thanks to the reduction in the number deaths due to respiratory infection, which still remain the largest cause of death due to infectious disease. Despite the success of infectious disease control measures efforts must continue as many deaths due to infections are preventable. Vaccination remains one of the most effective public health interventions, yet there is still slow uptake in certain groups (see Chapter 5).

There are some areas of excellence in data collection e.g. cancer; the National Cancer Intelligence Network (NCIN) and the United Kingdom Association of Cancer Registries (UKACR). There are other areas where there is a paucity of national, routinely collected information e.g. data on some musculoskeletal disorders, sensory disorders and skin diseases. Despite efforts by many people, the coverage of the congenital anomalies registers is not complete across the whole of England. Due to such data issues, this report includes data not routinely collected through formal mechanisms, such as that provided on certification of visual impairment by Moorfields Eye Hospital NIHR BRC, and on skin diseases from RCGP Research & Surveillance Centre (via Professor Williams, Dr Scourfield and Dr Fleming).

Clearly national systems of surveillance should be developed balancing the usefulness of data with the burden imposed on those collecting it. However, for historical reasons data have been more robust in those diseases which contribute significantly to mortality rates. Data are often lacking for those diseases which contribute significantly to disability. In future, this balance will need to be addressed.

A central issue when displaying the epidemiology of diseases is defining the diseases considered. Ideally, the categorisations used should allow for both mortality and morbidity data to be shown, where appropriate. The categorisations should also allow some comparability, both nationally and internationally, with other assessments of the population's health. Finally, they should reflect recent changes in understanding about how we define disease and be relevant to the local epidemiological picture.

It is not possible to address all diseases in this report. A number of summary indicators (e.g. 'all cause mortality', 'life expectancy at birth' and 'life expectancy at 65', etc) and international comparisons are considered. More detailed information on specific diseases and groups of diseases is also provided.

The general structure of this chapter is based on the broad disease groupings outlined in the WHO Global Burden of Disease (GBD) study[4]. To assist the interpretation of data, a table of ICD10 codes used to define different groupings is provided at the end of the chapter. Within this structure, for each disease grouping, one of the following has been chosen: a specific disease e.g. pancreatic cancer; a broad grouping of diseases e.g. cardiovascular diseases; or a key disease within the broad grouping that is most relevant to England e.g. chronic kidney disease within the genitourinary section.

Summary data for the broad disease groupings used are given in the key facts box. These summary data are the number of potential years of life lost due to death (calculated using 75 years as the cut off point) and the annual number of hospital bed days. Around 2,288,300 potential years of life were lost (to age 75) in 2010; 32% due to malignant neoplasms (cancer), 19% due to CVD, 13% due to injuries, 8% due to digestive diseases, 5% due to suicide and death of undetermined intent and 4% due to communicable diseases. Hospital bed days paint a slightly different picture with neuropsychiatric conditions accounting for the largest proportion (14%) of hospital bed days.

Unless otherwise stated, mortality and hospital admission data are analysed based on primary cause. While using the primary cause of death/hospital admission is useful in understanding the overall pattern of mortality and morbidity it does not address the issue, or the causal role that other diseases may have had. This should be borne in mind with any interpretation of the data.

The focus on single causes also belies a much more complex picture in real life. As we have an ageing population, we expect to see growing numbers of individuals with complex patterns of co-morbidity through chance alone.

Within this chapter there are instances where co-morbidity needs to be taken into account in the interpretation, e.g. in the figures given for common mental disorders, the total prevalence is less than the sum of the individual disorders, because of co-occurrence of the disorders.

In Chapter 3, we are able to move towards a more 'whole person' approach. We examine how the lifestyle and medical risk factors that account for most of the burden of disease co-occur with individual risk factors. In part, this is because such information is available.

Planning around surveillance needs will require careful consideration of current gaps in data, the reasons for these gaps and the best approaches to address them.

1 Parkin DM, Boyd L and Walker LC. The fraction of cancer attributable to lifestyle and environmental factors in the UK in 2010. Summary and conclusions. *British Journal of Cancer* (2011) 105, S77–S81.

2 NHS Choices Atlas of Risk, (http://www.nhs.uk/Tools/Pages/NHSAtlasofrisk.aspx)

3 Lee IM, Shiroma EJ, Lobelo F, Puska P, Blair SN, Katzmarzyk PT; Lancet Physical Activity Series Working Group. Effect of physical inactivity on major non-communicable diseases worldwide: an analysis of burden of disease and life expectancy. Lancet. 2012 Jul 21;380(9838):219-29

4 WHO. Global health risks: mortality and burden of disease attributable to selected major risks. 2009.

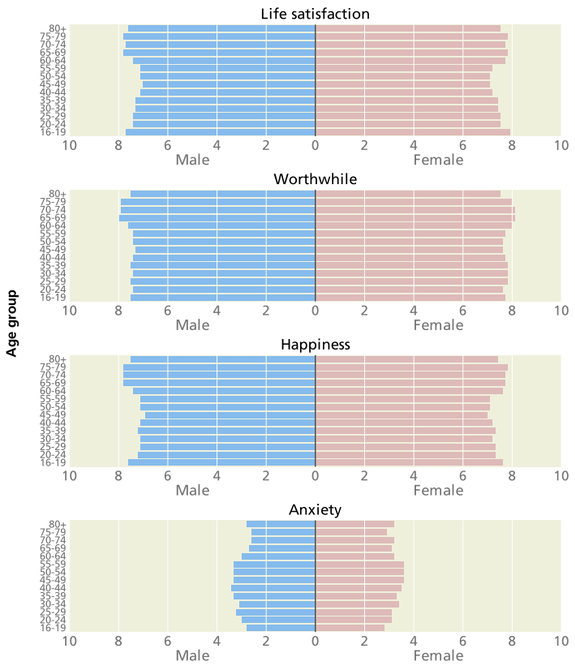
Wellbeing is a new and evolving concept in public health and health services. It includes emotional, social, psychological, mental and physical dimensions. This section focuses on mental wellbeing.

Mental wellbeing is not just determined by the absence of mental health problems; it is characterised by social and psychological wellbeing which enables and supports good relationships, emotional resilience and physical health.

Different methods exist to measure wellbeing. ONS is developing a framework of objective and subjective indicators across a range of life aspects, such as relationships, health, work, local community and personal finance/debt. Subjective mental wellbeing measures included are: life satisfaction, happiness, anxiety, and purpose in life. The Public Health Outcomes Framework will use four subjective measures of wellbeing as defined by ONS, alongside an average WEMWBS score for adults aged 16+. Approaches to measuring wellbeing continue to develop nationally and internationally.

Different measures of wellbeing are generally consistent regarding age, sex, employment status and health. The wellbeing of men and women differs little, wellbeing declines in middle age and is higher in post-retirement age groups and in young adults.

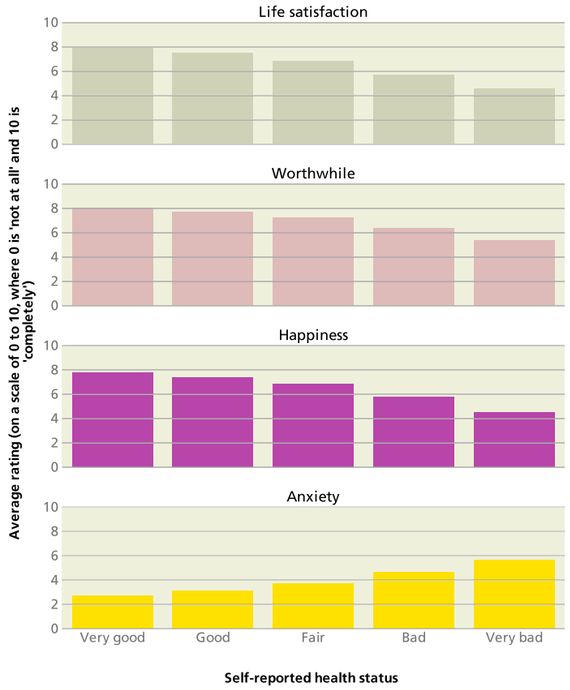
Wellbeing scores by age and sex, United Kingdom, April - September 2011



Average rating (on a scale of 0 to 10, where 0 is 'not at all' and 10 is 'completely')

Source: Annual Population Survey (APS) subjective well-being six month dataset (April to September 2011), ONS. (Data are considered experimental statistics)

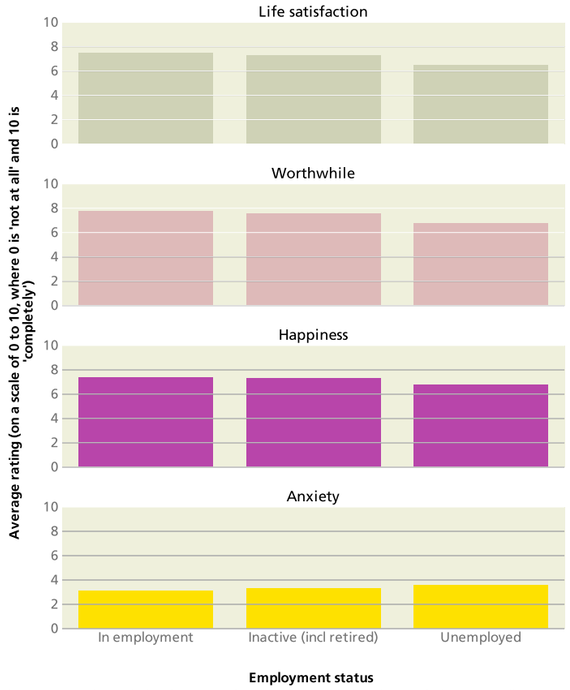
Wellbeing scores by self-reported health status, United Kingdom, April - September 2011



Self-reported health status

Source: Annual Population Survey (APS) subjective well-being six month dataset (April to September 2011), ONS. (Data are considered experimental statistics)

Wellbeing scores by employment status, United Kingdom, April - September 2011



Employment status

Source: Annual Population Survey (APS) subjective well-being six month dataset (April to September 2011), ONS. (Data are considered experimental statistics)

People not in work (excluding the retired) and people living in poverty have lower wellbeing than other groups, reporting more anxiety, and less happiness, satisfaction with life and sense of purpose.

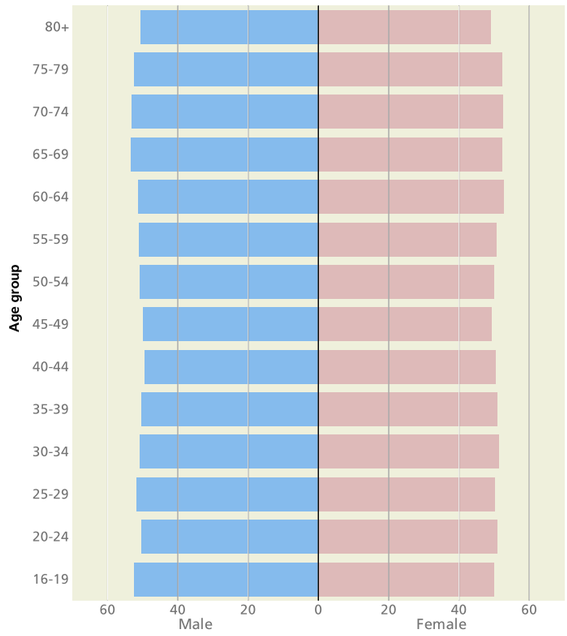
Mental wellbeing and health are associated and appear to influence each other.

There is a growing evidence base for approaches that improve wellbeing at both individual and population levels. Giving children a good start in life and supporting parents demonstrate positive effects across the life course.

There is good evidence supporting workplace programmes and interventions which aim to improve wellbeing in adults e.g. programmes working with people seeking employment and those experiencing work-based stress. Health improvement initiatives are enhanced by integrating mental wellbeing and psycho-social approaches, particularly those which aim to affect physical activity levels, smoking, sexual health, diet, and alcohol and drug misuse.

The close relationship between wellbeing and mental and physical health requires health and public health services to provide a 'whole person' approach to health. Increasing access to, and uptake of, psychological therapies (including mindfulness based stress reduction) can be an important public health intervention.

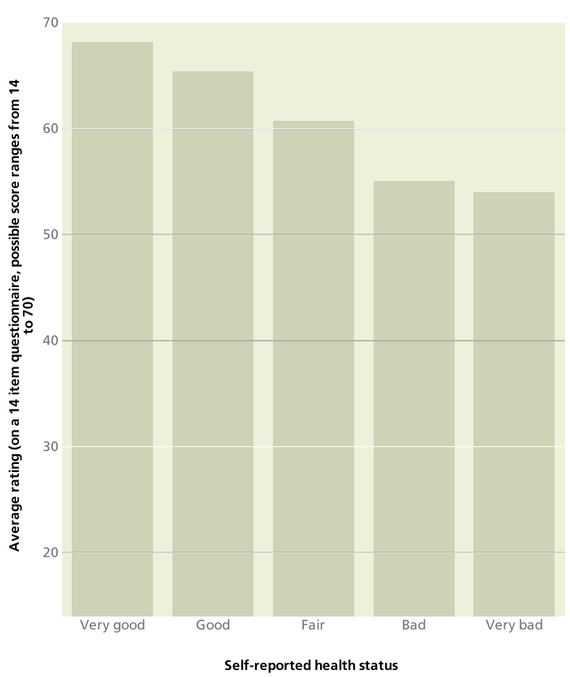
Wellbeing scores (WEMWBS) by age and sex, England, 2010



Average rating (on a 14 item questionnaire, possible score ranges from 14 to 70)

Source: Health Survey for England, 2010. Copyright © 2012, re-used with the permission of The Health and Social Care Information Centre. All rights reserved. (Provided by Dr H Maheswaran, Dr P Kimani, Professor S Stewart-Brown, Univeristy of Warwick Medical School)

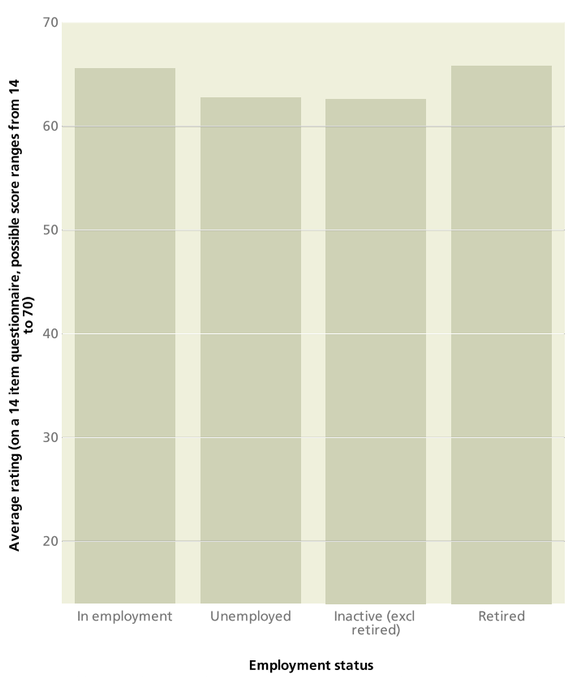
Wellbeing scores (WEMWBS) by self-reported health status, England, 2010



Self-reported health status

Source: Health Survey for England, 2010. Copyright © 2012, re-used with the permission of The Health and Social Care Information Centre. All rights reserved. (Provided by Dr H Maheswaran, Dr P Kimani, Professor S Stewart-Brown, Univeristy of Warwick Medical School)

Wellbeing scores (WEMWBS) by employment status, England, 2010



Employment status

Source: Health Survey for England, 2010. Copyright © 2012, re-used with the permission of The Health and Social Care Information Centre. All rights reserved. (Provided by Dr H Maheswaran, Dr P Kimani, Professor S Stewart-Brown, Univeristy of Warwick Medical School)

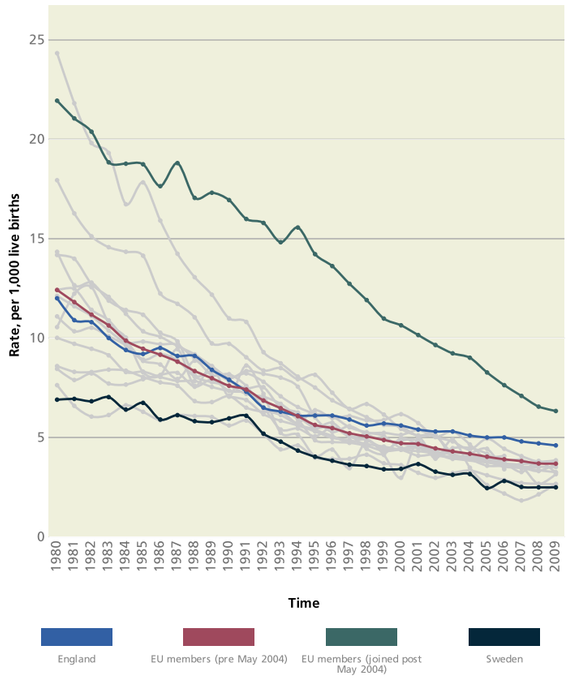
Health outcomes reflect differences in lifestyle-related risk factors, health seeking behaviour, and early detection and effectiveness of service provision. To be able to interpret and act on health outcomes it is important to understand variations in underlying causes.

Differences in health outcomes between countries can highlight national successes and identify lessons to be learned from other countries. However, comparisons must be treated with caution as they may reflect differences in diagnostic coding practices and data handling etc., rather than true differences in outcomes. The choice of comparator, and comparator countries, will also influence apparent differences. EU countries provide England's closest comparators.

This section compares premature mortality and other outcomes against the average rate of the EU-15 (EU members pre May 2004) and the average rate of EU members who joined post May 2004. Individual EU-15 county rates are shown in grey, with those with the highest and lowest rates highlighted. As many EU countries have lower life expectancy than England, the comparison used here defines premature mortality as <65 years.

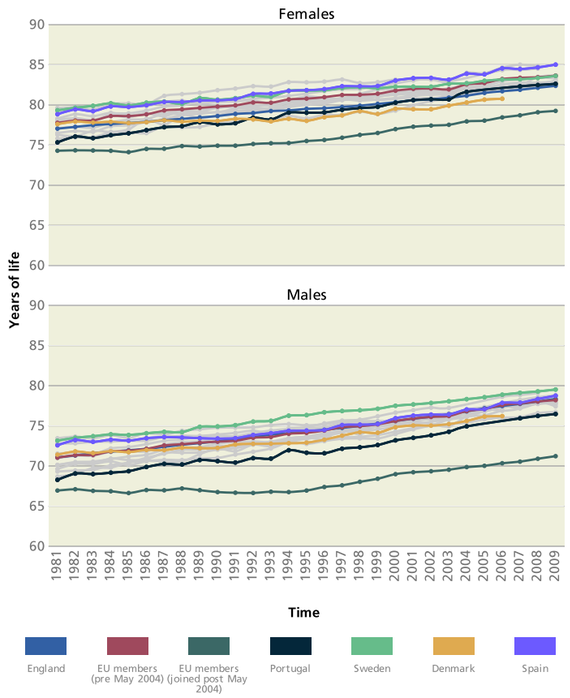
It is increasingly common to define premature mortality as <85 years. As this convention proliferates, consideration of the definition of 'premature mortality' should remain under review. Using <85years would expand the focus of premature mortality to include an age range with substantial, preventable mortality rates.

Trend in infant mortality, England and EU countries, 1980 to 2009



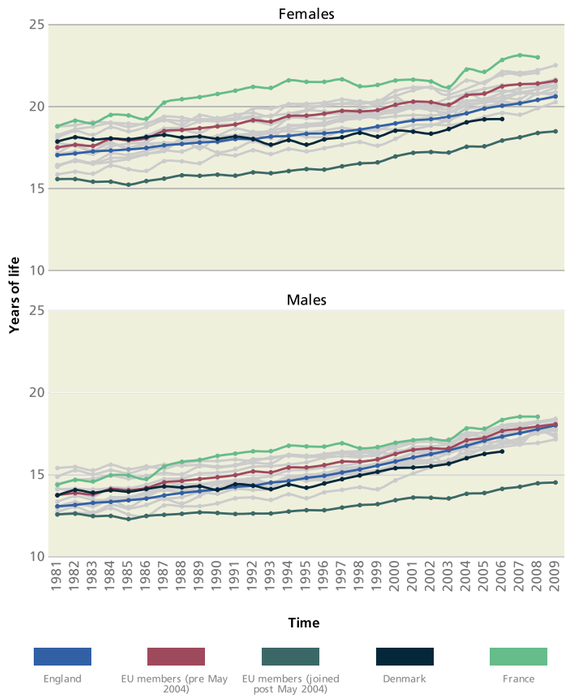
Source: EU: WHO, Health For All data set; England: ONS.

Trend in life expectancy at birth, England and EU countries, 1981 to 2009



Source: EU: WHO, Health For All data set; England: ONS.

Trend in life expectancy at 65 years, England and EU countries, 1981 to 2009



Source: EU: WHO, Health For All data set; England: ONS.

Male life expectancy at 65 has increased more rapidly than in many EU-15 countries. This may reflect a combination of declining smoking-related deaths and improved health care, especially the management of chronic conditions.

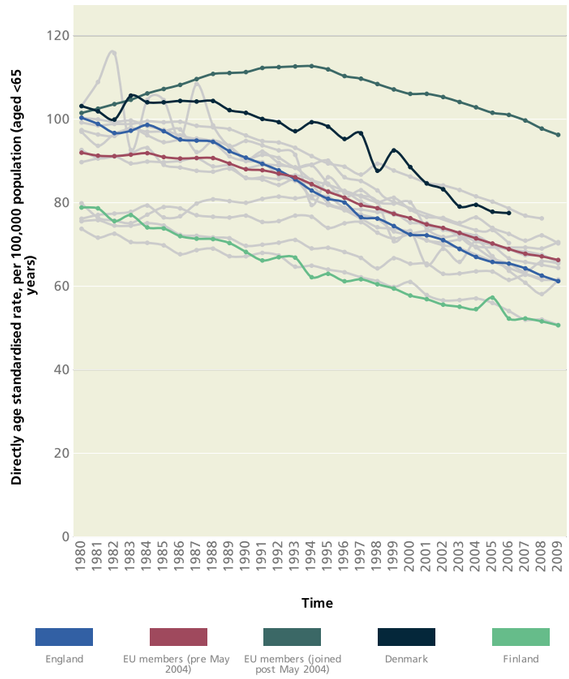
Female life expectancy has also increased, possibly due to improved health care. However, the peak of expected deaths due to the smoking epidemic has not yet been reached.

Alcohol related deaths and infant mortally are a serious cause of concern. Death rates from cirrhosis have been rising in England at the same time they are falling in other EU countries. 30 years ago the UK was close to the average EU-15 infant mortality rate, we now have the highest rate in the EU-15.

Cancer outcomes have improved but lag behind those of some EU-15 and other comparable countries. International rates for cancer survival are difficult to compare. However, there is a cohort of countries against which we can reliably benchmark. UK survival rates for lung, breast, colorectal, and ovarian cancers have improved but lag behind those of Australia, Canada, Denmark, Norway and Sweden[1].

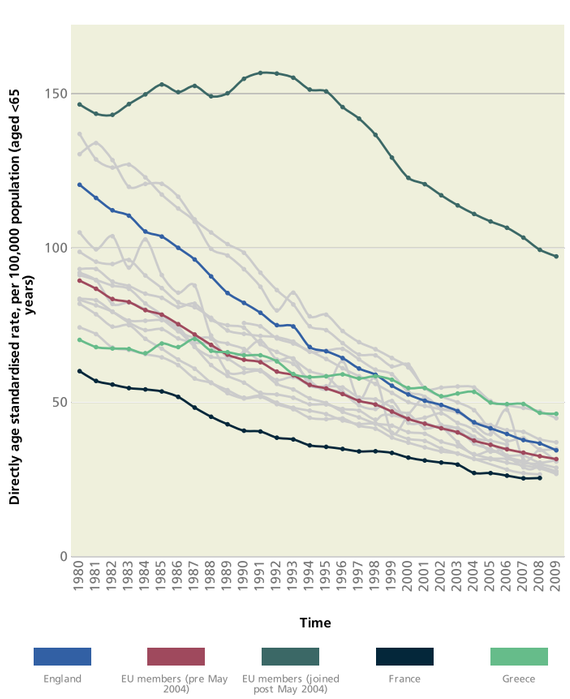
1 Coleman MP, et al, (2011). 'Cancer survival in Australia, Canada, Denmark, Norway, Sweden, and the UK, 1995–2007 (the International Cancer Benchmarking Partnership): an analysis of population-based cancer registry data'. *The Lancet*, vol 377, no 9760, pp 127–38.

Trend in premature mortality (ages under 65) from cancer, England and EU countries, 1980 to 2009



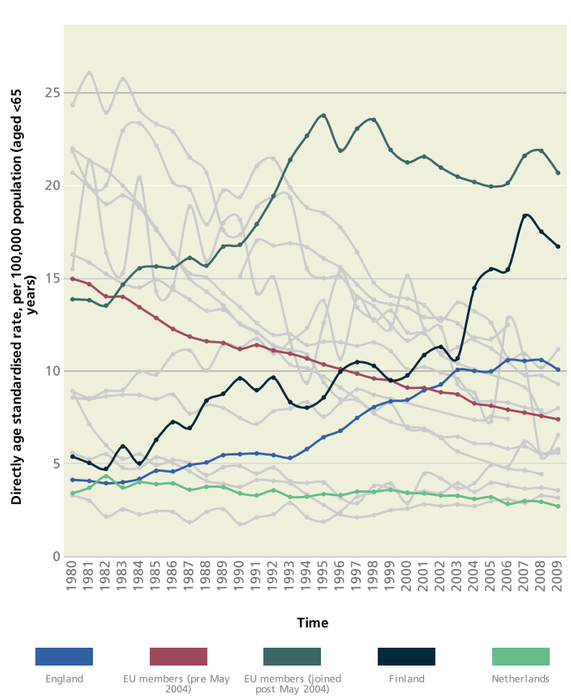
Source: EU: WHO, Health For All data set; England: ONS.

Trend in premature mortality (ages under 65) from cardiovascular diseases, England and EU countries,1980 to 2009



Source: EU: WHO, Health For All data set; England: ONS.

Trend in premature mortality (ages under 65) from chronic liver disease and cirrhosis, England and EU countries, 1980 to 2009



Source: EU: WHO, Health For All data set; England: ONS.

Life expectancy is an important summary measure of population health. 'Life expectancy at birth' is an estimate of the average number of years a person can expect to live. 'Life expectancy at 65' is an estimate of the average number of remaining years a 65 year old can expect to live.

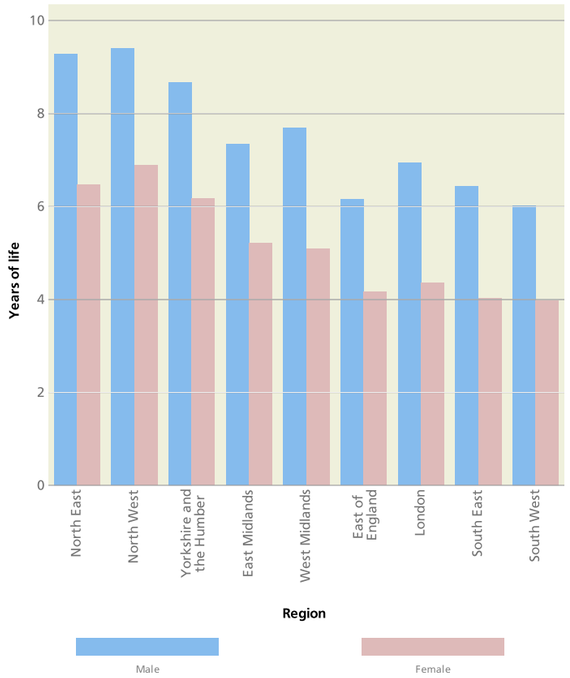
In 2008-10, life expectancy at birth was 78.0 for men and 82.4 years for women, and at 65 years it was 18.0 and 20.6 years respectively. It is lower in deprived populations, the north and the midlands.

'Healthy life expectancy' measures how many years a person can expect to live in good health. In general, where life expectancy is lower, so is healthy life expectancy but there is considerable variation.

Life expectancies at birth, and at age 65, have improved in recent years. This reflects the reduced impact of risk factors (especially smoking) and advances in health care e.g. improved detection and treatment of high blood pressure, heart disease and cancer.

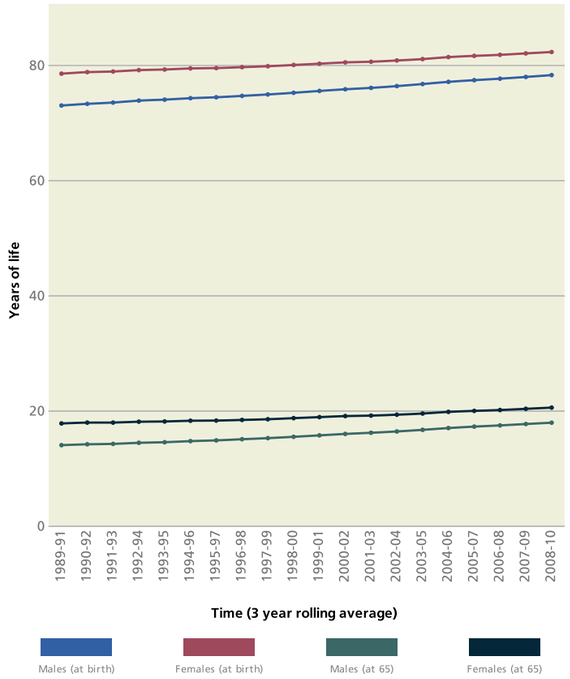
English life expectancies can move closer to the best levels found in EU countries. Concerted effort to improve access to services is likely to increase life expectancy at 65. Broad action addressing determinants of health is required to improve life expectancy at birth.

Differences in life expectancy at birth between the most and least deprived quintile in each region by sex, England, 2005-09



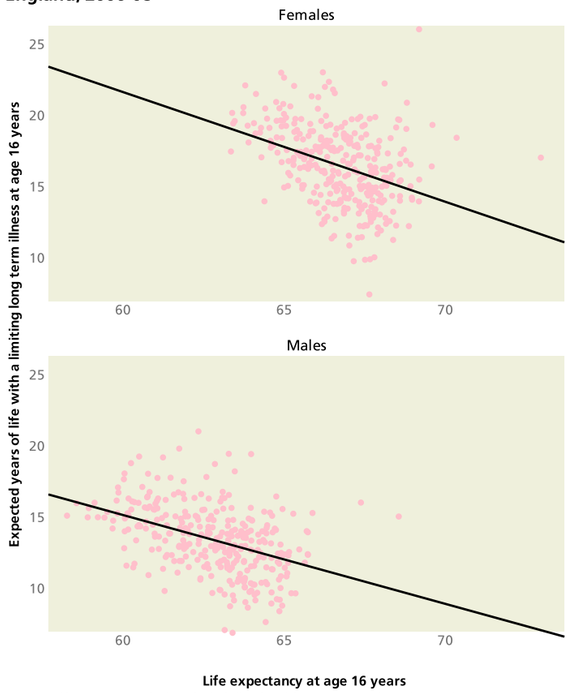
Source: 2011 Local Health Profiles. (Analysis by DH)

Trend in life expectancy at birth and at age 65 by sex, England, 1989-91 to 2008-10



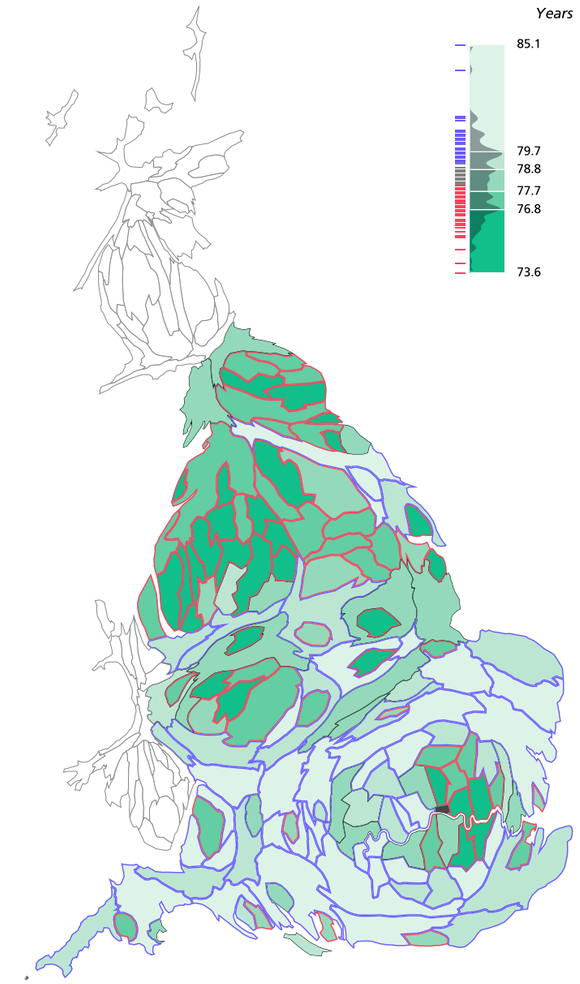
Source: Interim Life Tables, ONS.

Comparison of life expectancy and expected years of life spent with a limiting long-term illness or disability for local authorities, England, 2006-08



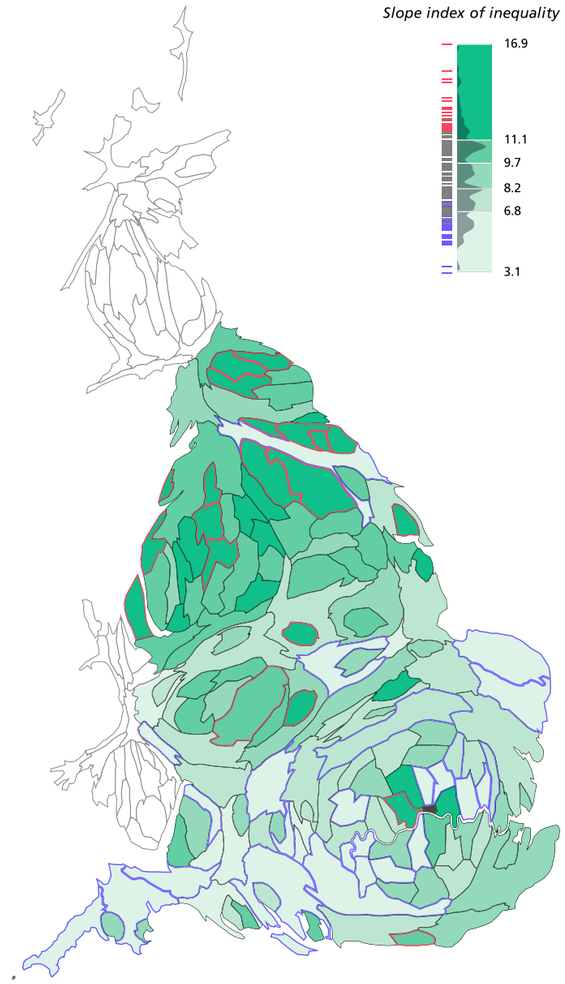
Source: Life expectancy (LE) and Disability-free life expectancy (DFLE) experimental statistics, ONS.

Life expectancy at birth for males by upper tier local authority, England, 2008-10



Source: Life expectancy statistics, ONS.

Slope index of inequality for life expectancy at birth for males by upper tier local authority, England, 2006-10



Source: LHO.

Differences in all cause mortality (all causes of death), after adjustment for age and sex, indicate health inequalities between areas and groups. Comparing age specific rates for broad causes of death show which deaths are premature and avoidable.

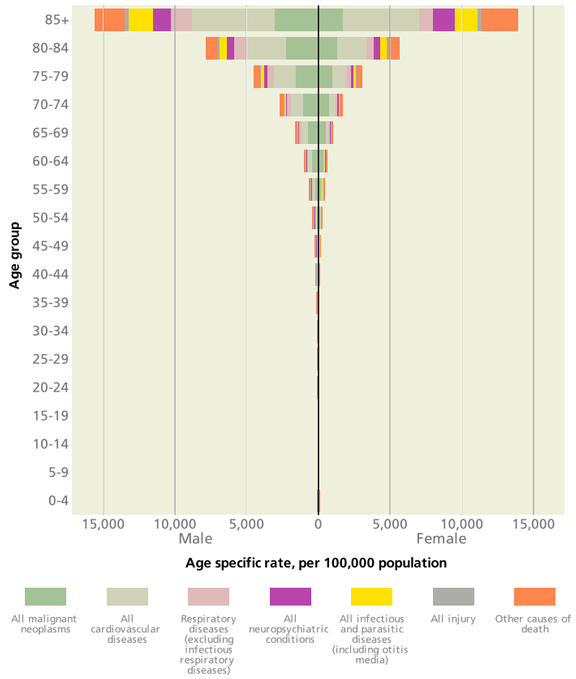
In infants and young children, 'other causes', infections and injury are most prevalent. As children grow older, injuries and violence become most prevalent, especially motor vehicle traffic accidents and suicides. For people in their 30s, cancer and cardiovascular deaths increase in prevalence and from around 40 onwards cancer is most prevalent. Cardiovascular disease is the most common cause of death in the population, being the most prevalent cause of death in those over 80.

Geographical differences are due to inequalities in social determinants of health (Chapter 4) and specific risk factors (Chapter 3).

Reducing inequalities in all cause mortality rates can be addressed by improving population health, encouraging conditions which promote healthy behaviours, making sure people recognise symptoms and seek help early, and ensuring equitable access to evidence based services. These efforts should reach everyone but focus on those whose needs are greatest.

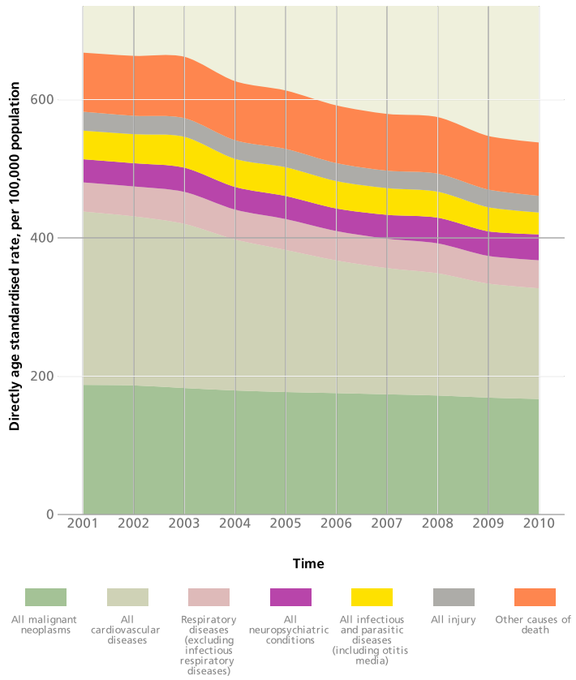
Improving children's health will increase the likelihood of their being healthy adults.

Mortality due to all causes (and sub-categories) by age and sex, England, 2008-10



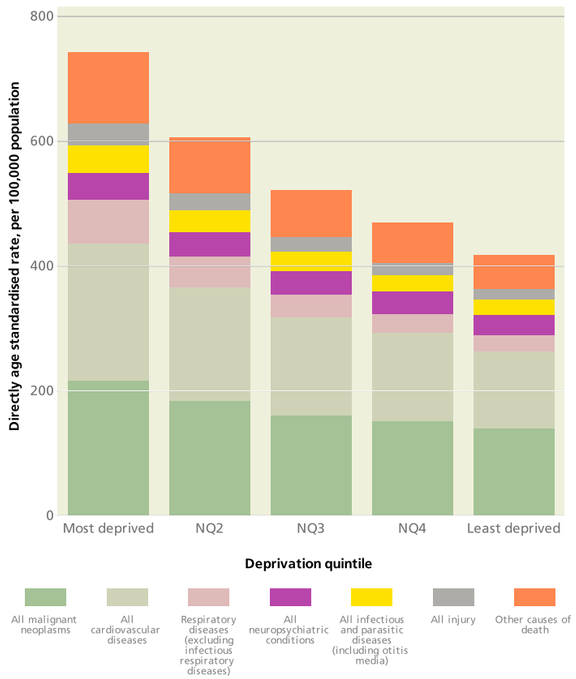
Source: Death registrations and 2008 to 2010 population estimates, ONS. (Analysis by DH)

Trend in mortality due to all causes (and sub-categories), England, 2001 to 2010



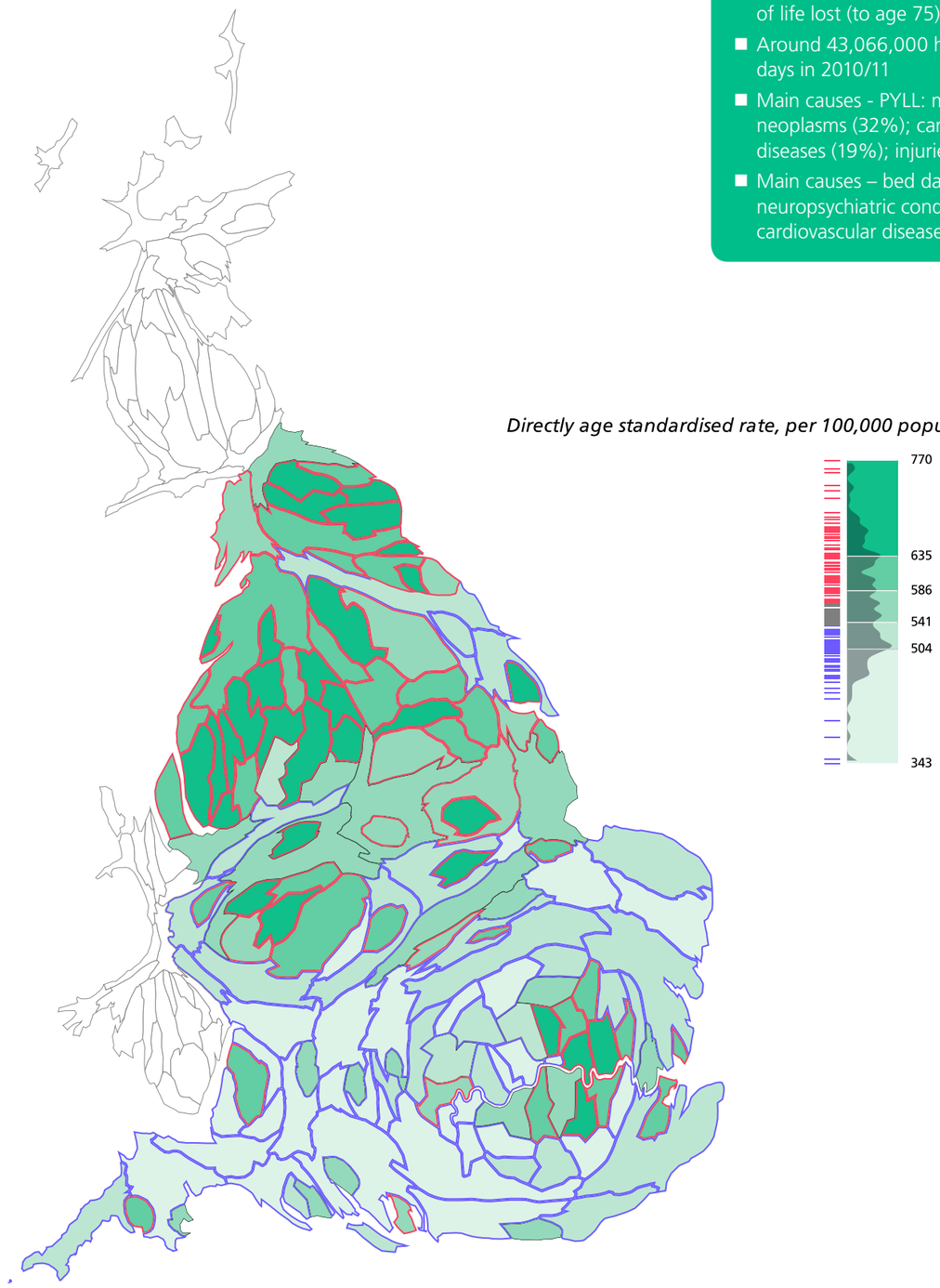
Source: Death registrations and 2001 to 2010 population estimates, ONS. (Analysis by DH)

Mortality due to all causes (and sub-categories) by deprivation, England, 2010



Source: Death registrations and 2010 population estimates, ONS. (Analysis by DH)

Average annual mortality due to all causes by upper tier local authority, England, 2008-10



Source: Death registrations and 2008 to 2010 population estimates, ONS. (Analysis by DH)

Key facts

- Around 2,288,300 potential years of life lost (to age 75) in 2010
- Around 43,066,000 hospital bed days in 2010/11
- Main causes - PYLL: malignant neoplasms (32%); cardiovascular diseases (19%); injuries (13%)
- Main causes – bed days: neuropsychiatric conditions (14%); cardiovascular diseases (13%)

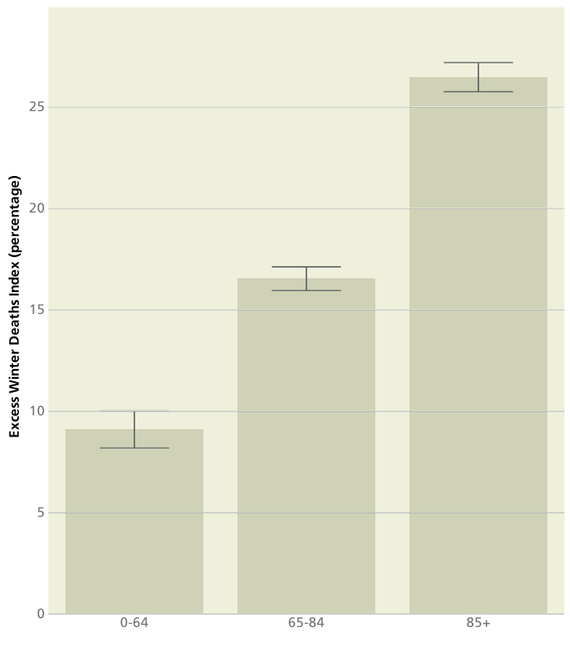
Winter weather is associated with increased illness and injury. 'Excess' winter deaths are the extra deaths that occur in winter months (December to March) compared to deaths in the four months before and after. This is often expressed by the Excess Winter Deaths Index (EWDI). Older people, the very young and people with long term conditions are particularly susceptible. Cold weather increases the risk of heart attack, stroke, lung illnesses, influenza and serious injuries due to falls.

On average, over the past four years, we have had around 20,400 excess winter deaths each year. These deaths occurred mainly in the over 85s. Over time the number of excess winter deaths has varied greatly according to the severity of the winter and the underlying level of disease (particularly influenza) in the population.

England does not compare well with other northern European countries on excess winter deaths, despite having milder winters. For example, Finland has around half England's excess winter death rate.

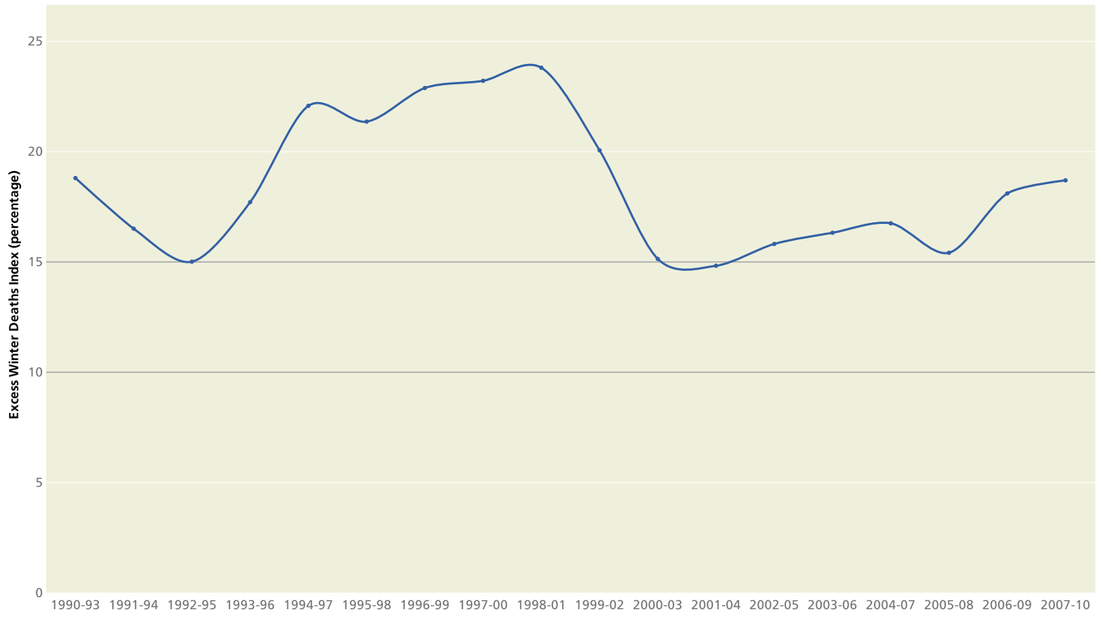
Better preventative measures in England could reduce illness and injury related to winter weather. These include better insulated, well-heated, energy efficient homes and appropriate outdoor clothing.

Excess Winter Deaths Index by age, England, 2007-10



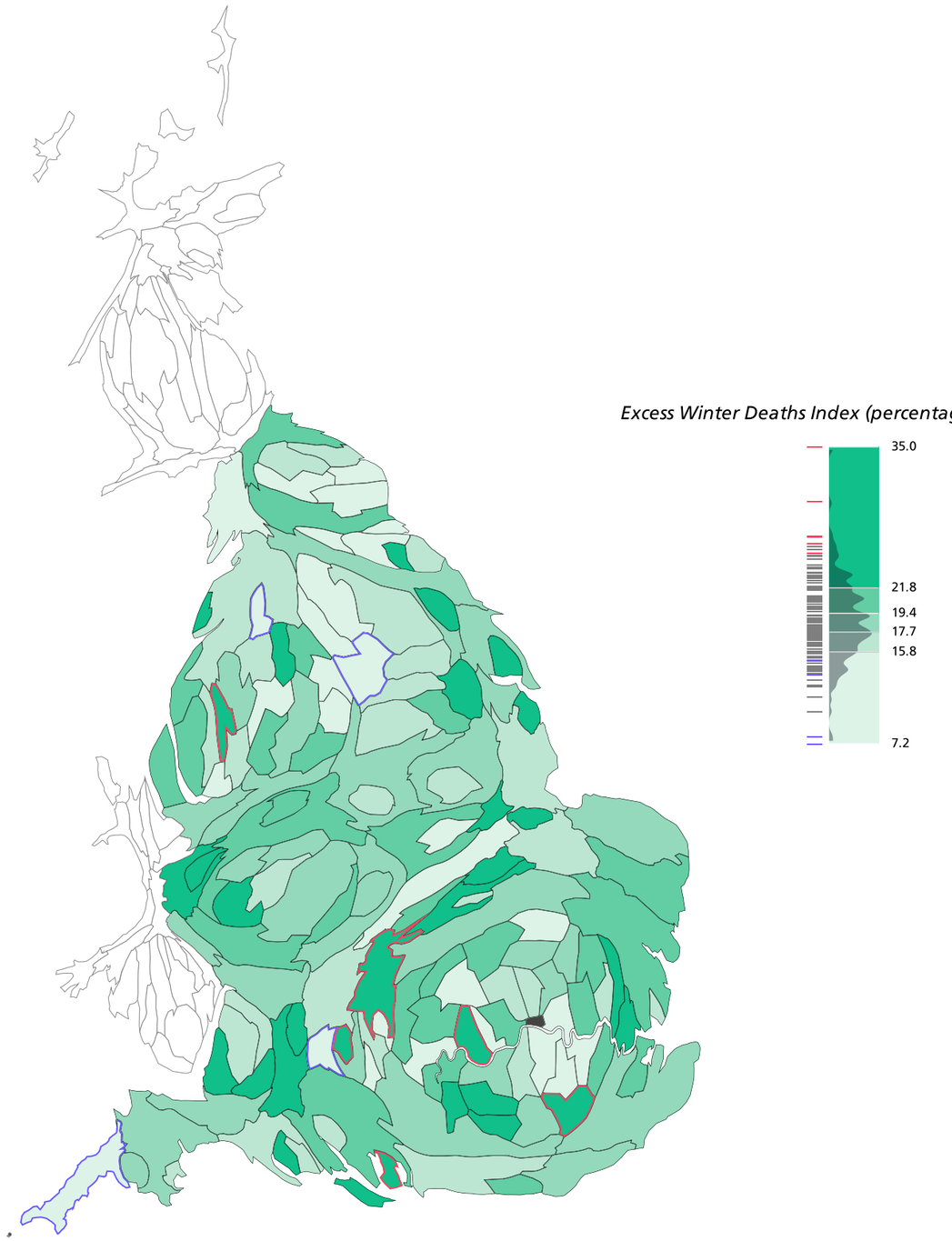
Source: WMPHO, based on death registrations, ONS. (3 year averages, eg 2007-10 based on excess of deaths in winter compared with non-winter months from August 2007 to July 2010)

Trend in Excess Winter Deaths Index, England, 1990-93 to 2007-10



Source: WMPHO, based on death registrations, ONS. (3 year averages, eg 2007-10 based on excess of deaths in winter compared with non-winter months from August 2007 to July 2010)

Excess Winter Deaths Index by upper tier local authority, England, 2007-10



Source: WMPHO, based on death registrations, ONS. (3 year averages, eg 2007-10 based on excess of deaths in winter compared with non-winter months from August 2007 to July 2010)

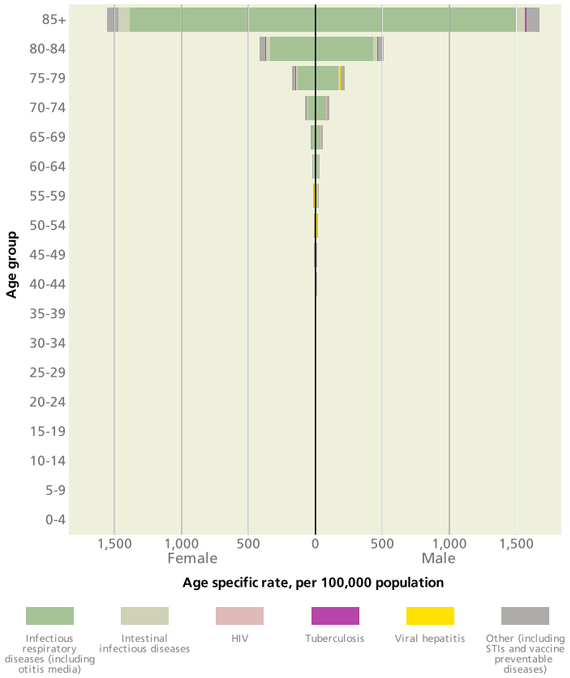
Infectious disease in England has been decreasing for several decades. Socioeconomic changes, improvements in sanitation and hygiene, mass vaccination and improvements in medical treatment have contributed to this decrease. It now accounts for a far smaller proportion of mortality than heart disease, cancer and other non-communicable diseases.

After a small peak in early life, mortality from infectious disease rises exponentially with age. Respiratory diseases including influenza and pneumonia account for a large proportion of deaths related to infectious disease, particularly in vulnerable groups. Mortality is low for most other infections, but may be higher for certain infections in particular populations.

Hospital admission rates for infectious and parasitic diseases are highest at the extremes of life, particularly in the under-fives. They are also higher for infections in males at all ages, except in early adult life.

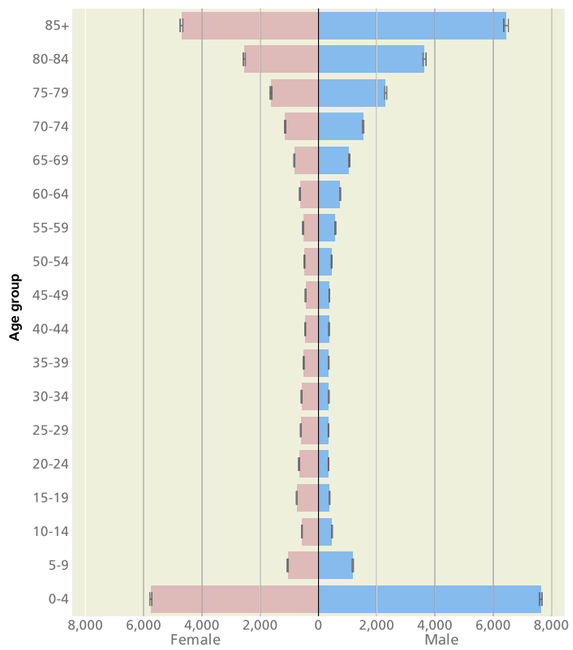
Mortality rates for infectious disease are low in England due to medical treatment and public health action. However, it remains important to monitor the risk posed by emerging or resistant pathogens. Infectious disease is a considerable cause of morbidity leading to use of health care resources.

Average annual mortality rate due to infectious and parasitic diseases (and sub-categories) by age and sex, England, 2008-10



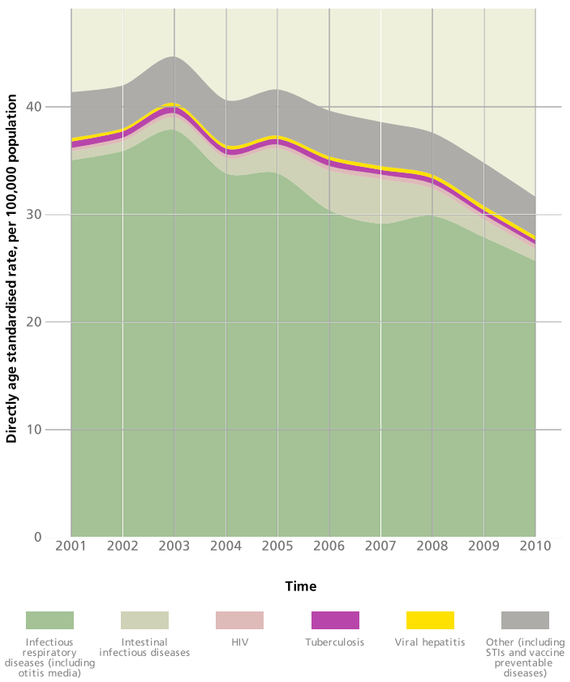
Source: Death registrations and 2008 to 2010 population estimates, ONS. (Analysis by DH)

Hospital admission rates due to infectious and parasitic diseases by age and sex, England, 2010/11



Source: Hospital Episode Statistics (HES), Health and Social Care Information Centre. © Crown Copyright 2012. 2010 population estimates, ONS. (Analysis by PHOs, led by EMPHO)

Trend in mortality rate due to infectious and parasitic diseases (and sub-categories), England, 2001 to 2010

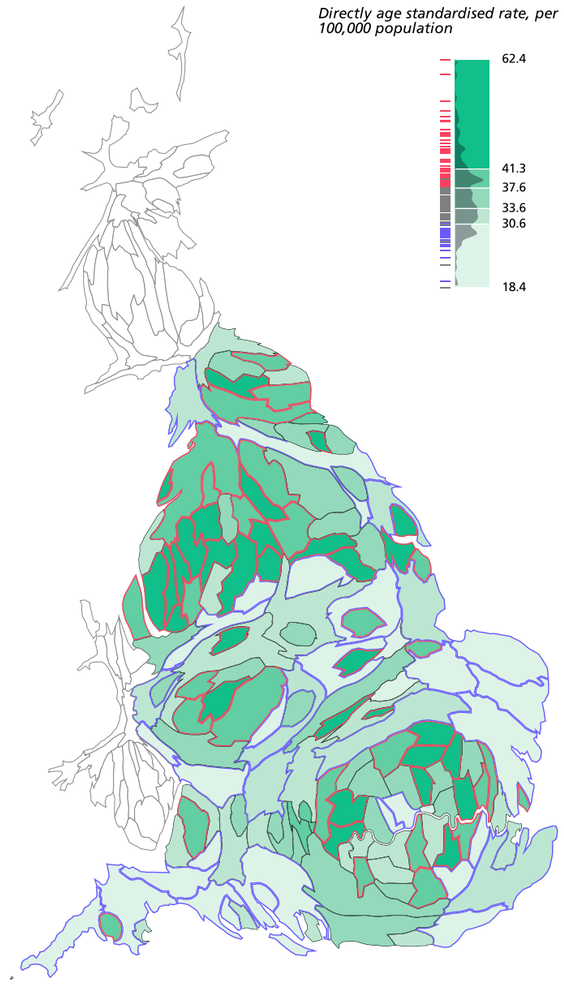


Source: Death registrations and 2001 to 2010 population estimates, ONS. (Analysis by DH)

Key facts

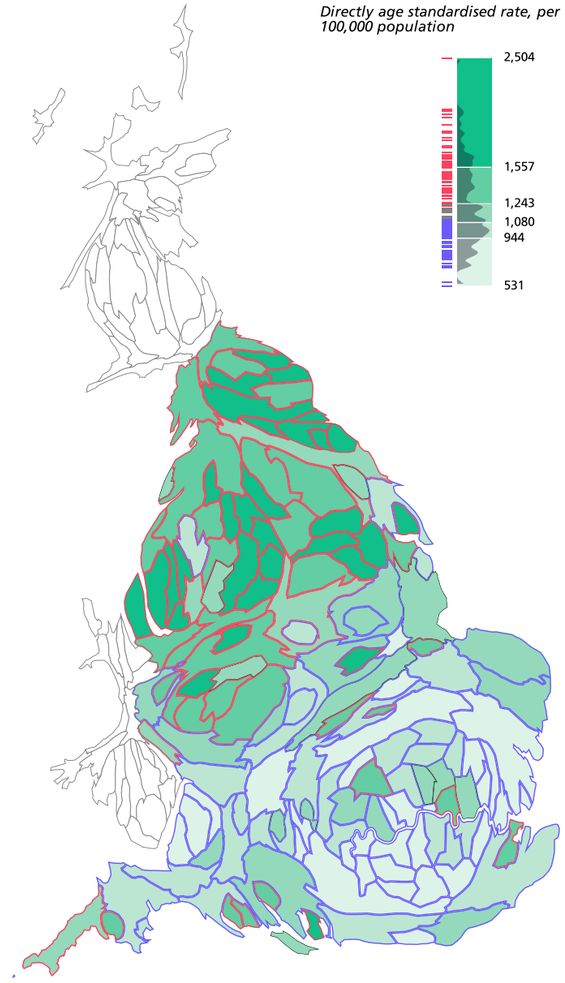
- Around 89,700 potential years of life lost (to age 75) in 2010 (4% of all PYLL)
- Around 3,417,000 hospital bed days in 2010/11 (8% of all bed days)
- Infectious respiratory diseases accounted for 57% of PYLL and 74% of bed days for communicable conditions

Average annual mortality due to infectious and parasitic diseases by upper tier local authority, England, 2008-10



Source: Death registrations and 2008 to 2010 population estimates, ONS. (Analysis by DH)

Hospital admission rates due to infectious and parasitic diseases by upper tier local authority, England, 2010/11



Source: Hospital Episode Statistics (HES), The Information Centre for Health and Social Care. © Crown Copyright 2012. 2010 population estimates suplied by ONS. (Analysis by PHOs, led by EMPHO)

Tuberculosis (TB) is an infectious bacterial disease, predominantly of the lungs. Usually curable, TB may be fatal without treatment. The current global TB pandemic is the leading cause of death due to treatable infectious disease, causing an estimated 1.4 million deaths globally in 2010[1].

In 2010 in England 7,758 cases of tuberculosis were reported, a rate of 14.9 per 100,000 population. This continues a gradual rise in recent years. The most affected regions are London and the West Midlands, with highest rates in the 15 to 44 age groups and with more men affected than women.

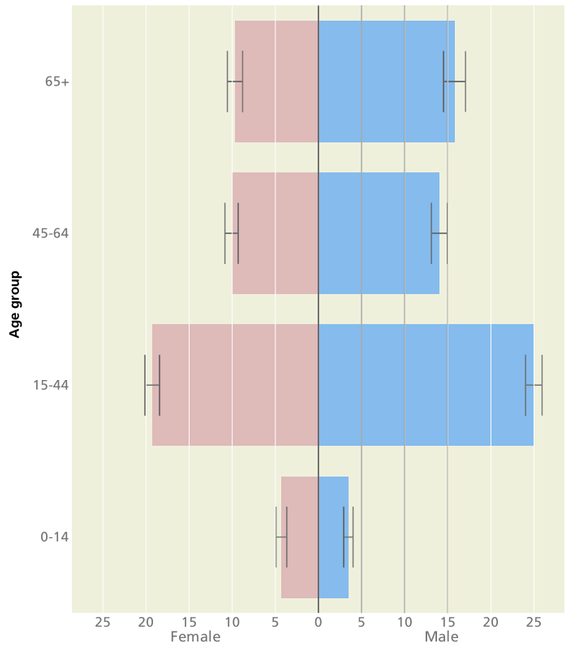
An increasing proportion of cases is found in people born outside the UK (73% in 2010). Other risk factors include homelessness, drug and alcohol use and previous imprisonment.

Multidrug resistant TB (MDR TB, resistant to two key first line TB drugs) remains low at 1.3% of cases but has gradually increased over the preceding decade. Three extensively drug resistant (XDR) TB cases were reported in 2009, with nine cases reported between 1995 and 2008. 84% of TB cases diagnosed in 2009 completed treatment within one year.

TB control efforts should continue to target high-risk groups in England, as well as contributing where possible to international efforts to combat the wider pandemic.

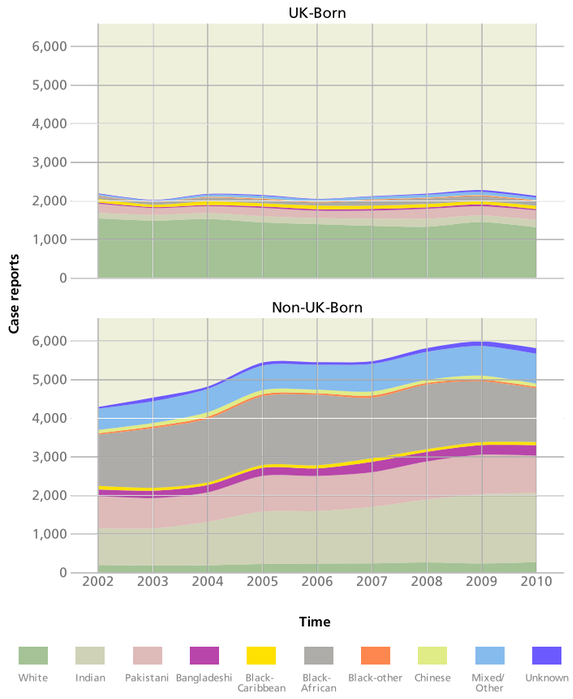
1 WHO. Global TB Control 2011.

Tuberculosis case report rates by age and sex, England, 2010



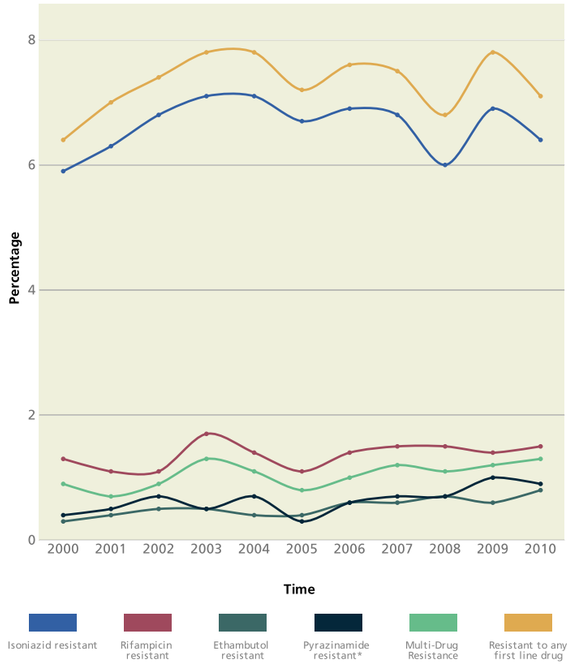
Source: Enhanced Tuberculosis Surveillance, HPA. 2009 population estimates, ONS. (Analysis by HPA)

Trend in number of tuberculosis case reports by place of birth and ethnic group, United Kingdom, 2002 to 2010



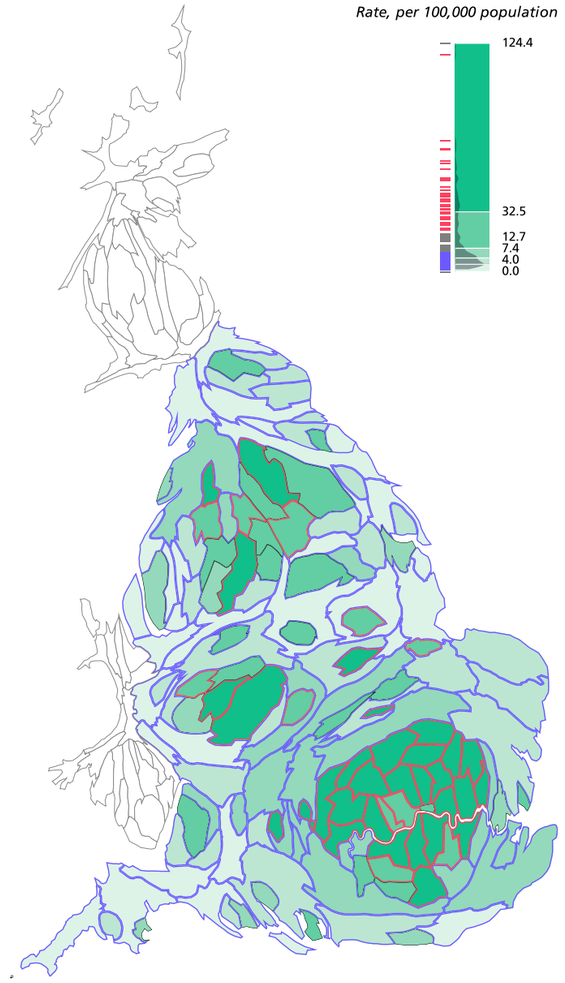
Source: Enhanced Tuberculosis Surveillance, HPA.

Trend in the proportion of tuberculosis cases with first-line drug resistance, United Kingdom, 2000 to 2010



Source: Enhanced Tuberculosis Surveillance, Enhanced Surveillance of Mycobacterial Infections, UK Mycobacterial Surveillance Network.

Average annual tuberculosis case rate by upper tier local authority, England, 2008-10

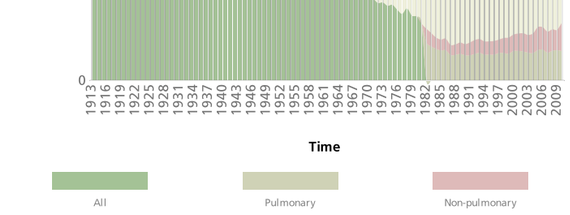


Source: Enhanced Tuberculosis Surveillance, HPA. 2009 population estimates, ONS. (Analysis by HPA)

Key facts

- Around 2,600 potential years of life lost (to age 75) in 2010 (<1% of all PYLL)
- Around 54,000 hospital bed days (<1% of all bed days)

Trend in tuberculosis notifications by site of disease (pulmonary/non-pulmonary), England and Wales, 1913 to 2010



Source: Statutory Notifications of Infectious Diseases (NOIDS), HPA.

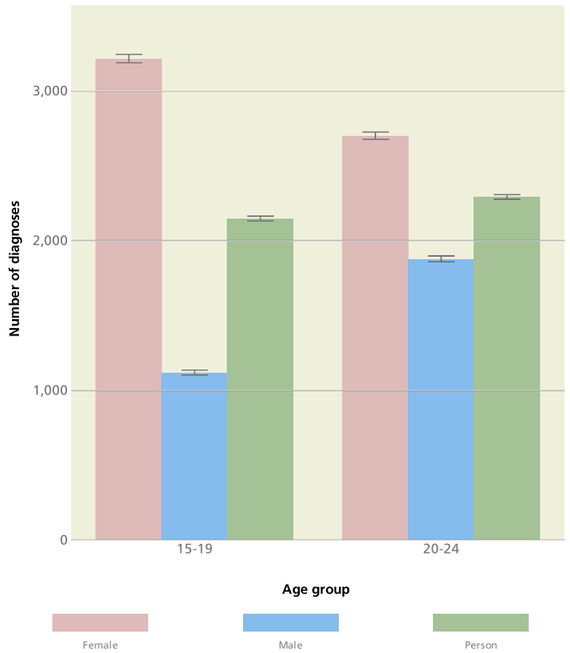
Chlamydia is caused by the bacterium *Chlamydia trachomatis* and is the most common bacterial sexually transmitted infection in England. It is most prevalent among sexually active young people. Infection is mostly asymptomatic. If untreated, chlamydia can lead to complications including pelvic inflammatory disease, ectopic pregnancy and infertility. The national programme to control chlamydia offers opportunistic screening to sexually active under-25s.

In 2010, 152,838 diagnoses were made in 15-24 year olds, a rate of 2,226 diagnoses per 100,000. Diagnosis rates are reliant on the numbers and characteristics of those screened and do not necessarily represent the underlying disease distribution: increases in screening lead to increased diagnosis rates.

Differing approaches to promoting screening uptake may contribute to different diagnosis rates between local authorities.

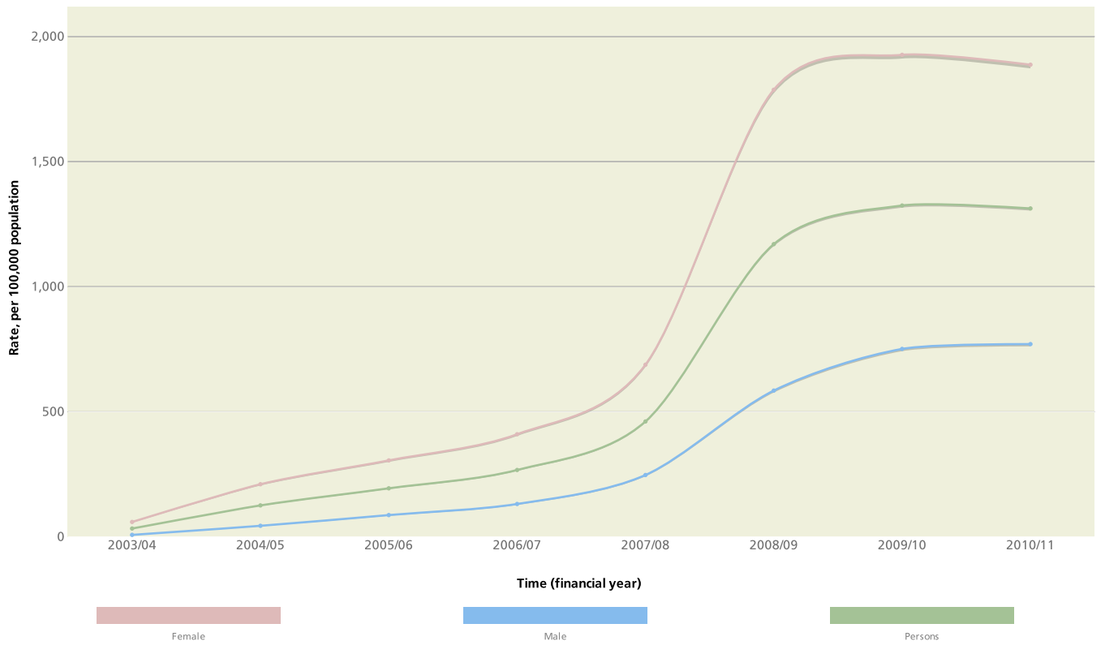
Control measures include encouraging young adults to be screened for chlamydia annually and on change of partner, facilitating access to sexual health services and effective partner notification, and promotion of consistent condom use. Local areas should aim to achieve a high diagnosis rate of at least 2,400 per 100,000 15-24 year olds in order to detect and treat chlamydia and reduce the consequences of infection.

Rate of diagnoses of chlamydia for young persons aged 15-24 years only by age and sex, England, 2010



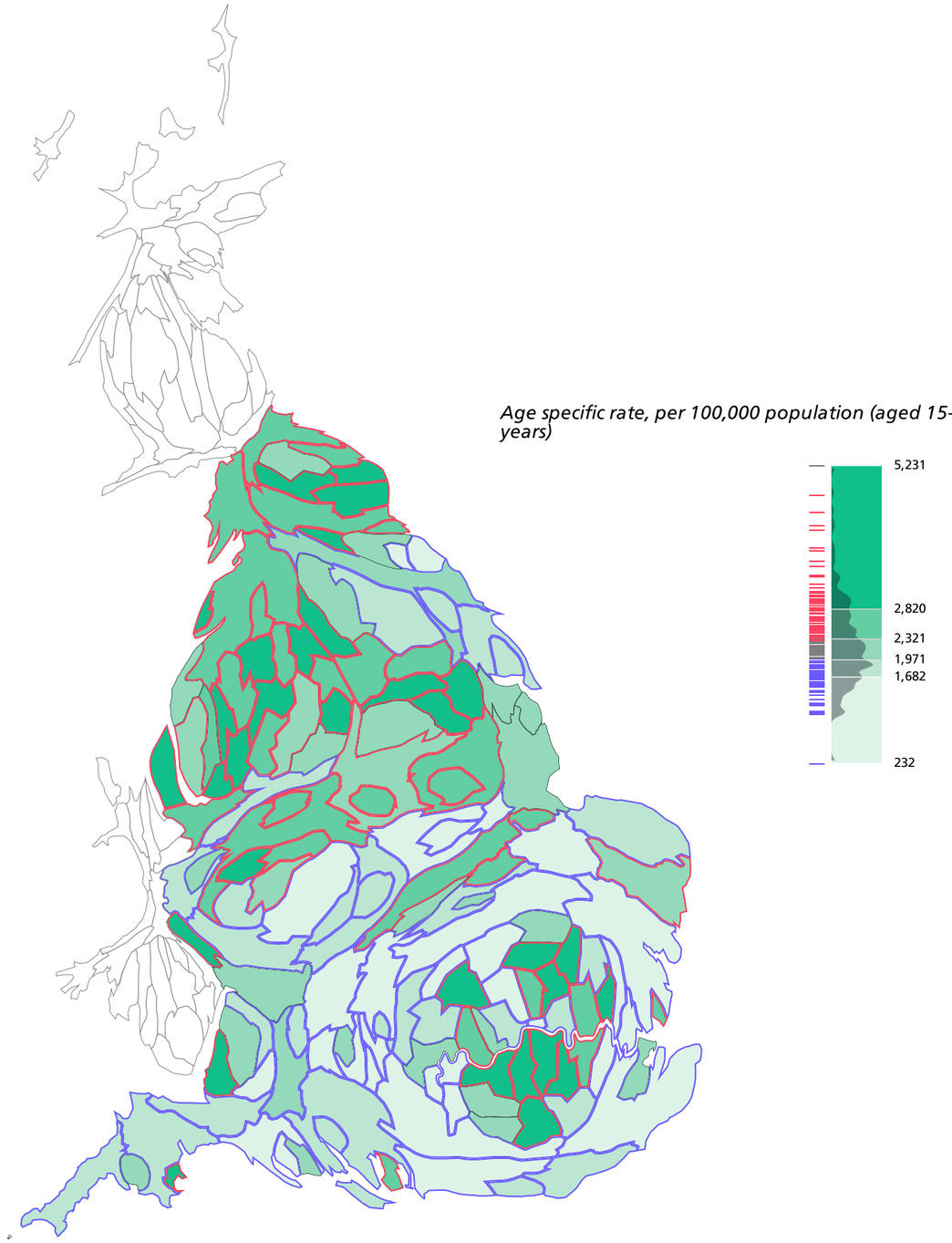
Source: Genito-Urinary Medicine Clinic Activity Dataset (GUMCAD) and community setting (National Chlamydia Screening Programme (NCSP) & Non-NCSP/Non-GUM), HPA. 2010 population estimates, ONS. (Analysis by HPA)

Trend in rate of diagnoses of chlamydia made in community settings, by sex, England, 2003/04 to 2010/11



Source: National Chlamydia Screening Programme (NCSP) and non-NCSP non-Genito-urinary Medicine (GUM) clinic laboratory returns. 2003 to 2010 population estimates, ONS. (Analysis by HPA)

Rate of diagnoses of chlamydia in young persons aged 15-24 years by upper tier local authority, England, 2010



Source: Genito-Urinary Medicine Clinic Activity Dataset (GUMCAD) and community setting (National Chlamydia Screening Programme (NCSP) & Non-NCSP/Non-GUM), HPA. 2010 population estimates, ONS. (Analysis by HPA)

Gonorrhoea is a sexually transmitted infection caused by the bacterium *Neisseria gonorrhoeae*. If left untreated gonorrhoea can lead to serious complications including pelvic inflammatory disease, ectopic pregnancy and infertility.

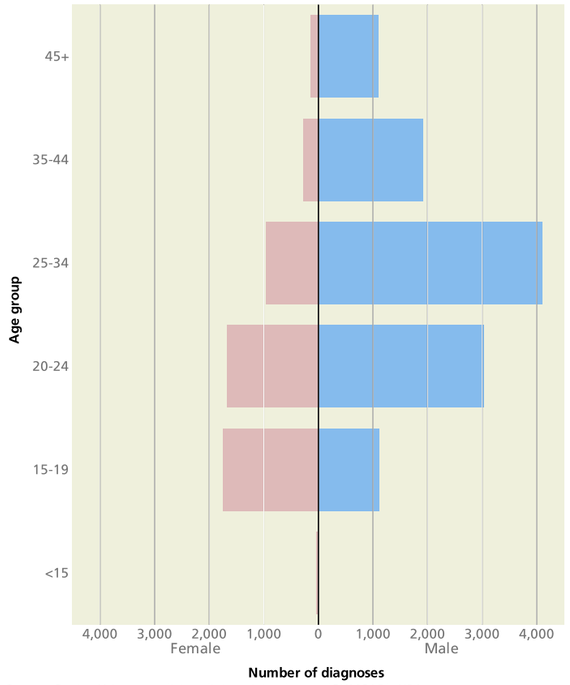
Gonorrhoea can usually be effectively treated with antibiotics but this is threatened by emerging resistance to currently recommended drugs (specifically ceftriaxone and cefixime).

After genital chlamydial infection, gonorrhoea is the second most common bacterial sexually transmitted infection. In 2010, there were over 16,500 diagnoses of gonorrhoea. The annual number of diagnoses has been increasing. This is probably due to better diagnosis although increased transmission is likely to have contributed.

The true number of cases may be considerably greater, as gonorrhoea is frequently asymptomatic. The highest rates of gonorrhoea are seen in women aged 15-19 and men aged 20-24 years. Gonorrhoea is concentrated in urban areas and those at greatest risk include young adults, certain black ethnic minorities and men who have sex with men (MSM).

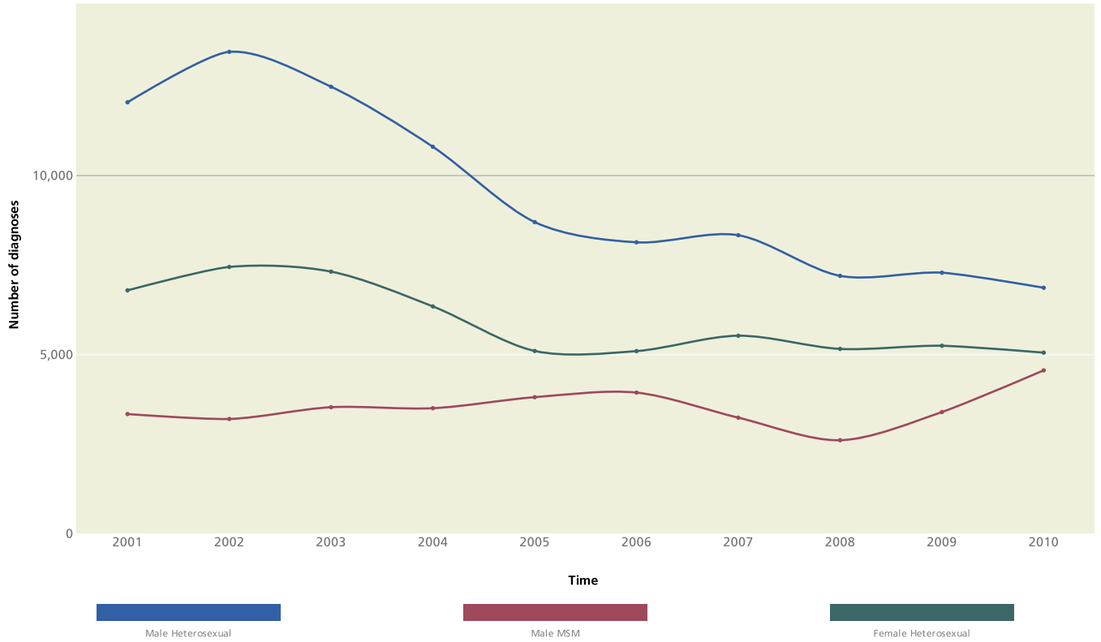
Effective control measures include providing easy access to sexual health services, effective partner notification, encouraging high risk individuals to have annual sexual health screens, and promoting consistent condom use.

Number of diagnoses of gonorrhoea made at genitourinary medicine clinics by age and sex in England, 2010



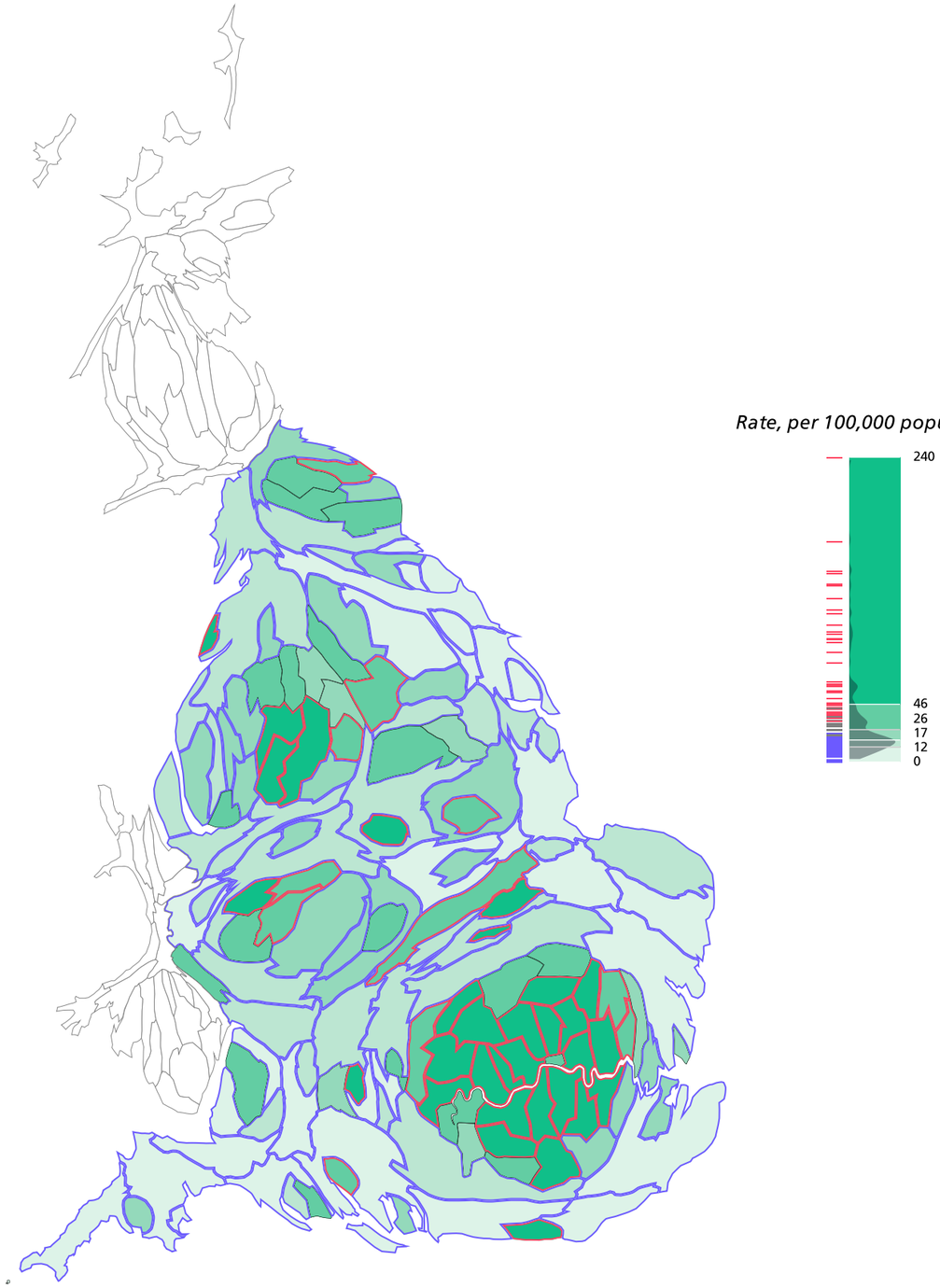
Source: Genito-Urinary medicine clinic activity dataset (GUMCAD), HPA.

Trend in the number of diagnoses of gonorrhoea made at genitourinary medicine clinics by sex and sexual orientation, England, 2001 to 2010



Source: Genito-Urinary medicine clinic activity dataset (GUMCAD), HPA.

Rate of diagnoses of gonorrhoea by upper tier local authority, England, 2010



Source: Genito-Urinary Medicine Clinic Activity Dataset (GUMCAD), HPA. 2010 population estimates, ONS. (Analysis by HPA)

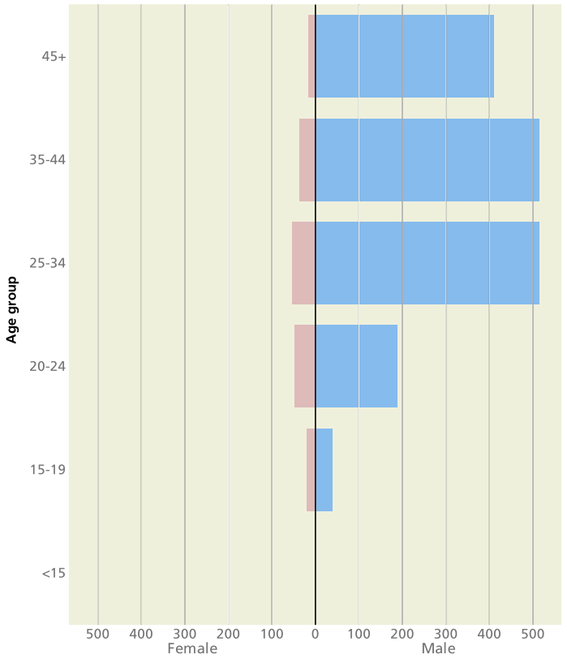
Syphilis is caused by the bacterium *Treponema pallidum*. Syphilis can be transmitted during sexual intercourse and from an infected pregnant woman across the placenta to a developing baby (congenital syphilis).

Syphilis can result in serious neurological and cardiac problems. If a woman has syphilis during pregnancy, infection may lead to stillbirth, neonatal death, or disorders such as deafness, neurological impairment, and bone deformities. Syphilis can be effectively treated using antibiotics.

The resurgence of syphilis started in the late 1990s. In 2010, there were over 2,600 diagnoses in England. Syphilis is concentrated in major urban areas, particularly London, and among MSM aged 25 to 34, many of whom are co-infected with HIV. Outbreaks among heterosexuals, including reproductive age women, have developed alongside the larger MSM epidemic indicating an increased risk of congenital syphilis.

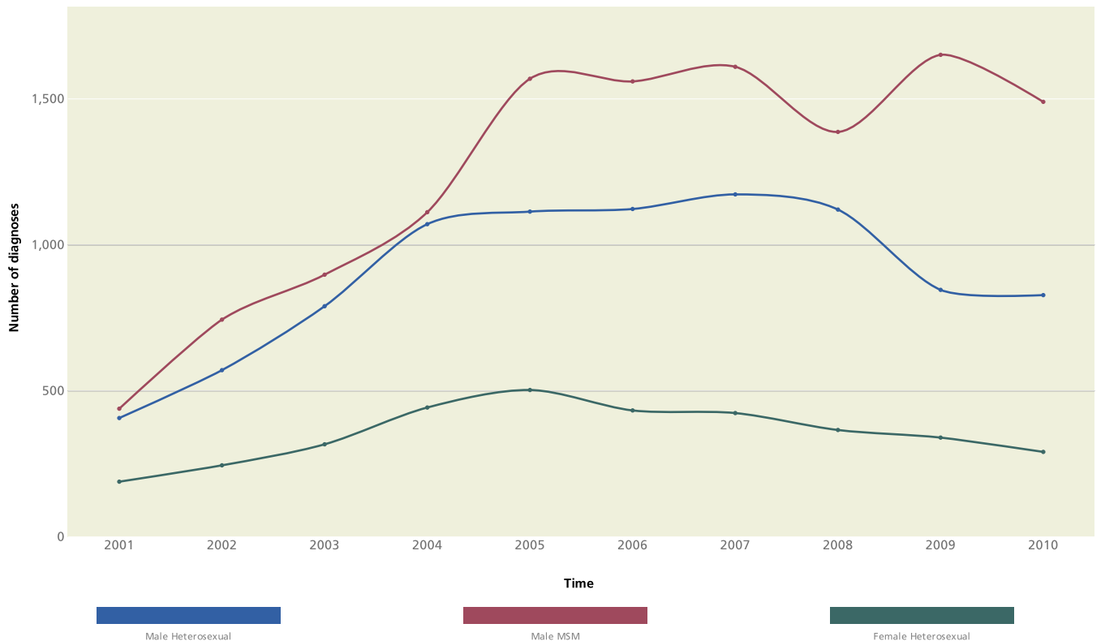
Effective control measures include general sexual health promotion including encouraging high risk individuals to have annual sexual health screens, providing easy access to sexual health services and effective partner notification, promotion of consistent condom use, and early awareness of symptoms to prompt early medical assessment.

Number of diagnoses of infectious syphilis made at genitourinary medicine clinics by age and sex in England, 2010



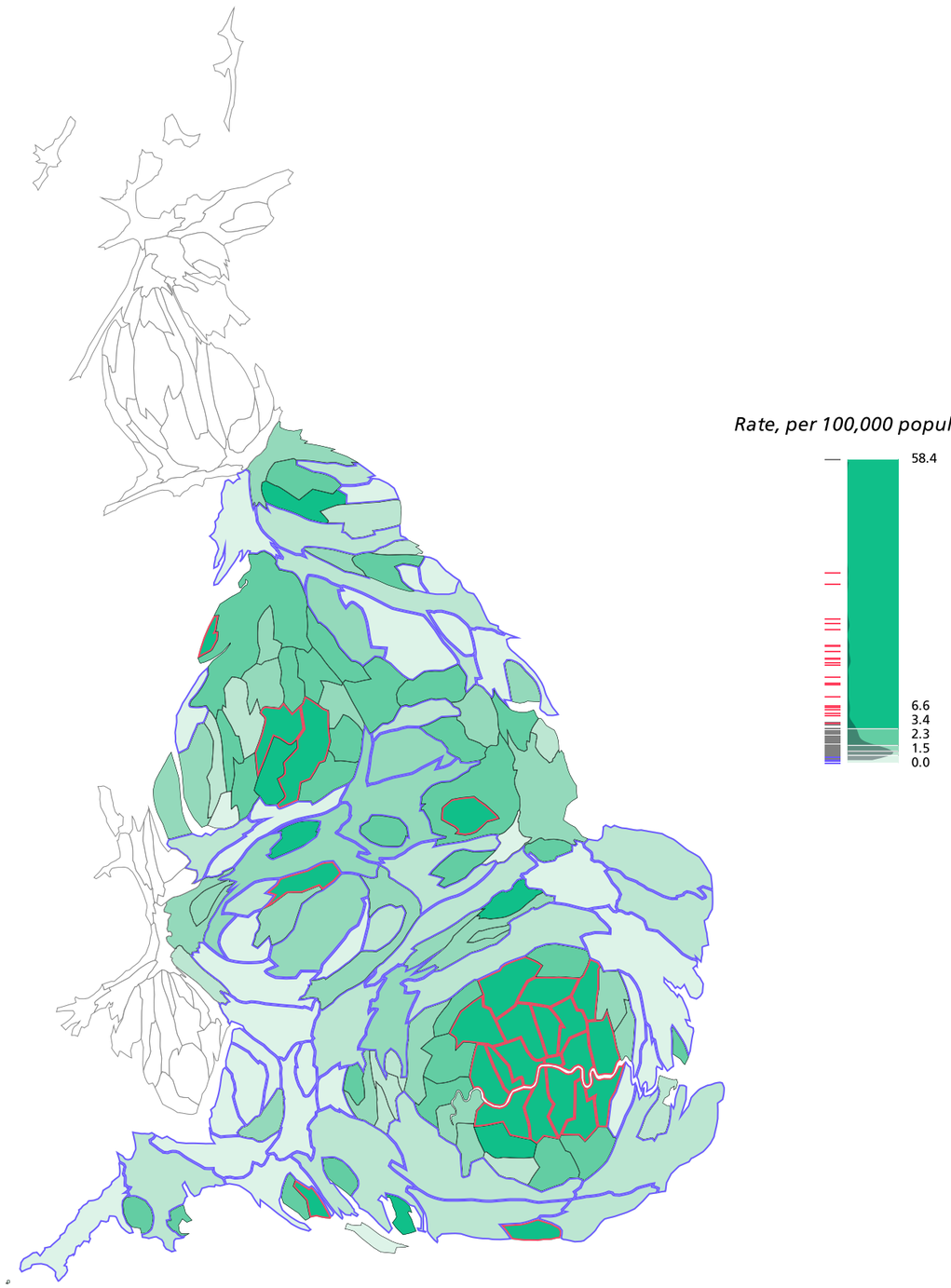
Source: Genito-Urinary medicine clinic activity dataset (GUMCAD), HPA.

Trend in the number of diagnoses of infectious syphilis made at genitourinary medicine clinics by sex and sexual orientation, England, 2001 to 2010



Source: Genito-Urinary medicine clinic activity dataset (GUMCAD), HPA.

Rate of diagnoses of infectious syphilis by upper tier local authority, England, 2010



Source: Genito-Urinary Medicine Clinic Activity Dataset (GUMCAD) returns, HPA. 2010 population estimates, ONS. (Analysis by HPA)

Genital herpes is a major viral cause of poor sexual health. It can be effectively treated by antiviral drugs, though can recur frequently post treatment. In rare cases, the virus can be transmitted from mother to newborn, resulting in serious infant morbidity or death.

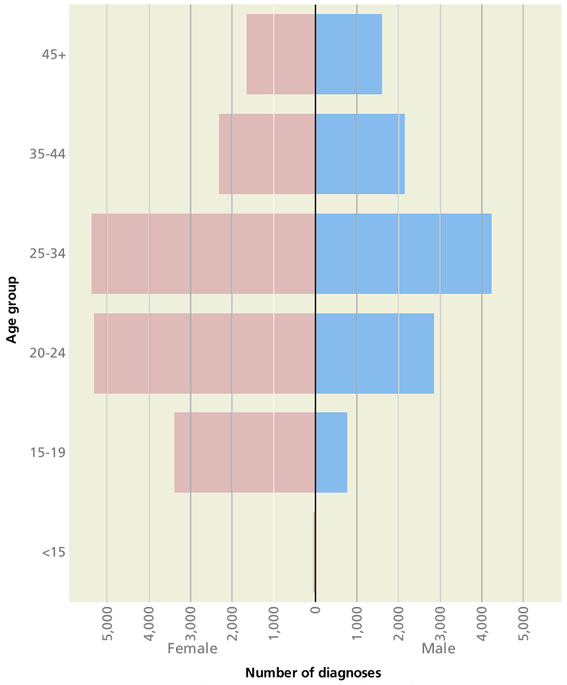
In 2010, the number of new diagnoses was almost 30,000 (60% in women). This is almost twice the number of new diagnoses in 2001. Most of this rise is due to considerable improvements in diagnostics but increased transmission may have contributed. The highest rates of diagnosis are found in young people, MSM and those living in urban areas.

Genital warts is the most commonly diagnosed sexually transmitted viral infection. It is caused by "low-risk" (referring to cancer causation) types of the human papillomavirus (HPV). It can be hard to treat and recurs frequently.

A marked increase in new diagnoses over the past decade, particularly in young adults, peaked in 2008 at over 78,000. This is probably due to increased transmission and better diagnostics. In 2008, a UK-wide HPV immunisation programme to prevent cervical cancer started, using a vaccine against "high-risk" HPV types. In 2012, a vaccine also protecting against two "low-risk" HPV types and genital warts will be introduced.

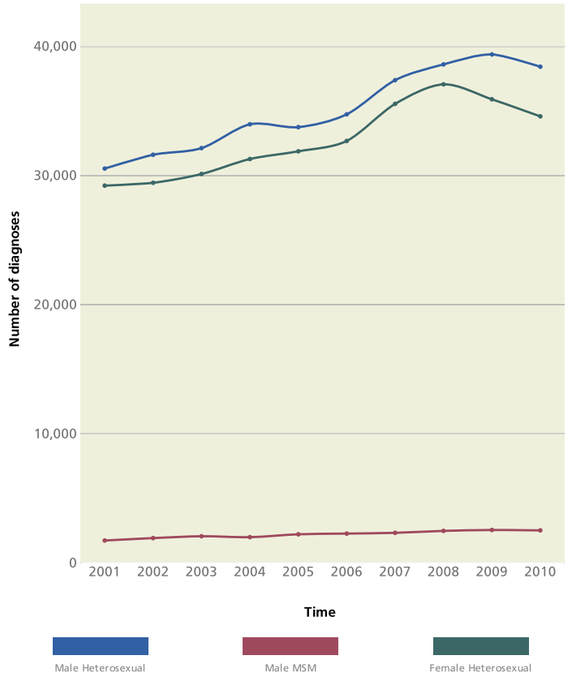
Ensuring high immunisation uptake among the eligible will help ensure a continued decline in HPV infection.

Number of diagnoses of genital herpes made at genitourinary medicine clinics by age and sex,England, 2010



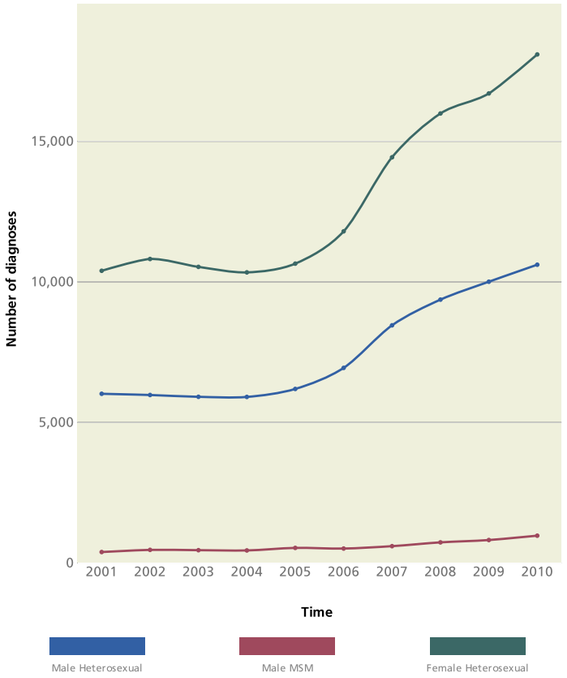
Source: Genito-Urinary Medicine Clinic Activity Dataset (GUMCAD), HPA.

Trend in number of diagnoses of genital warts made at genitourinary medicine clinics by sex and sexual orientation, England, 2001 to 2010



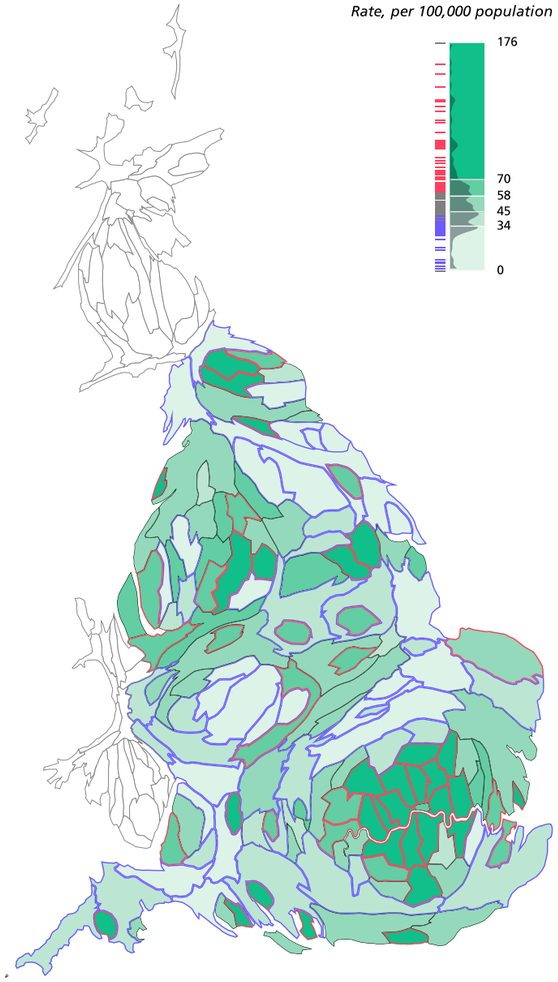
Source: Genito-Urinary Medicine Clinic Activity Dataset (GUMCAD), HPA.

Trend in number of diagnoses of genital herpes made at genitourinary medicine clinics by sex and sexual orientation in England, 2001 to 2010



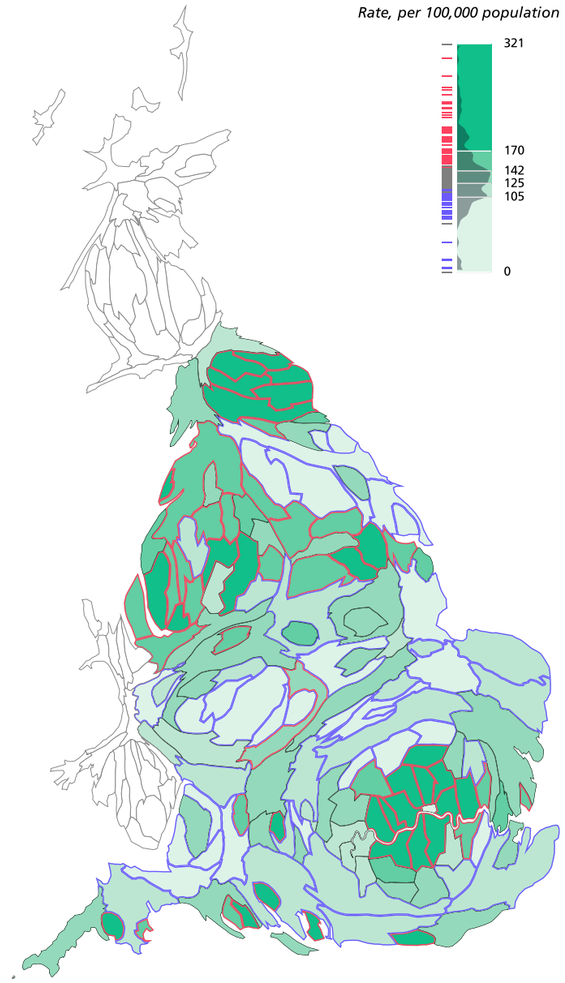
Source: Genito-Urinary Medicine Clinic Activity Dataset (GUMCAD), HPA.

Rate of new genital herpes diagnoses by upper tier local authority, England, 2010



Source: Genito-Urinary Medicine Clinic Activity Dataset (GUMCAD), HPA. 2010 population estimates, ONS. (Analysis by HPA)

Rate of first episode genital wart diagnoses by upper tier local authority, England, 2010



Source: Genito-Urinary Medicine Clinic Activity Dataset (GUMCAD), HPA. 2010 population estimates, ONS. (Analysis by HPA)

In 2010, an estimated 91,500 people were living with HIV in the UK. By the end of 2012 this is likely to rise to over 100,000.

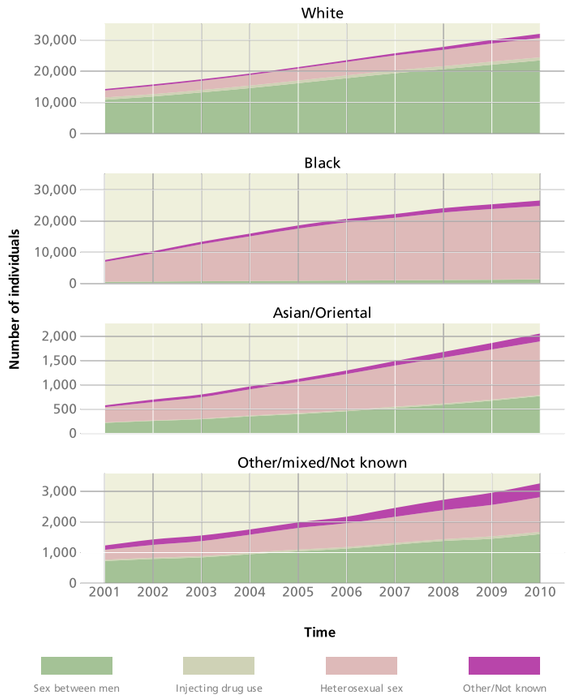
HIV treatment, introduced in the mid 1990s, transformed HIV from a fatal condition into a long term condition. People diagnosed at a late stage of progression of the infection have a ten times greater risk of death within one year than those diagnosed early. Early diagnosis also facilitates risk reduction and prompt treatment (if appropriate), which reduces infectivity.

In 2010, there were 5,900 new diagnoses, of which 50% were 'late' (CD4<350 cells/mm^3). Black-Africans/British black-Africans, particularly men, are at greater risk of late diagnosis (67% compared to 41% among white men). In 2010, the proportion of pregnant women testing positive was 0.17%[1], similar to the 2005 figure.

Effective control measures include those applicable to other bloodborne and sexually transmitted infections. Particularly important is reducing late diagnosis of HIV. Strategies to reduce late diagnosis include testing outside sexual health settings where the prevalence of diagnosed HIV infection is >2 per 1,000 population. Such strategies must also ensure clear pathways into HIV care following diagnosis.

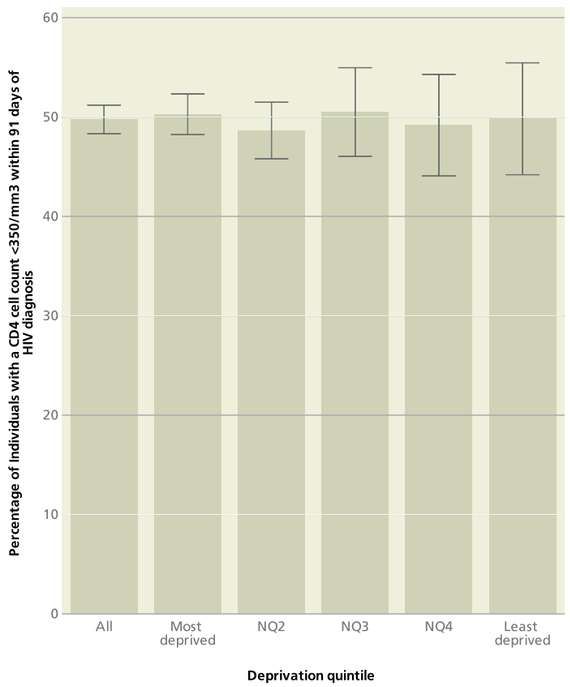
1 HPA. National Antenatal Infections Screening Monitoring (NAISM) 2005-2010.

Trend in number of individuals living with diagnosed HIV infection by risk factor and ethnicity, England, 2001 to 2010.



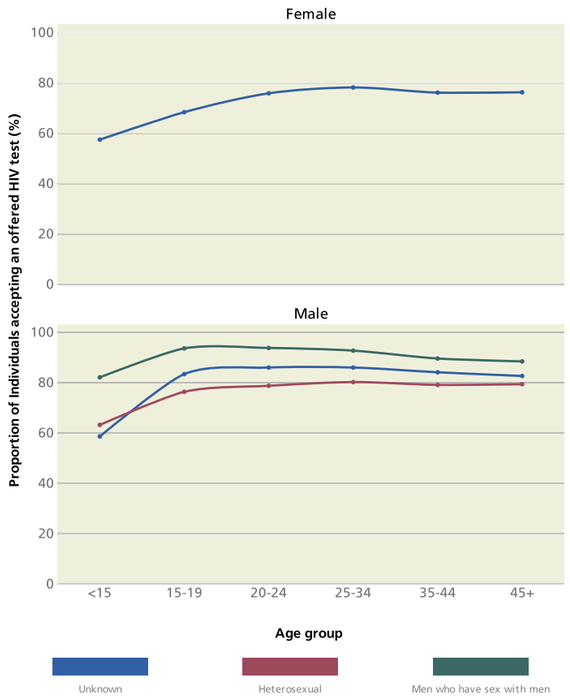
Source: HIV and AIDS Reporting System, HPA.

Proportion of late HIV diagnoses by deprivation quintile, England, 2010



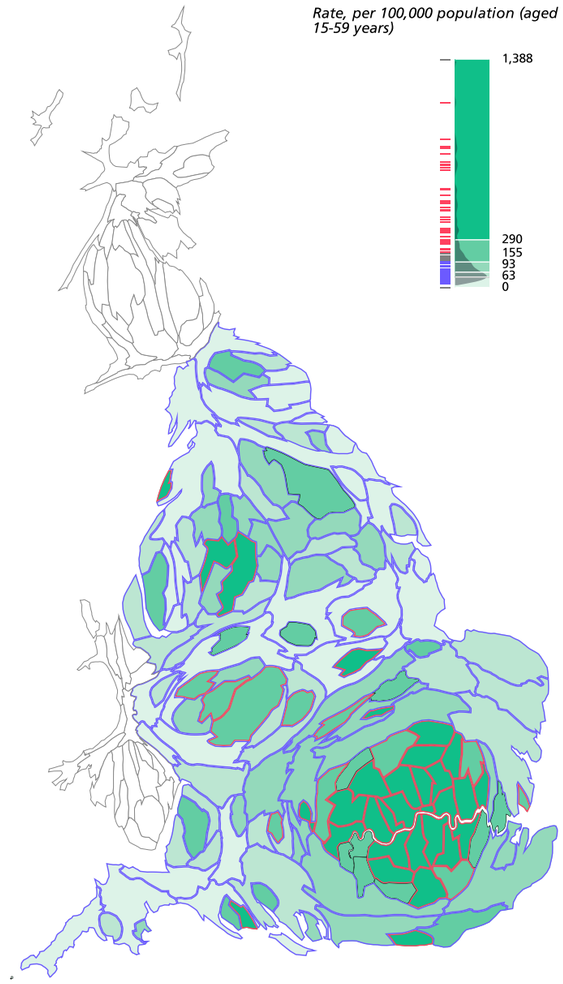
Source: HIV and AIDS Reporting System, HPA

HIV testing uptake by age, sex and sexual orientation, England, 2010



Source: Genito-Urinary Medicine Clinic Activity Dataset (GUMCAD), HPA. (Analysis by HPA)

Diagnosed HIV prevalence in persons aged 15 to 59 years by upper tier local authority, England, 2010

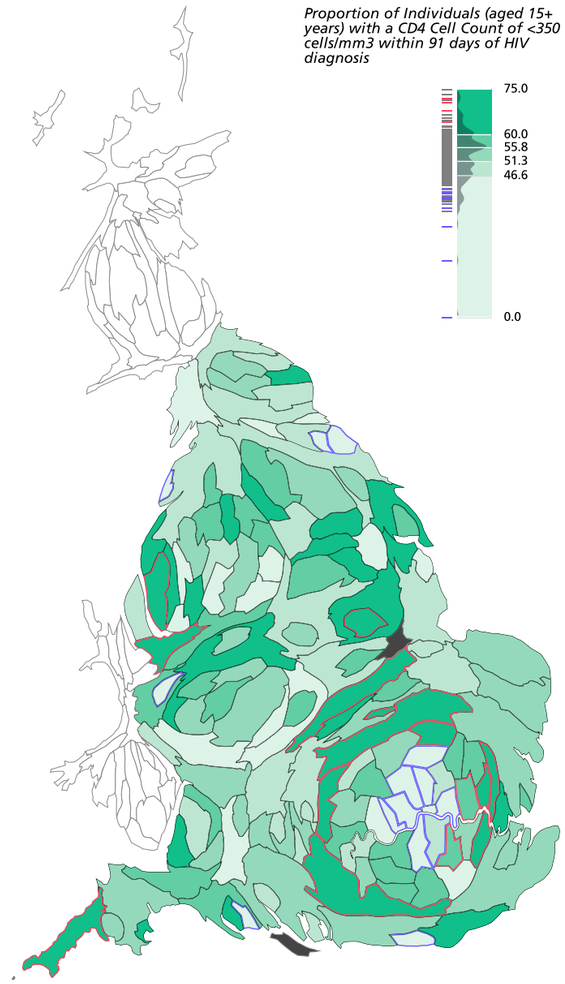


Source: Survey of Prevalent HIV Infections Diagnosed (SOPHID), HPA. 2010 population estimates, ONS. (Analysis by HPA)

Key facts

- Around 17,100 potential years of life lost (to age 75) in 2010 (<1% of all PYLL)
- Around 28,000 hospital bed days in 2010/11 (<1% of all bed days)
- Mortality data taken from the HIV and AIDS new diagnosis and death dataset, HPA, and includes all deaths of people diagnosed with HIV/AIDs. PYLL from primary cause ONS mortality statistics is around 6,500

Late HIV diagnosis rate in persons aged 15 years and over by upper tier local authority, England, 2008-10



Source: HIV and AIDS Reporting System, Survey of Prevalent HIV Infections Diagnosed (SOPHID), HPA. (Analysis by HPA)

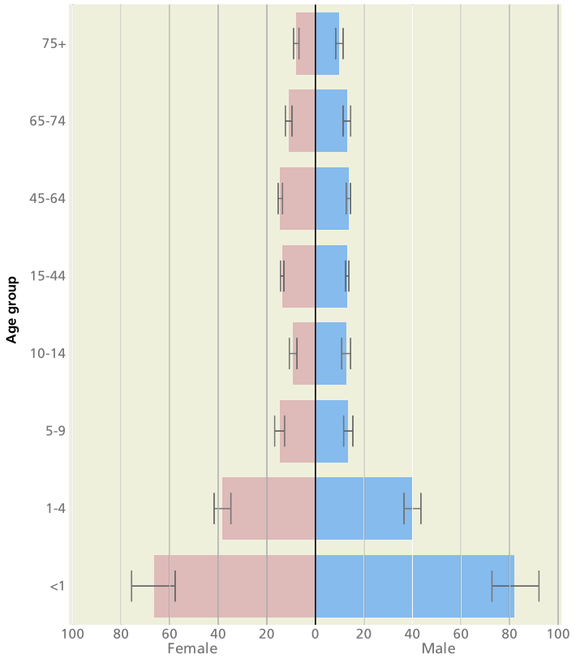
Salmonellosis is a common bacterial infection. Transmission is by contaminated food consumption or contact with infected animals or persons. It particularly affects the young, old and chronically ill, with mild to severe effects.

Diagnosis is most prevalent in the under ones and rates peak each summer, though this seasonal trend is now less pronounced. Salmonellosis notifications are decreasing, though geographic variability in rates remain.

Escherichia coli (E. coli) forms part of normal human gut bacteria but certain strains e.g. O157, often animal in origin, produce toxins that can cause severe infection. Complications include haemolytic uraemic syndrome and death. The peak age group for *E. coli* O157 infection is one to four years. Summer peaks occur, but vary yearly with no clear trend. Rates are highest in parts of the north, West Midlands and West Country.

Foodborne infection causes substantial morbidity in England, often unreported. Surveillance and outbreak investigation are key to identify outbreaks and their source. Effective preventative measures include promoting good hand hygiene; correct food storage, preparation and cooking; and prevention of contamination during food production, as well as ensuring open farms minimise risks due to animal contact.

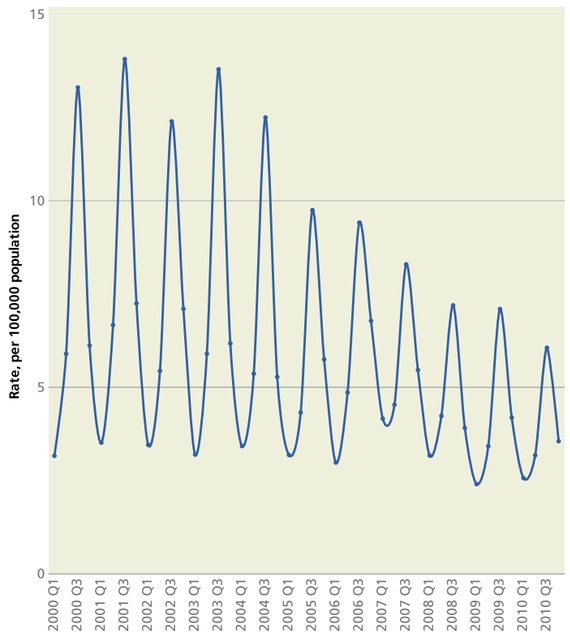
Rate of Salmonella diagnoses by age and sex, England, 2010



Age specific rate, per 100,000 population

Source: LabBase2 laboratory data, HPA. 2010 population estimates, ONS. (Analysis by HPA)

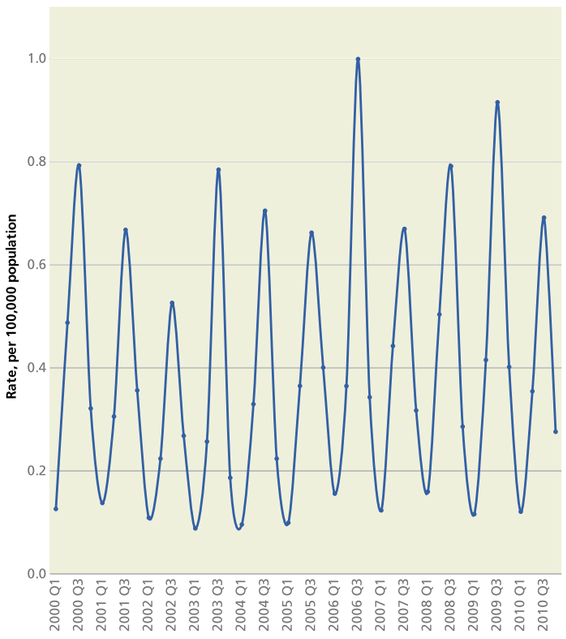
Trend in the rate of Salmonella diagnoses, England, 2000 to 2010



Time (calendar year-quarter)

Source: LabBase2 laboratory data, HPA. 2000 to 2010 population estimates, ONS. (Analysis by HPA)

Trend in the rate of Verocytotoxigenic E. coli O157 diagnoses, England, 2000 to 2010



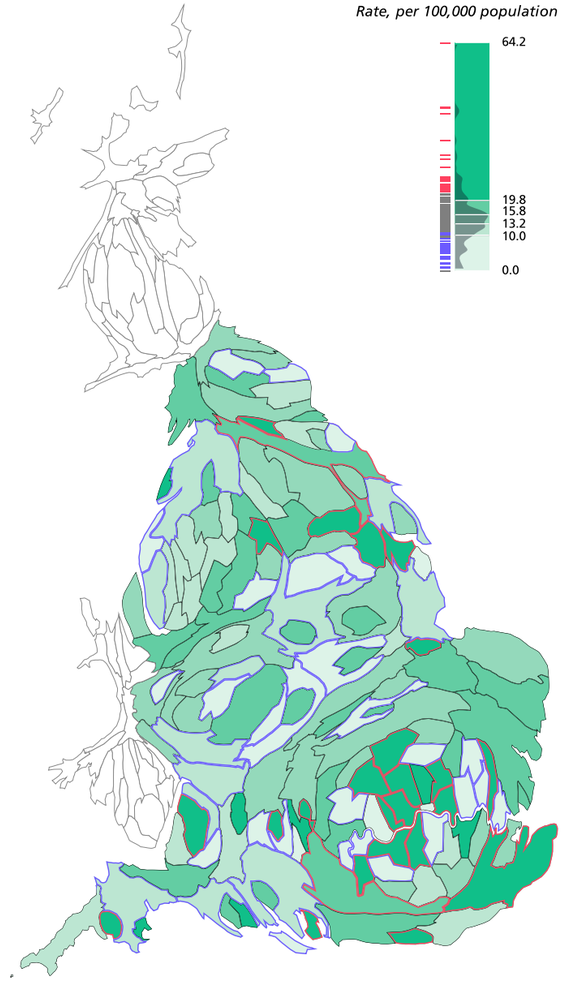
Time (calendar year - quarter)

Source: National Enhanced Surveillance System for VTEC, HPA. 2000 to 2010 population estimates, ONS. (Analysis by HPA)

Key facts

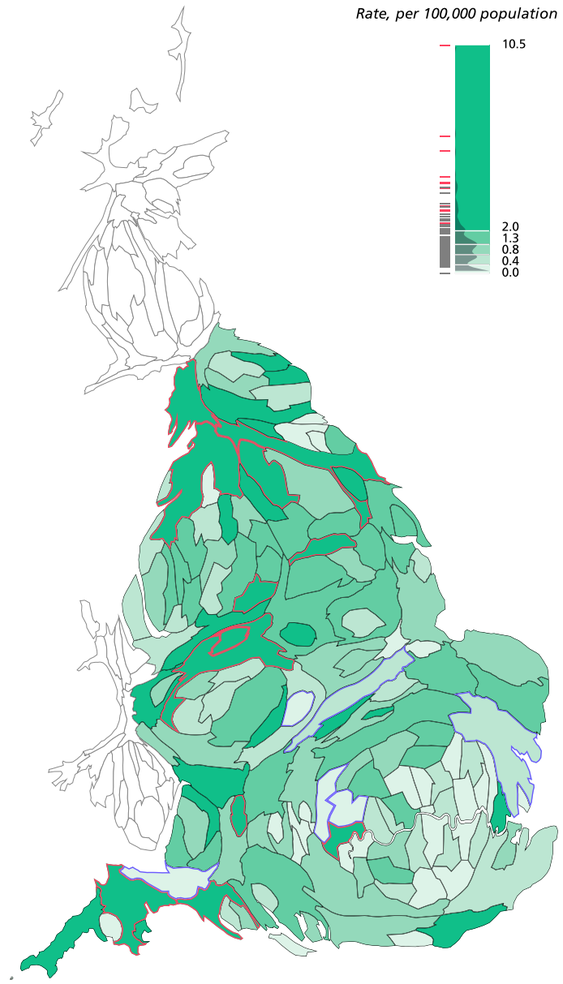
- Fewer than 300 potential years of life lost (to age 75) in 2010 (<1% of all PYLL)
- Around 5,000 hospital bed days in 2010/11 (<1% of all bed days)

Rate of Salmonella diagnoses by upper tier local authority, England, 2010



Source: LabBase2 laboratory data, HPA. 2010 population estimates, ONS. (Analysis by HPA)

Rate of Verocytotoxigenic E. coli O157 diagnoses by upper tier local authority, England, 2010



Source: National Enhanced Surveillance System for VTEC, HPA. 2010 population estimates, ONS. (Analysis by HPA)

Campylobacter is the most common foodborne infection. It is often associated with contaminated poultry meat (in particular undercooked chicken livers). *Campylobacter* may cause severe illness.

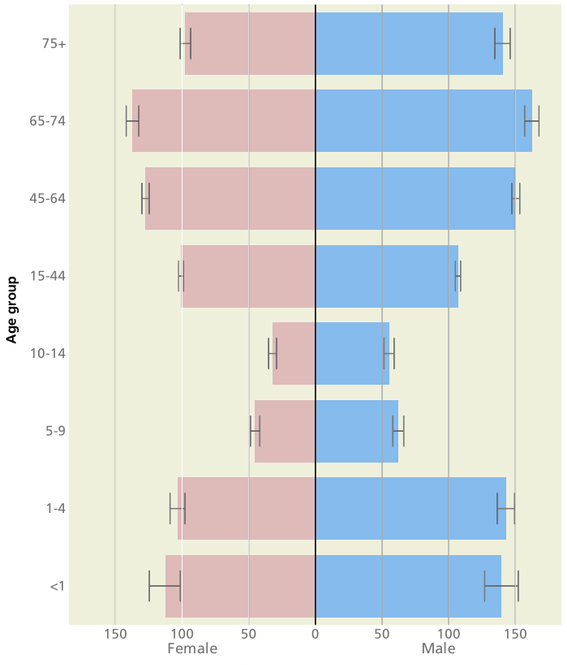
Rates of *Campylobacter* infection are higher in males at all ages, peaking in both sexes in the under fives and at 65-74 years of age. *Campylobacter* infections show marked seasonality, with late spring peaks. The overall trend in *Campylobacter* fell until 2005 and has risen thereafter, with the highest rates of infection in the North East, parts of the West Midlands and the South.

Cryptosporidium is an intestinal parasite that can cause severe diarrhoea, particular in the immunosuppressed. It may be acquired from contact with infected animals or humans, contaminated food, or contaminated water (including water in swimming pools).

Cryptosporidium infection rates peak at one to four years of age, falling to comparatively low levels in later life. *Cryptosporidium* infection rates show seasonality with variable summer or autumn peaks. The highest rates are observed in the North, West Country and West Midlands.

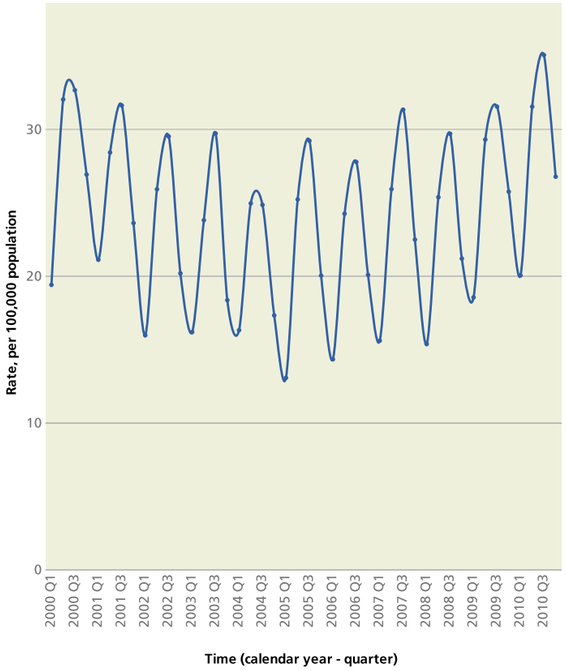
To reduce *Campylobacter* rates, the poultry industry should continue efforts to reduce contamination of poultry, alongside wider action around appropriate food handling, preparation and manufacture.

Rate of Campylobacter diagnoses, by age and sex, England, 2010



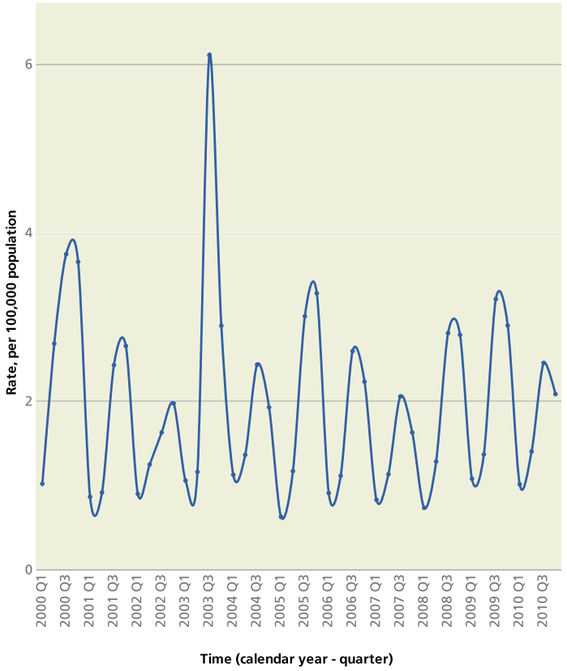
Source: LabBase2 laboratory data, HPA. 2010 population estimates, ONS. (Analysis by HPA)

Trend in rate of Campylobacter diagnoses, England, 2000 to 2010



Source: LabBase2 laboratory data, HPA. 2000 to 2010 population estimates, ONS. (Analysis by HPA)

Trend in rate of Cryptosporidium diagnoses by quarter, England, 2000 to 2010

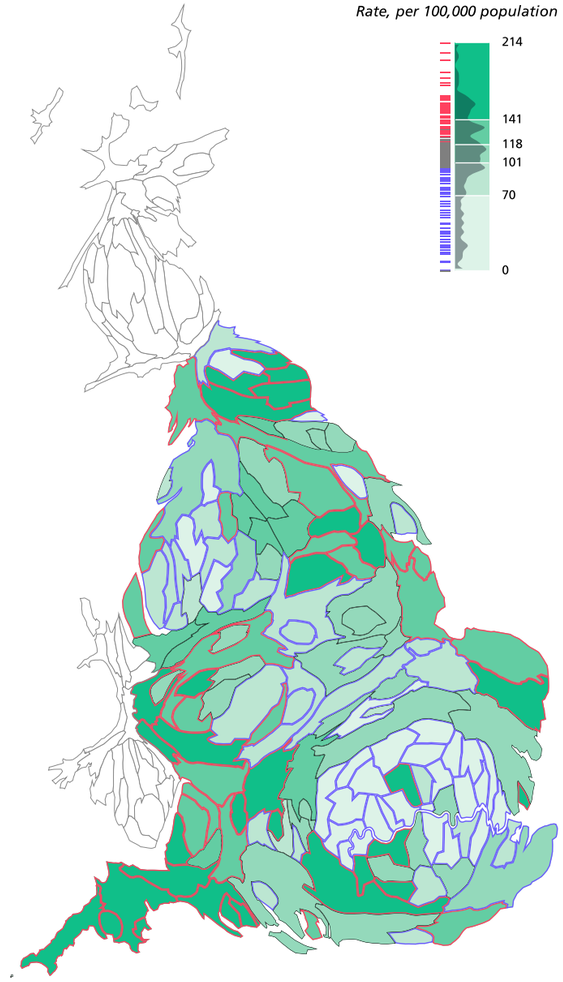


Source: LabBase2 laboratory data, HPA. 2000 to 2010 population estimates, ONS. (Analysis by HPA)

Key facts

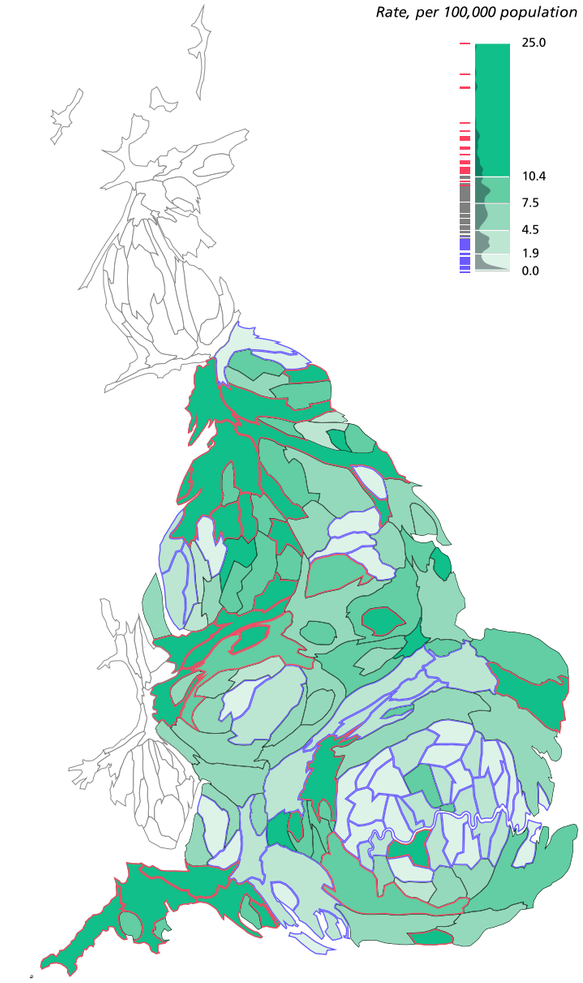
- Less than 300 potential years of life lost (to age 75) in 2010 (<1% of all PYLL)
- Around 33,000 hospital bed days in 2010/11 (<1% of all bed days)

Rate of Campylobacter diagnoses by upper tier local authority, England, 2010



Source: LabBase2 laboratory data, HPA. 2010 population estimates, ONS. (Analysis by HPA)

Rate of Cryptosporidium diagnoses by upper tier local authority, England, 2010



Source: LabBase2 laboratory data, HPA. 2010 population estimates, ONS. (Analysis by HPA)

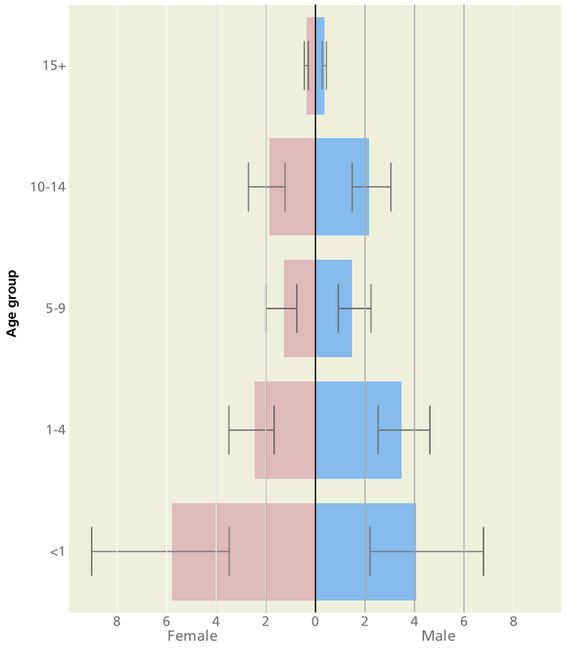
Low vaccine coverage in some populations has led to large outbreaks of measles in recent years. Measles is a highly infectious viral illness, typically causing a rash. It can result in serious complications such as pneumonia or neurological problems, particularly in those with impaired immune systems.

The measles vaccine was introduced in 1968, but was replaced by the MMR vaccine in 1988, which protects against measles, mumps and rubella. The two dose schedule of MMR vaccine was then introduced in 1996 as part of the routine vaccination schedule.

The highest rates of measles are seen in the under one age group, with a smaller second peak in the 10-14 age group. An increase in the number of confirmed cases is seen every few years, with large increases occurring since 2006. These increases have occurred across all child age groups. Quarter 3 of 2010 saw the most recent upsurge, and the highest regional rates of measles notifications in 2010 were in the South East.

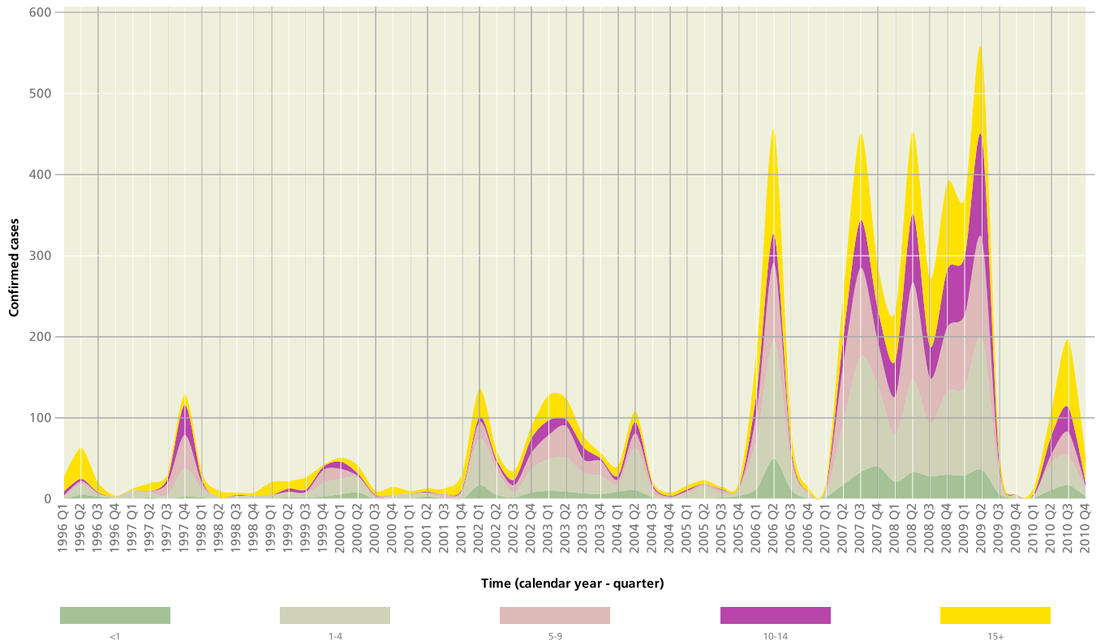
As outbreaks generally occur in populations with low vaccination coverage, efforts need to continue to try to improve vaccination coverage in these 'at risk' populations. Opportunities must also be taken by health professionals to encourage completion of the MMR course in older children and adults.

Confirmed cases of measles, rates by age and sex, England, 2010



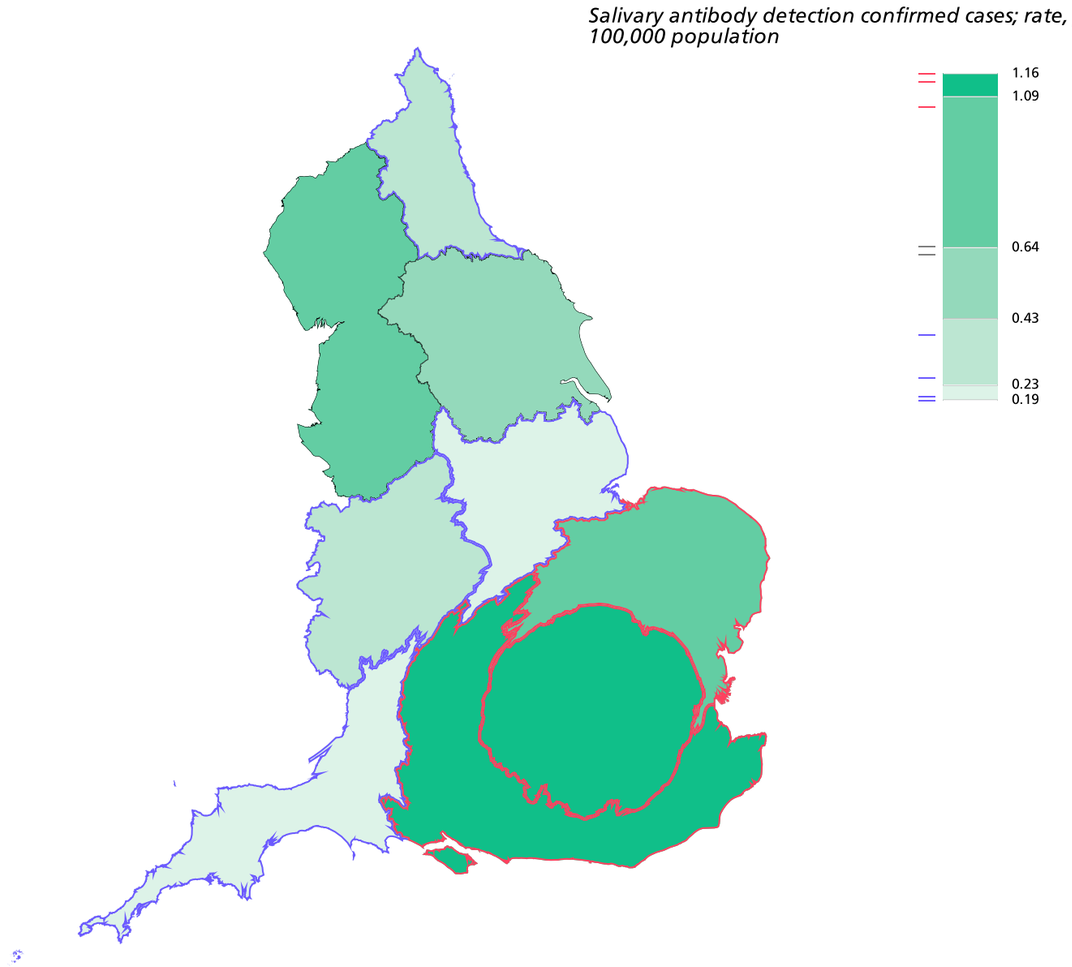
Source: Centre for Infections laboratory data, HPA. 2010 population estimates, ONS. (Analysis by HPA)

Trend in confirmed cases of measles by age, England, 1996 to 2010



Source: Centre for Infections laboratory data, HPA.

Rate of confirmed measles cases by region, England, 2010



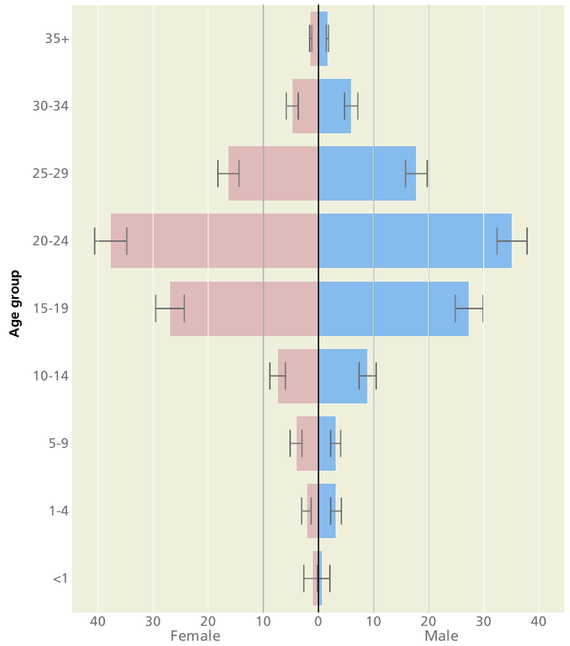
Source: Centre for Infections laboratory data, HPA. 2010 population estimates, ONS. (Analysis by HPA)

Mumps is a viral illness typically causing swelling of salivary glands. It can result in complications including meningitis and infertility. The MMR vaccine, which protects against mumps, has been part of the routine childhood vaccination schedule since 1988. Cases in adults largely occur in those born before the two dose MMR schedule became routine in 1996. In recent years, cases of mumps have been seen in those age groups not routinely vaccinated in childhood, leading to large outbreaks in universities and other similar settings.

Rates of mumps are highest in adolescents and young adults. There were large peaks in the number of confirmed cases in 2004-06 and in 2009, mostly in adolescents and young adults, falling back during 2010. The highest rates of confirmed cases of mumps in 2010 were in London and the northern regions.

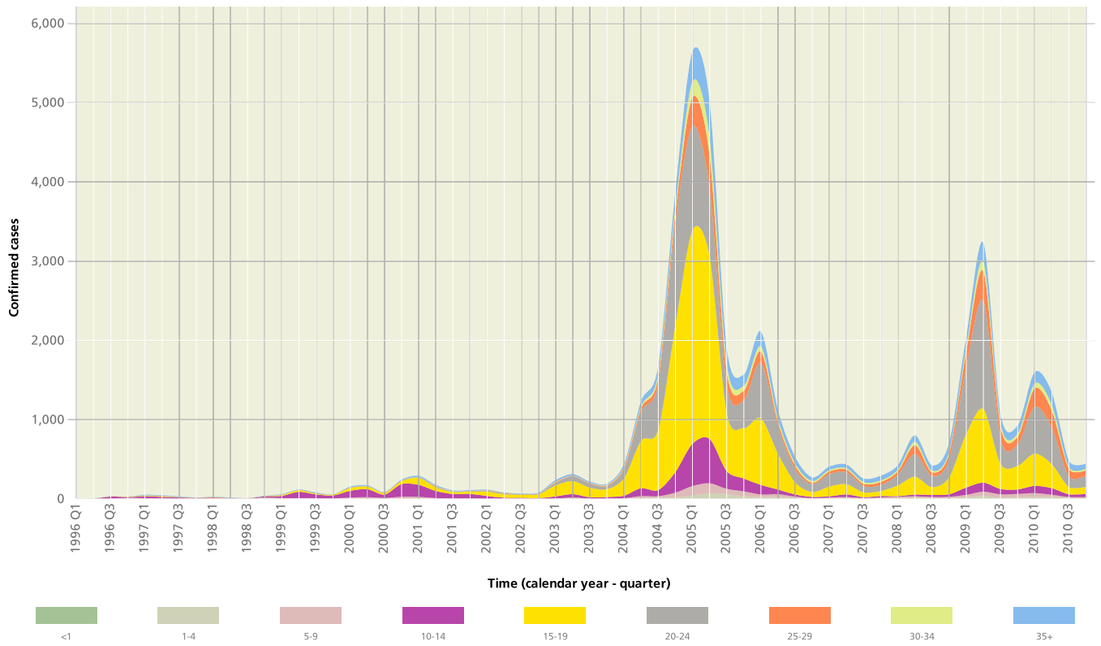
As with measles, opportunities must be taken to complete the MMR course in older children and adults.

Confirmed cases of mumps, rates by age and sex, England, 2010



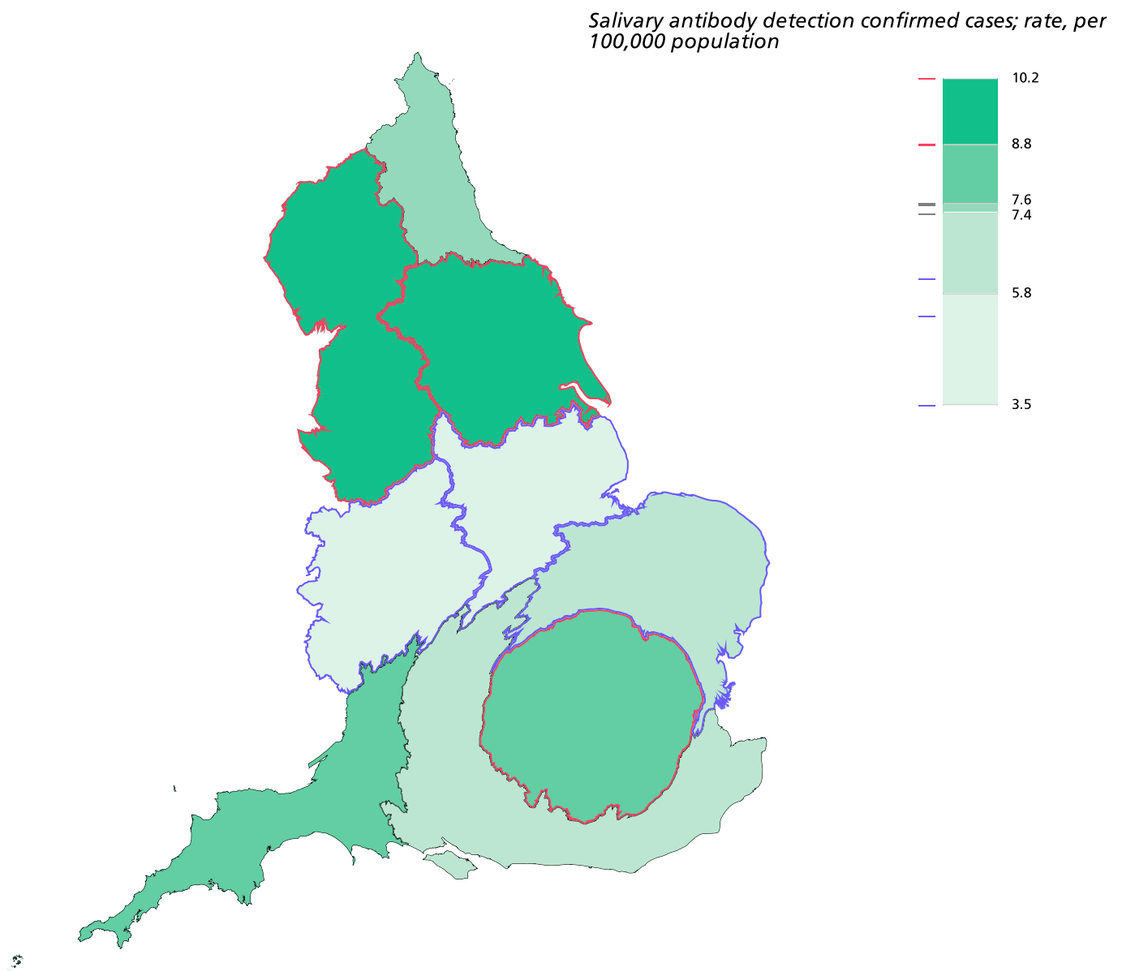
Source: Centre for infections, laboratory data HPA, 2010 population estimates, ONS. (Analysis by HPA)

Trend in confirmed cases of mumps by age, England, 1996 to 2010



Source: Centre for Infections laboratory data, HPA

Rate of confirmed mumps cases by region, England, 2010



Source: Centre for Infections laboratory data, HPA. 2010 population estimates, ONS. (Analysis by HPA)

Meningitis is a condition of infection and inflammation of the lining (meninges) of the brain, which is potentially most serious when caused by bacteria such as *Neisseria meningitidis* (meningococcal infection) or *Streptococcus pneumoniae* (pneumococcal infection). Meningitis can kill or cause lasting disability.

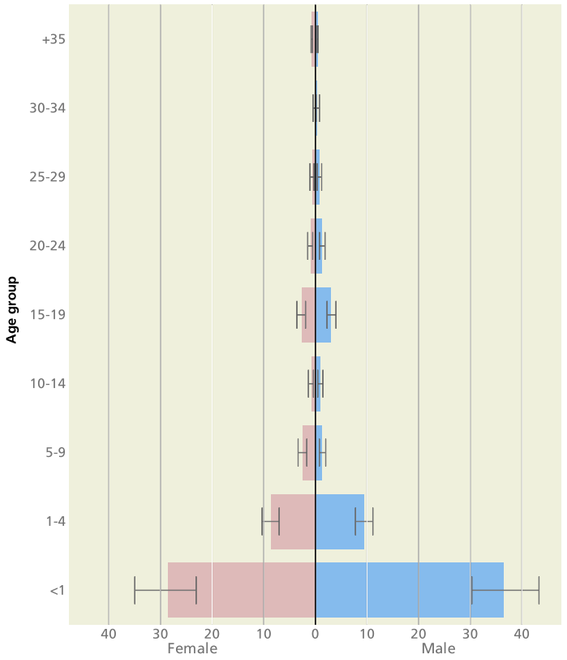
The highest rates of meningococcal infection are seen in the under fives, with a smaller secondary peak at 15-19 years. In 2010, the highest rate was in the North West and the lowest in the South East. Overall rates are falling.

There has been a substantial reduction in the proportion of meningococcal infection due to serogroup C following the addition of the serogroup C conjugate vaccine to routine UK childhood vaccination in 1999/2000. Most cases are now serogroup B, for which no vaccine is available.

Pneumococcal meningitis infection rates have decreased since the addition of the pneumococcal conjugate vaccine to the routine childhood schedule in 2006.

An effective new vaccine against serogroup B meningococcal infection would have a substantial impact on morbidity and mortality from meningitis. As prompt antibiotic treatment of cases reduces the risk of death or disability, improving the public awareness of the symptoms of meningitis will help to achieve this.

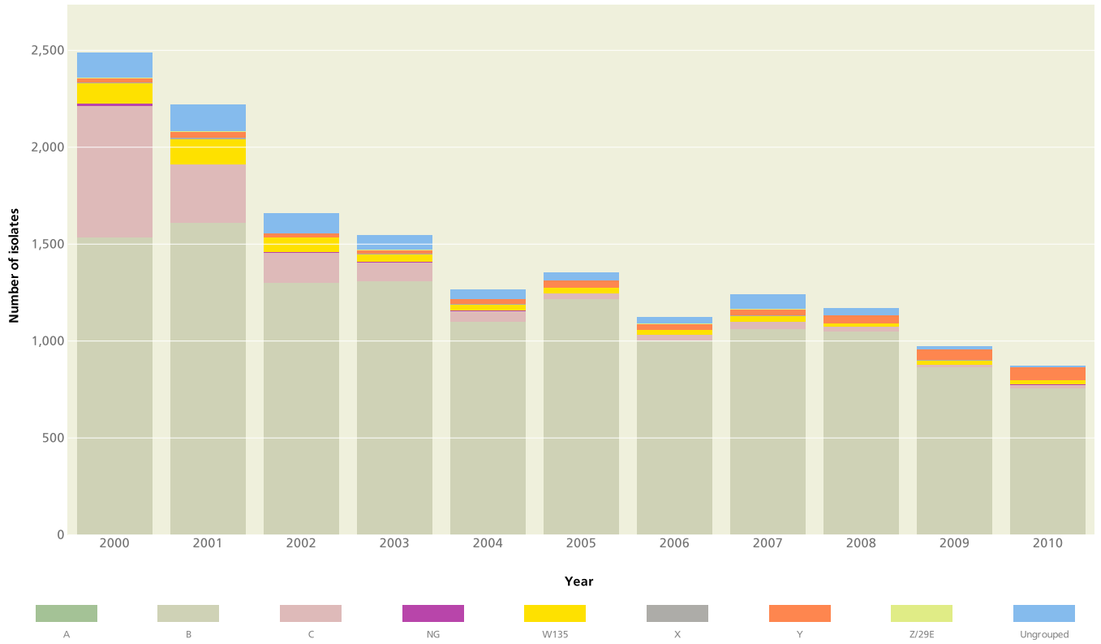
Meningococcal Reference Unit isolates of Neisseria meningitidis rates by age and sex, England, 2010



Age specific rate, per 100,000 population

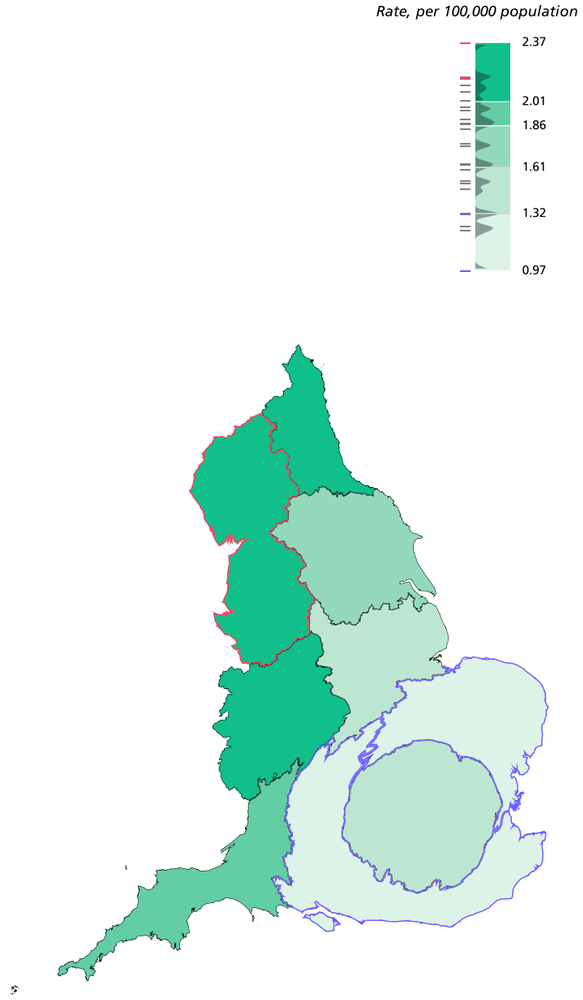
Source: Meningococcal Reference Unit, HPA. 2010 population estimates, ONS. (Analysis by HPA)

Trend in the number of isolates of Neisseria meningitidis by serogroup, England, 2000 to 2010.



Source: Meningococcal Reference Unit, HPA.

Meningococcal Reference Unit isolates of Neisseria meningitidis rates by region, England, 2010

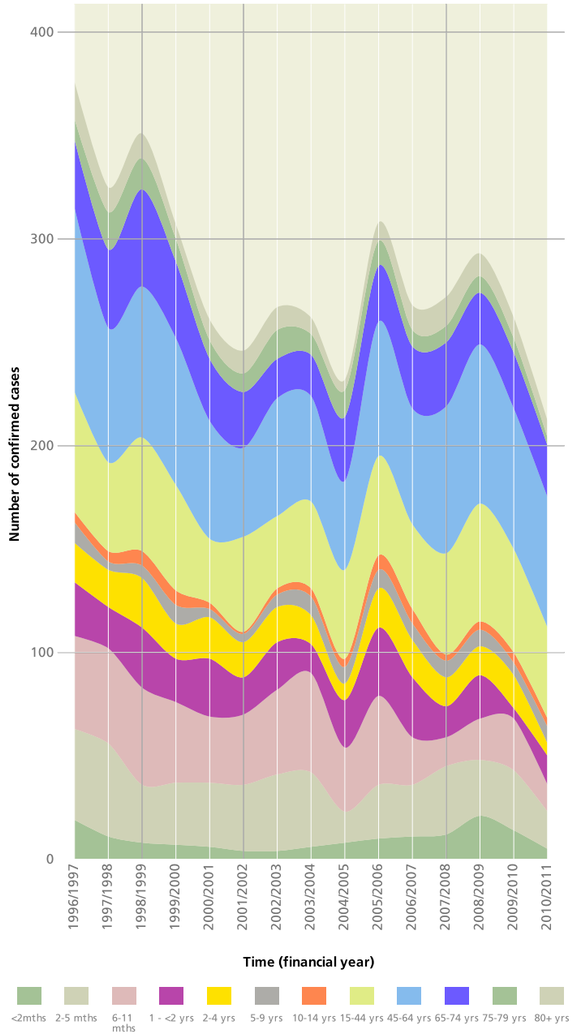


Source: Meningococcal Reference Unit, HPA. 2010 population estimates, ONS. (Analysis by HPA)

Key facts

- Around 5,400 potential years of life lost (to age 75) in 2010 (<1% of all PYLL)
- Around 33,000 hospital bed days in 2010/11 (<1% of all bed days)

Trend in laboratory confirmed cases of pneumococcal meningitis by age group, England, 1996/1997 to 2010/2011



Source: Centre for Infections laboratory data, HPA.

Hepatitis B is a bloodborne infection which can cause chronic, often asymptomatic, liver disease, especially if acquired at birth.

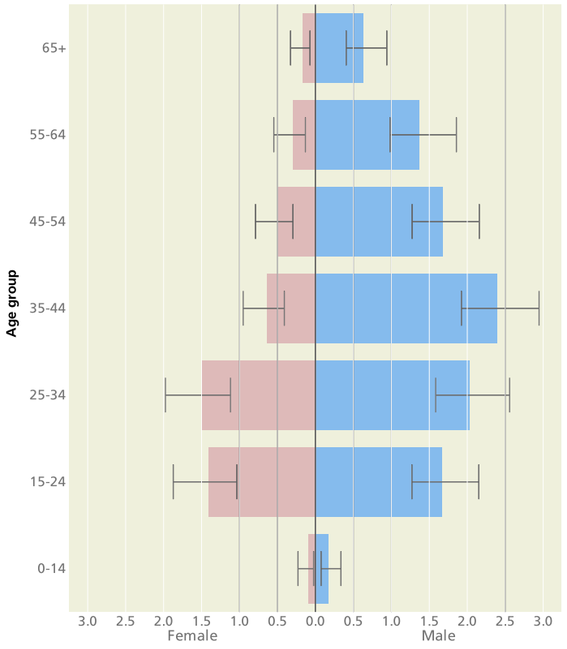
Transmission is through contact with infected blood or other body fluids e.g. needle sharing, sexual contact, or mother to child (perinatal) transmission. Although relatively uncommon in the population in England, prevalence is higher for residents born in Asia and Africa.

Annual laboratory reports of acute hepatitis B decreased from 729 in 2000 to 512 in 2010. This decrease was accompanied by a decline in injecting drug use as the main reported risk factor by cases from 46% (214) to 2% (10). However, the proportion of cases reporting heterosexual sex as their main risk factor has increased from 24% (113) to 55% (132) over the same period.

Infection rates are twice as high in males and greatest in those aged 35-44 years. The infection rate in London is significantly higher than any other region.

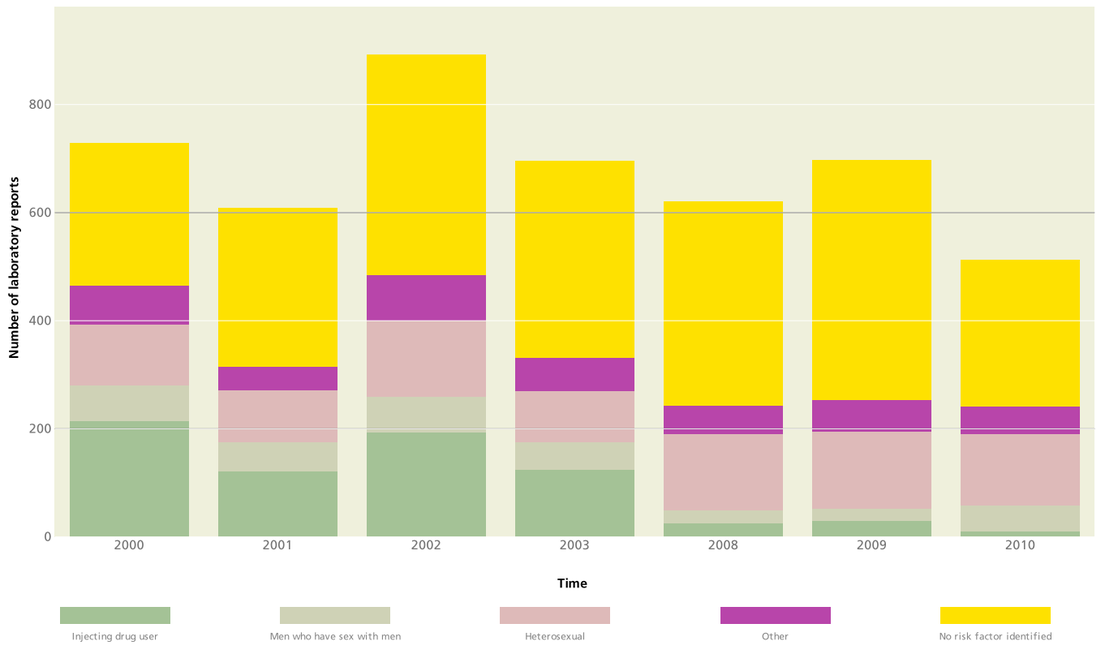
To continue to reduce infection, hepatitis B immunisation is recommended for 'at risk' groups including injecting drug users and family contacts of hepatitis B cases. Reducing injecting drug use, provide safe injecting services and ensuring babies born to hepatitis B positive mothers are fully immunised are also important.

Acute hepatitis B laboratory report rate, by age and sex, England, 2010.



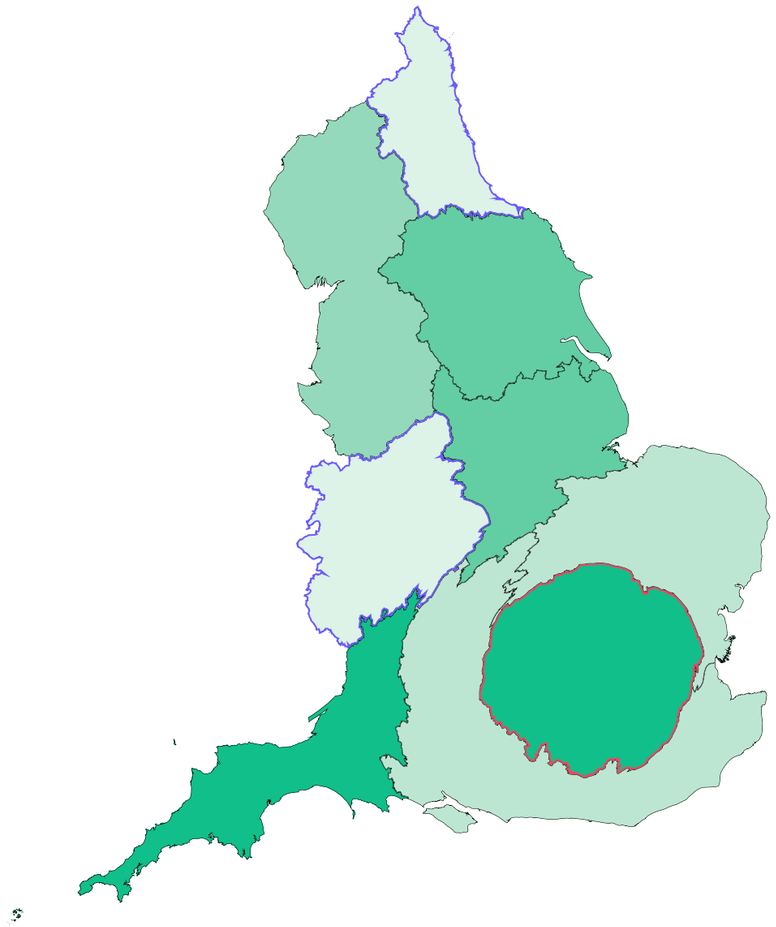
Source: Centre for Infections laboratory data, HPA. 2010 population estimates, ONS. (Analysis by HPA)

Trend in laboratory reports of acute hepatitis B by risk factors, England, 2000 to 2010



Source: Centre for Infections laboratory data, HPA. Note data not avaliable for 2004 to 2007

Acute hepatitis B laboratory report rate by region, England, 2010



Source: Centre for Infections laboratory data, HPA. 2010 population estimates, ONS. (Analysis by HPA)

Key facts

- Hepatitis B and C - Around 3,600 potential years of life lost (to age 75) in 2010 (<1% of all PYLL)
- Hepatitis B and C - Around 6,000 hospital bed days in 2010/11 (<1% of all bed days)
- Main cause - PYLL: Hepatitis C (78%)
- Hospital bed days: split equally between Hepatitis B and Hepatitis C (50% each)

Hepatitis C is a bloodborne viral infection which leads to long term infection in about 75% of those who get infected. Hepatitis C can often be asymptomatic, as symptoms may not appear until the liver is severely damaged.

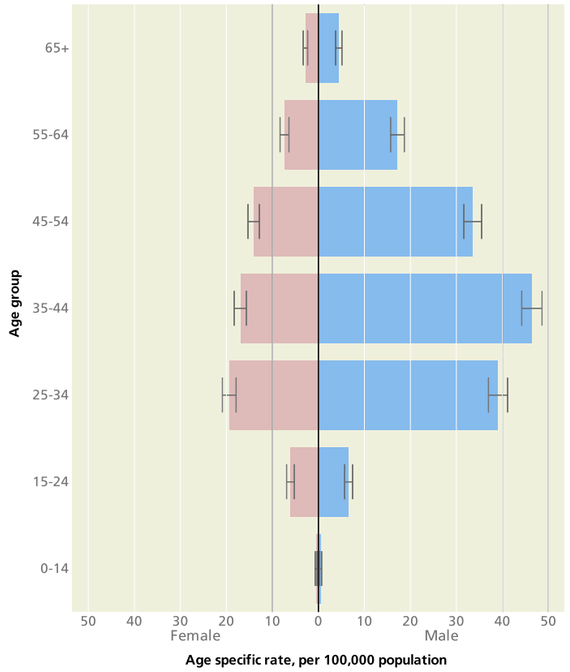
The virus is transmitted when blood from an infected person enters the bloodstream of another. Most cases occur through use of contaminated needles in a healthcare setting or contaminated drug use equipment. Alcohol consumption, older age at acquisition and being male are associated with more advanced disease. There is no vaccine against hepatitis C. Antiviral treatments are available that successfully clear the virus in many patients.

Laboratory reported notifications have risen since 2000 (4,500), peaking in 2009 (8,633). In 2010, similar to 2000, where a risk factor was reported, 93% of notifications identified injecting drug use as the main risk factor.

The male rate of diagnosis is double that of females. The highest rate of diagnosis in males is in those aged 35-44 and in females in those aged 25-34.

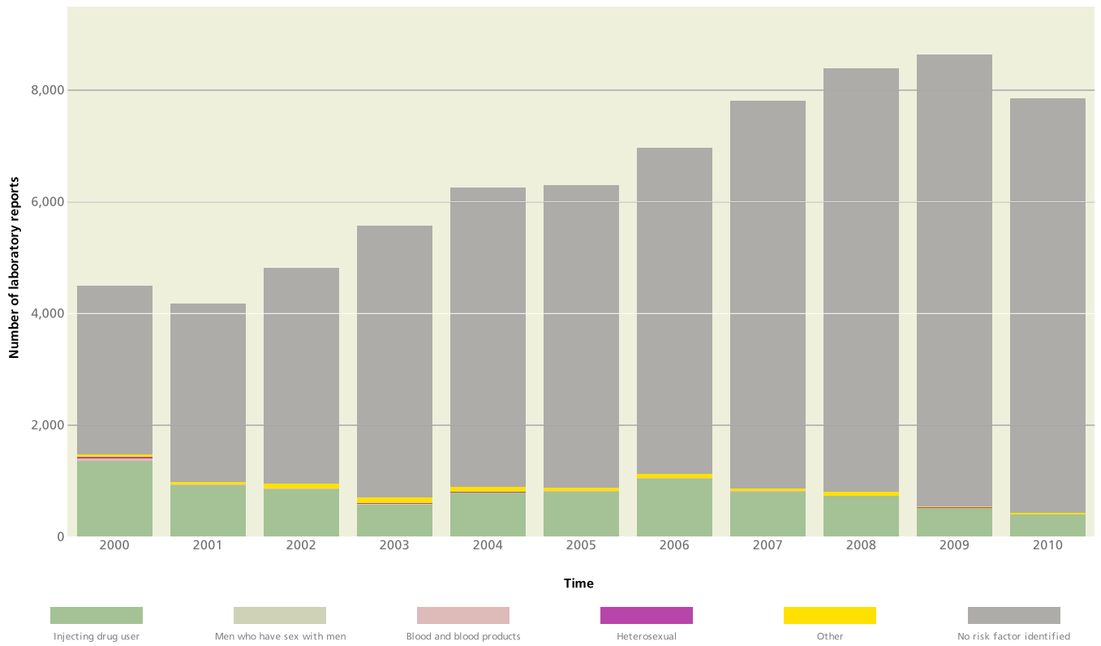
It is important that we continue to reduce injecting drug use and provide safe injecting services; increase awareness of infection in those at risk, including health professionals, and improve access to treatment for those with chronic infection.

Hepatitis C laboratory report rate, by age and sex, England, 2010.



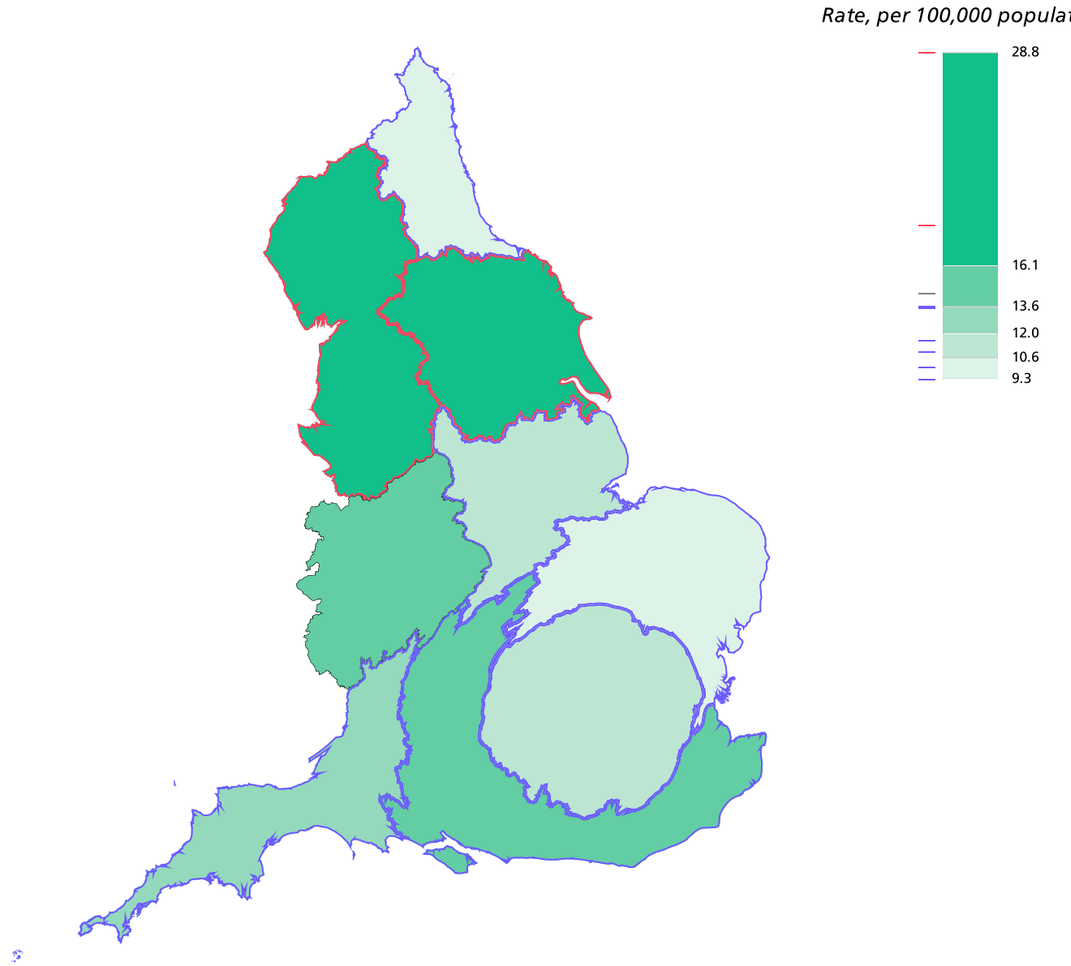
Source: Centre for Infections laboratory data, HPA. 2010 population estimates, ONS. (Analysis by HPA)

Trend in laboratory reports of hepatitis C by risk factor, England, 2000 to 2010.



Source: Centre for Infections laboratory data, HPA.

Hepatitis C laboratory report rate by region, England, 2010



Source: Centre for Infections laboratory data, HPA. 2010 population estimates, ONS. (Analysis by HPA)

Imported infections: malaria, typhoid, etc.

UK residents who travel abroad, and tourists and migrants to the UK, are at increased risk for certain, often avoidable, infections. Most UK international travel is to European destinations but there is increasing travel between the UK and countries where there is a greater risk of infection.

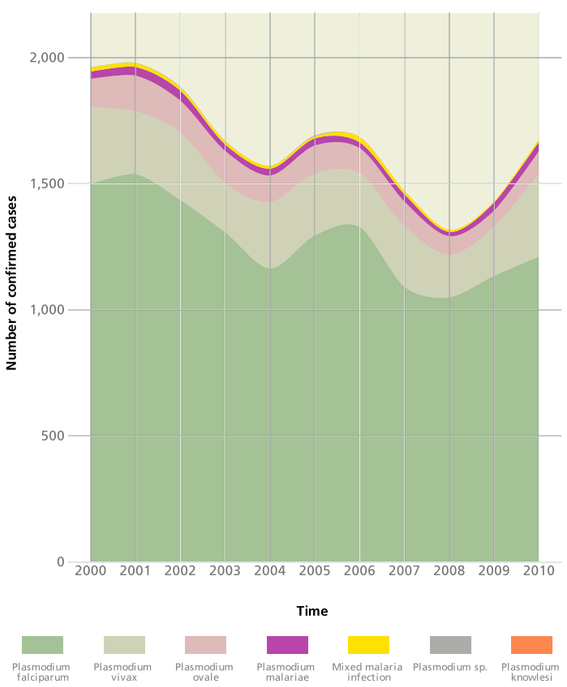
The most common travel related infections are gastrointestinal infections (GI), particularly salmonellosis, which may be acquired from contaminated food or water. There is an increased risk in countries where sanitation and safety of water supplies are suboptimal.

Malaria poses a serious risk to travellers to endemic countries (particularly falciparum in Africa, and vivax in Asia, which account for an increasing proportion of imported cases). Although the global incidence is falling, malaria cases in the UK have risen in recent years.

Cases of typhoid and paratyphoid infections are increasing and are mostly related to travel, particularly to the Indian subcontinent. There is a wide variety of other possible imported infections, but most are rare.

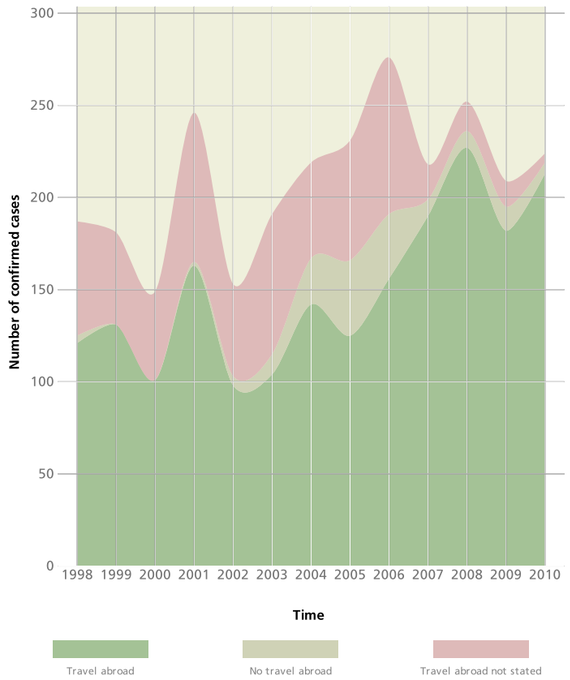
All travellers, even those who have lived abroad and are returning to visit, should continue to seek advice regarding vaccinations (e.g. rabies), malaria prevention, personal hygiene and other precautionary measures, well in advance of travelling.

Trend in number of laboratory confirmed malaria cases by type of malaria, England, 2000 to 2010



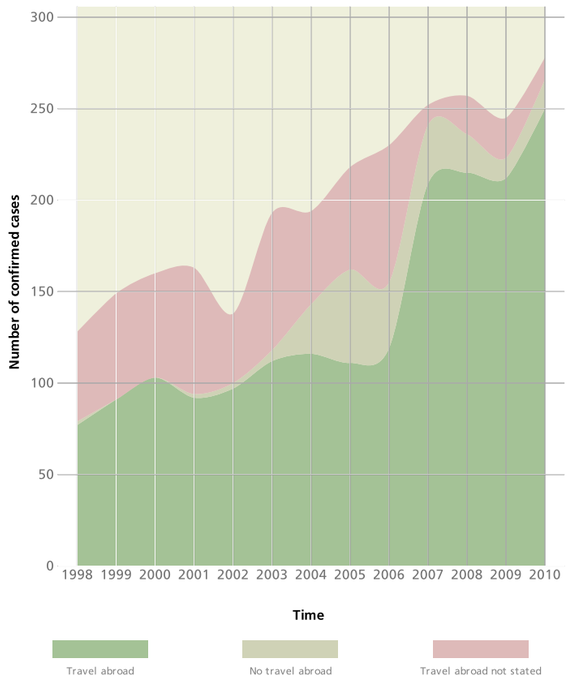
Source: Malaria reference laboratory, HPA.

Trend in number of laboratory confirmed paratyphoid cases by linked travel history, England, 1998 to 2010



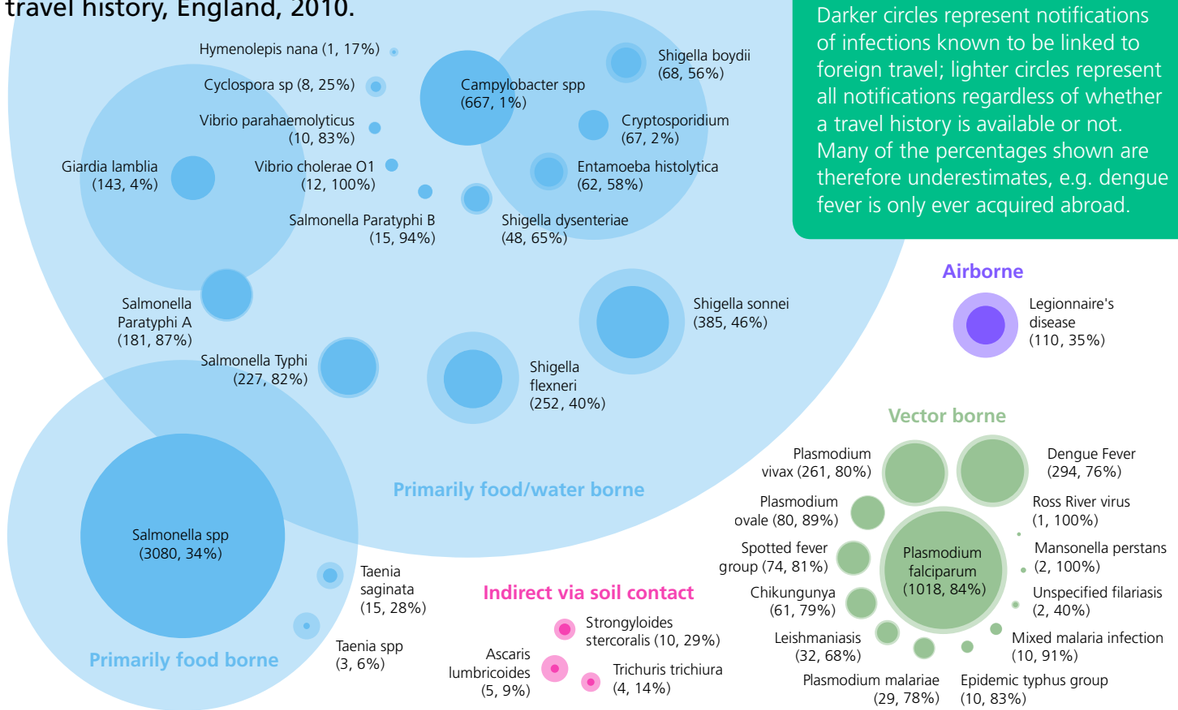
Source: LabBase 2 laboratory data and enhanced enteric fever surveillance, HPA.

Trend in number of laboratory confirmed typhoid cases by linked travel history, England, 1998 to 2010



Source: LabBase 2 laboratory data and enhanced enteric fever surveillance, HPA.

Key imported infections; notifications with linked foreign travel history, England, 2010.

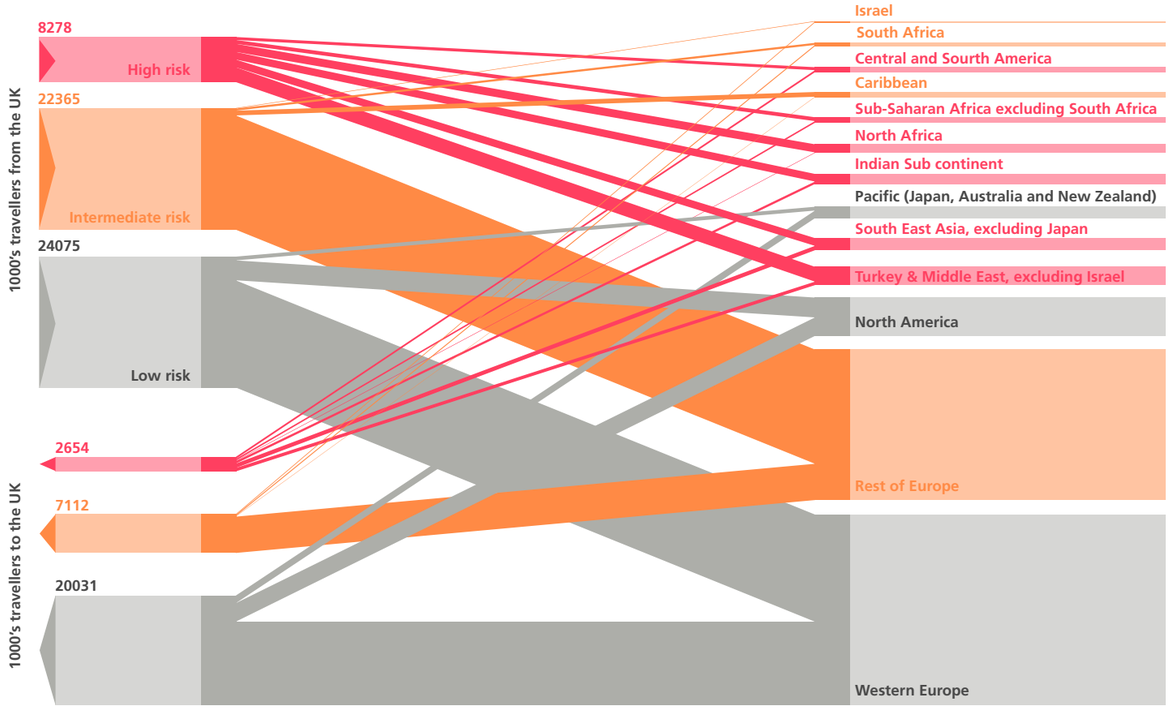


Key facts

Darker circles represent notifications of infections known to be linked to foreign travel; lighter circles represent all notifications regardless of whether a travel history is available or not. Many of the percentages shown are therefore underestimates, e.g. dengue fever is only ever acquired abroad.

Source: Laboratory data extracted from LabBase 2 and enhanced surveillance, HPA

Travel to and from the United Kingdom, by GI (travellers diarrhoea) risk area, 2008 - 2010



Source - Travel: Overseas Travel and Tourism, ONS
Source - GI risk: HPA. Foreign travel-associated illness - a focus on travellers' diarrhoea. 2010 report. London: HPA; 2010

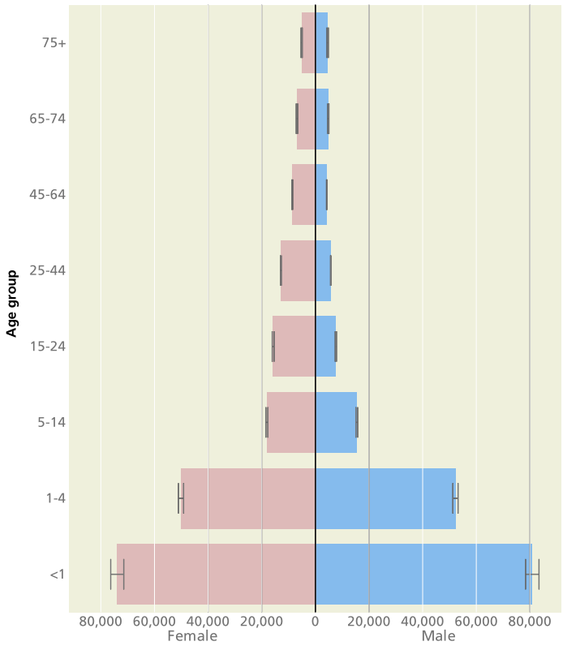
Respiratory infections are common causes of morbidity, mortality and economic costs. Upper respiratory tract infection (URTI, or "coughs and colds") usually refers to minor infections of the nasal passages, throat or tonsils caused by viruses (such as rhinoviruses) which do not usually require clinical treatment. Sometimes they have more serious complications, such as croup in infants.

Lower respiratory tract infection (LRTI) is more serious and includes acute bronchitis and bronchiolitis, and pneumonia. Pneumonia refers to inflammation and infiltration of the lungs, is most commonly caused by the bacteria *Streptococcus pneumoniae* and may be severe or fatal in the elderly or those with long term illnesses.

URTI and LRTI GP consultation rates fluctuate markedly from year to year. Pneumonia consultation rates are higher in older people. Rates have generally fallen since 2004, with a small rise in 2010. The highest consultation rates for URTI and LRTI are seen in the youngest age groups, falling to low levels in older age groups. There is a second peak for LRTI in the 75+ age group.

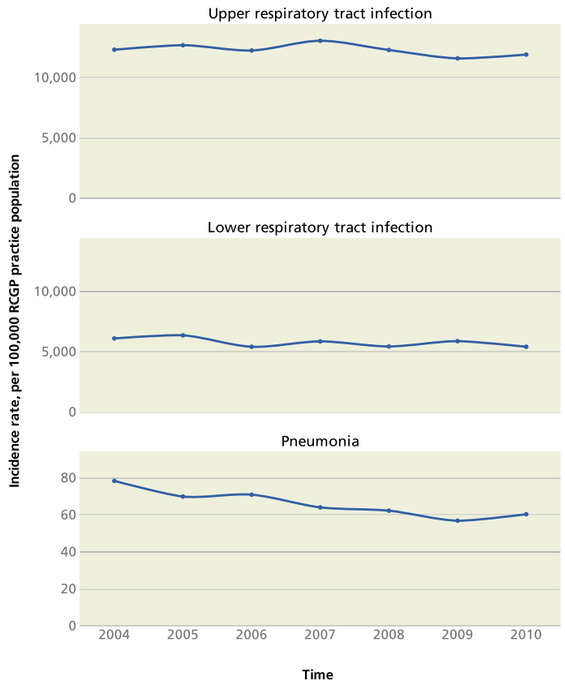
Effective control measures include regular handwashing (URTIs) and encouraging the uptake of vaccines in vulnerable groups for influenza, *Streptococcus pneumonia*, whooping cough and *Haemophilus influenzae* type B (Hib)

Upper respiratory tract infection, annual primary care first/new consultation rate by age and sex, England, 2010



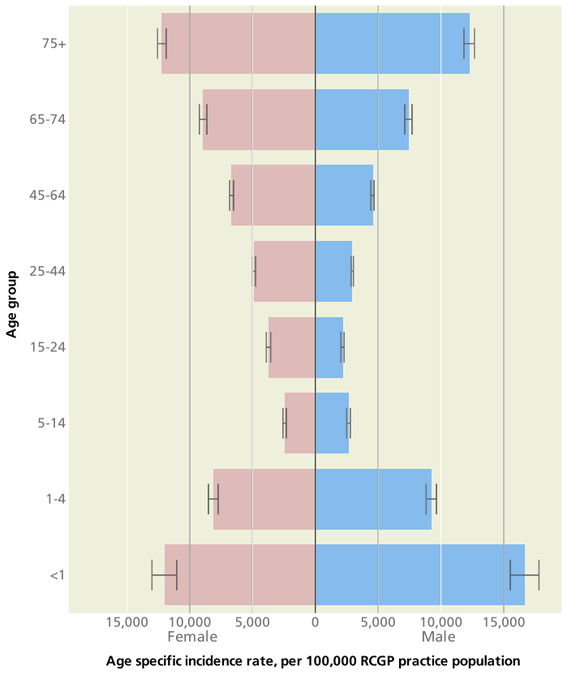
Source: Research and Surveillance Centre, Royal College of General Practitioners (RCGP). (Analysis by HPA)

Trend in respiratory infection, annual primary care first/new consultation rate by infection type, England, 2004 to 2010



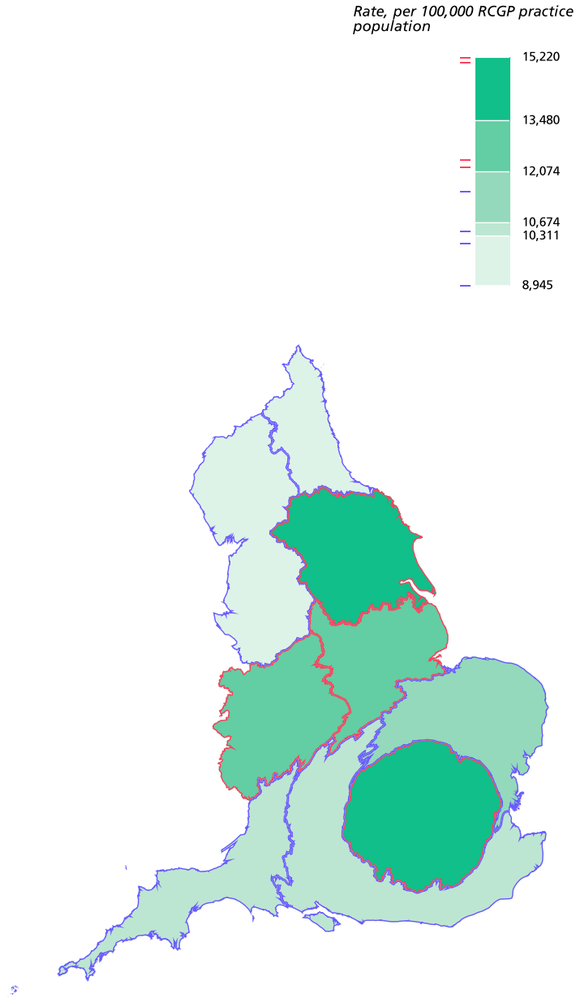
Source: Research and Surveillance Centre, Royal College of General Practitioners (RCGP). (Analysis by HPA)

Lower respiratory tract infection, annual primary care first/new consultation rate by age and sex, England, 2010



Source: Research and Surveillance Centre, Royal College of General Practitioners (RCGP). (Analysis by HPA)

Rate of primary care first/new consultations for upper respiratory tract infection by region, England, 2010

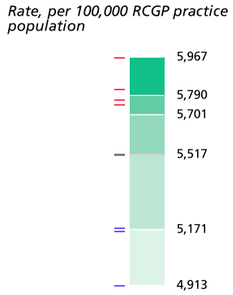


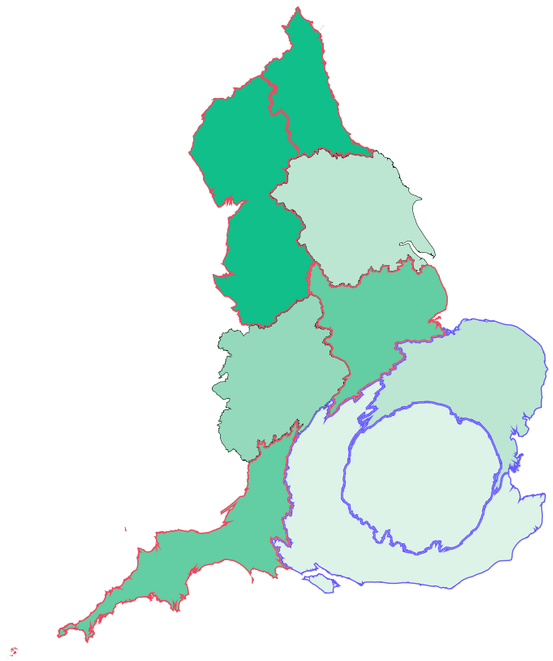
Source: Research and Surveillance Unit Weekly Returns Service, Royal College of General Practitioners (RCGP). (Analysis by RCGP)

Key facts

- Around 47,000 potential years of life lost (to age 75) in 2010 (2% of all PYLL)
- Around 2,516,000 hospital bed days in 2010/11 (6% of all bed days)
- Lower respiratory tract infections accounted for 99% of PYLL and 96% of hospital bed days for respiratory infections

Rate of primary care first/new consultations for lower respiratory tract infection by region, England, 2010





Source: Research and Surveillance Unit Weekly Returns Service, Royal College of General Practitioners (RCGP). (Analysis by RCGP)

Influenza is a highly contagious viral illness with two main types: A and B. Most influenza infections occur between December and March in the northern hemisphere and mainly affect the young, old and those with long term conditions.

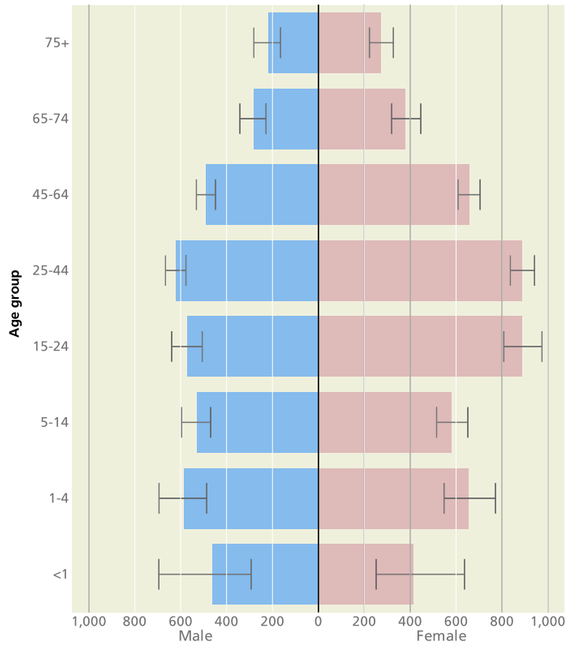
New pandemic strains of influenza may emerge with the possibility of greater general mortality. 2010 began with the end of the second wave of a "swine 'flu" (H1N1) pandemic; mostly causing mild illness, but a range of vulnerable groups including pregnant women had severe effects/complications.

Primary care consultations vary markedly each year, though overall have decreased in the last two decades. The highest rates for influenza-like illness in 2010 were seen in the 15-44 age group, females, and in the South West, London and the West Midlands.

At the end of 2010, there was a large rise in detection of H1N1 influenza (and a lesser rise of type B influenza) heralding a period of intense pressure on secondary care related to influenza.

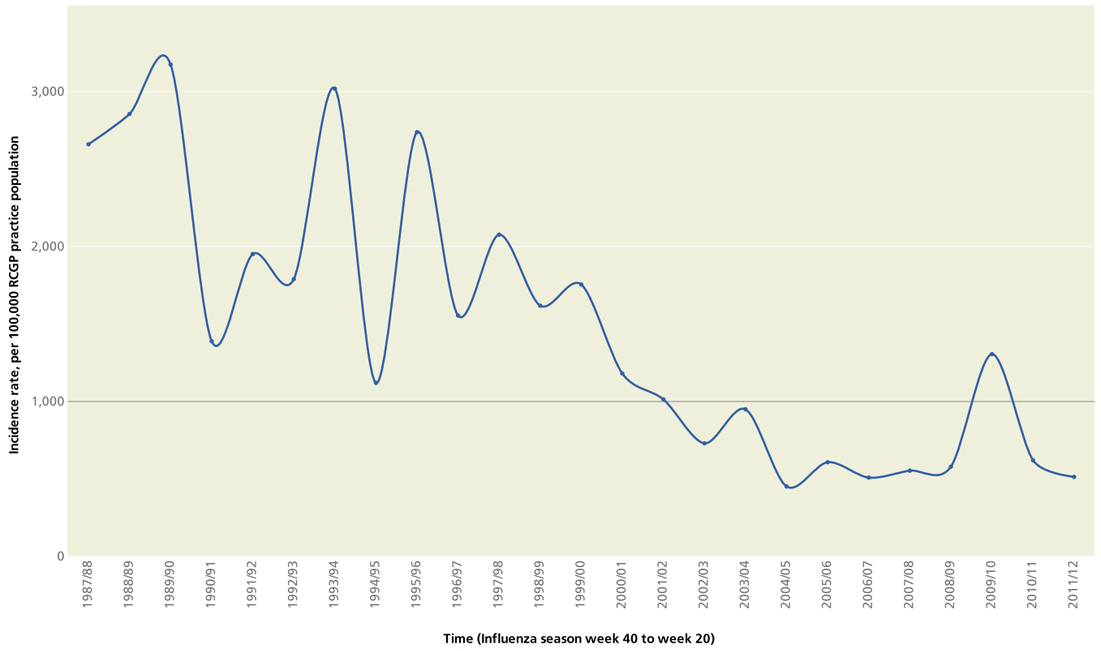
Annual vaccination against influenza is the best protection for those, including pregnant women, at risk of severe complications. It is very important that healthcare workers are vaccinated to help to protect vulnerable patients.

Influenza like illness, annual primary care first/new consultation rate by age and sex, England, 2010



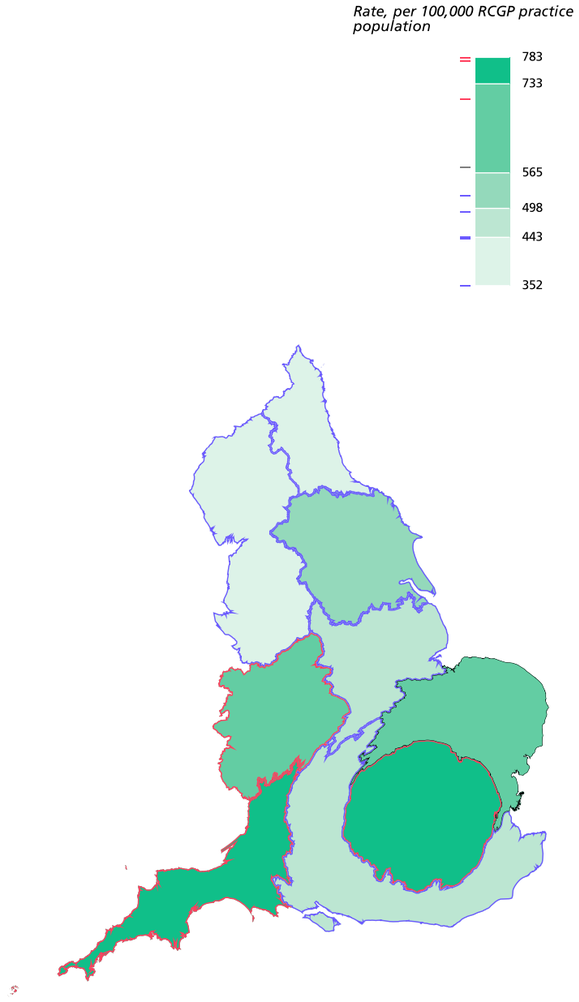
Source: Research and Surveillance Centre, Royal College of General Practitioners (RCGP). (Analysis by HPA)

Trend in influenza like illness, seasonal primary care first/new consultation rate , England, 1987/88 to 2011/12



Source: Research and Surveillance Centre, Royal College of General Practitioners (RCGP). (Analysis by HPA)

Rate of primary care first/new consultations for influenza-like illness by region, England, 2010

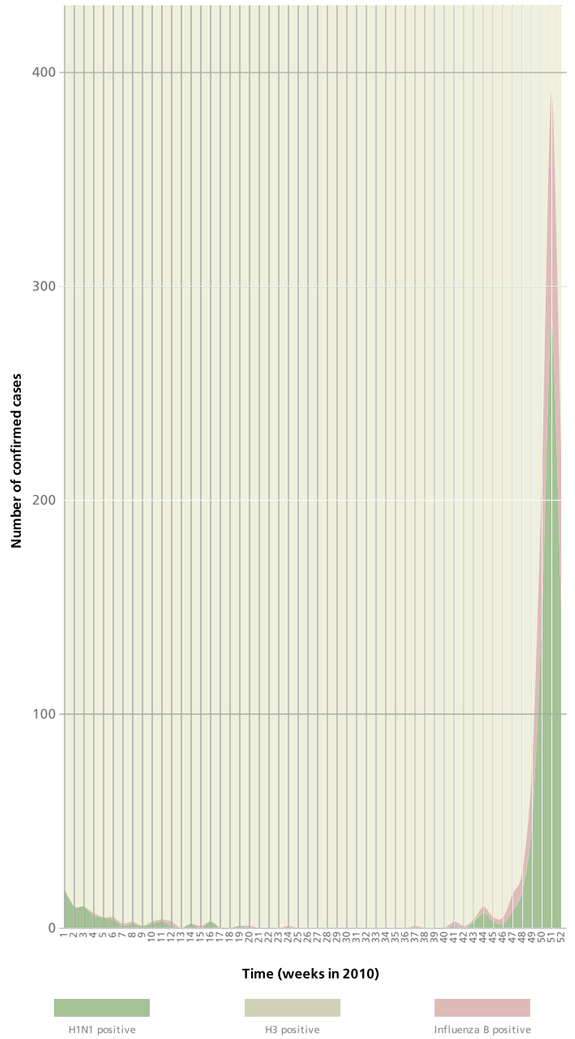


Source: Research and Surveillance Unit Weekly Returns Service, Royal College of General Practitioners (RCGP). (Analysis by RCGP)

Key facts

- Around 5,100 potential years of life lost (to age 75) in 2010 (<1% of all PYLL)
- Around 58,000 hospital bed days in 2010/11 (<1% of all bed days)

RCGP influenza virology, H1N1 Positive, H3 positive and influenza B positive by week, England, 2010



Source: Research and Surveillance Centre, Royal College of General Practitioners (RCGP).

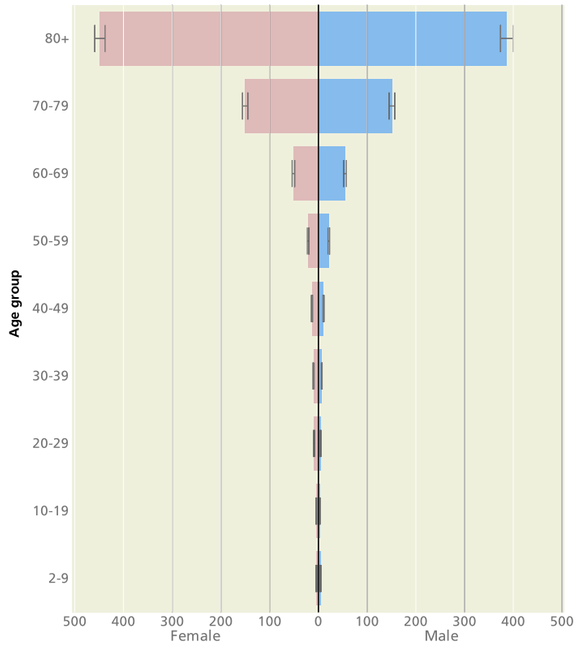
Clostridium difficile (*C. difficile*) is the most important cause of healthcare associated diarrhoea. The elderly are at greatest risk and infection can result in a range of conditions from asymptomatic colonisation to fatal inflammation of the bowel (colitis). Infection is often acquired by cross infection in the hospital environment and disease may be triggered by broad spectrum antibiotics affecting the normal bowel flora.

C. difficile rates rise exponentially with age. Rates have consistently fallen in all regions in recent years. In 2010, the regions with the highest rates were the North West, the North East and the Midlands regions.

C. difficile infection is preventable with high standards of infection control (isolation/cohort nursing, hand hygiene, barrier precautions and enhanced environmental cleaning) and minimising inappropriate antibiotic use.

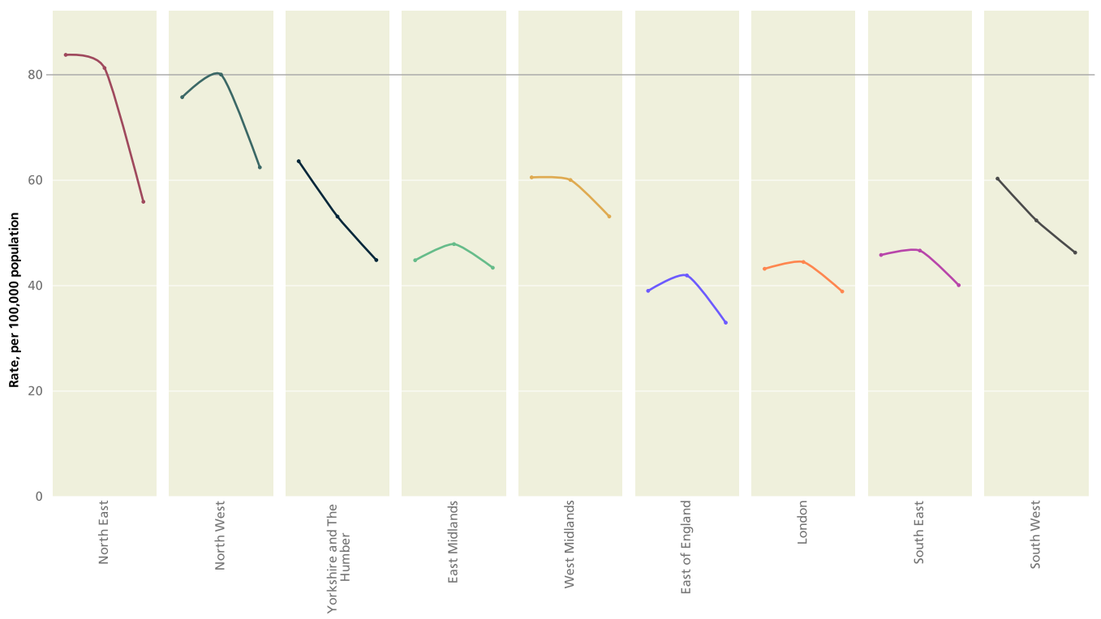
There should be a zero tolerance approach to preventable healthcare associated infections.

Rate of Clostridium difficile diagnoses by age (aged 2+ years) and sex, England, 2010



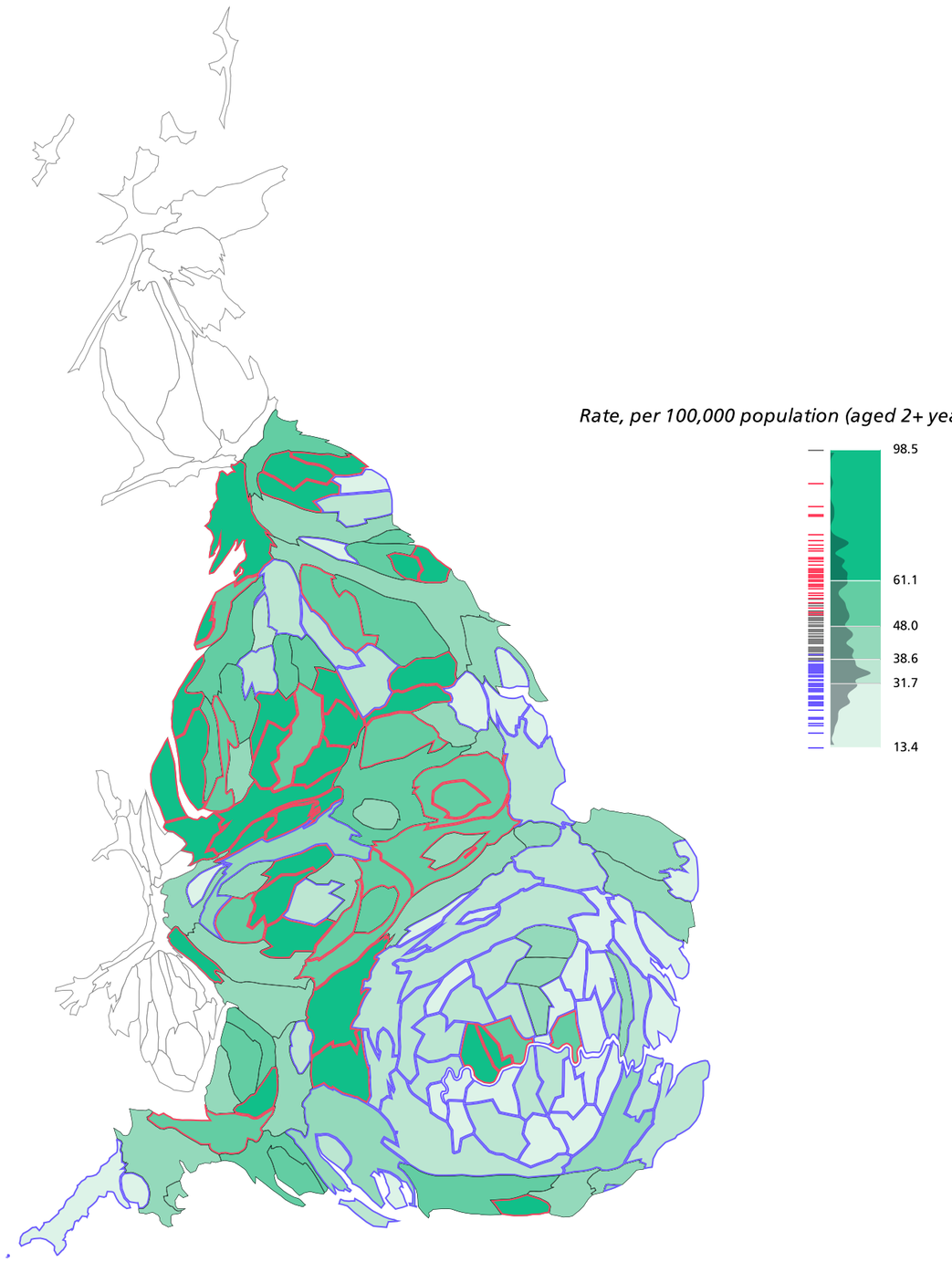
Source: Health Care Associated Infection (HCAI) Data Capture System, HPA. 2010 population estimates, ONS. (Analysis by HPA)

Trend in the rate of Clostridium difficile diagnoses by region, England, 2008 to 2010



Source: Health Care Associated Infection (HCAI) Data Capture System, HPA. 2010 population estimates, ONS. (Analysis by HPA)

Rate of Clostridium difficile diagnoses by primary care trust, England, 2010



Source: Healthcare Associated Infections (HCAI) Data Capture System, HPA. 2010 population estimates, ONS. (Analysis by HPA)

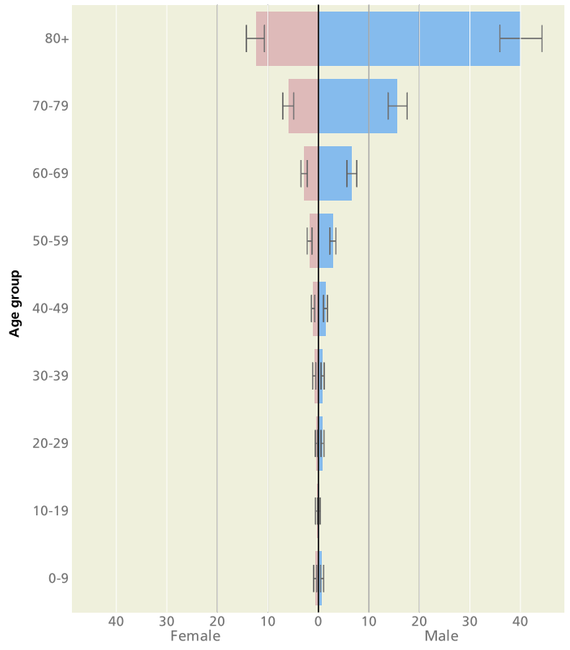
Meticillin resistant *Staphylococcus aureus* (MRSA) are bacteria resistant to a major class of antibiotics which may live harmlessly on human skin, but can cause serious invasive infections; many are associated with certain medical interventions, particularly those that cause a breach in the skin surface.

MRSA rates rise exponentially with age, though rates have fallen markedly in all regions in recent years and are now very low in many areas. In 2010, the highest rates were in London, the North West and Yorkshire & the Humber.

This reduction is due to interventions introduced in 2004, which included a 'Clean Your Hands' campaign, intravenous line care guidelines and stewardship, and an emphasis on rapid detection and decolonisation of colonized patients.

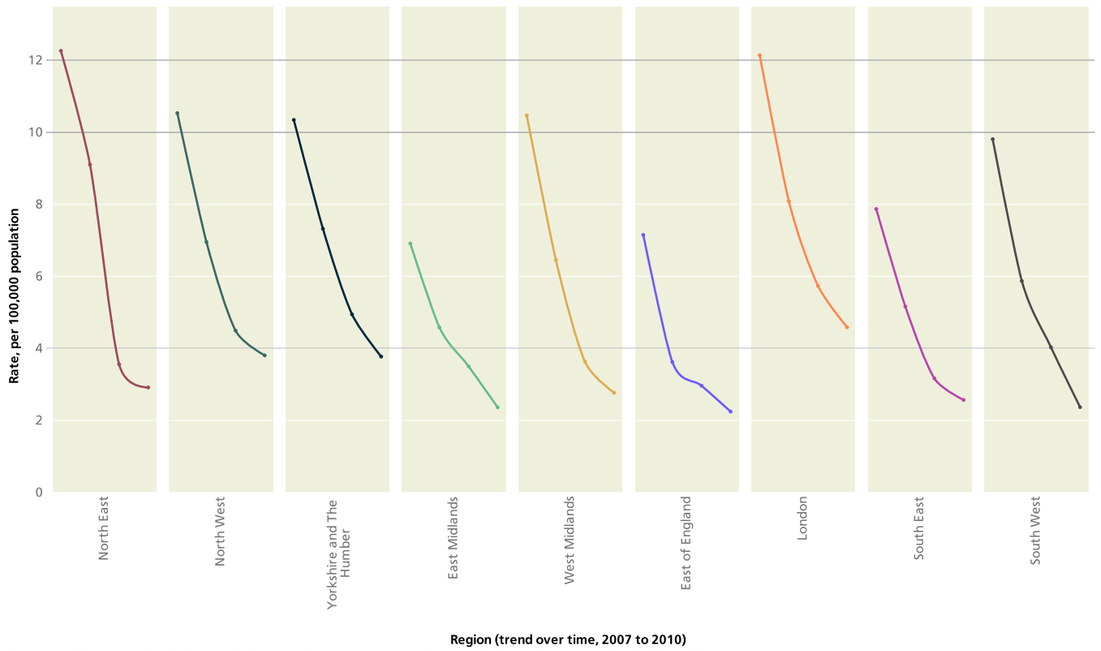
There should be a zero tolerance approach to preventable healthcare associated infections.

Rate of meticillin-resistant Staphylococcus aureus (MRSA) diagnoses, by age and sex, England, 2010



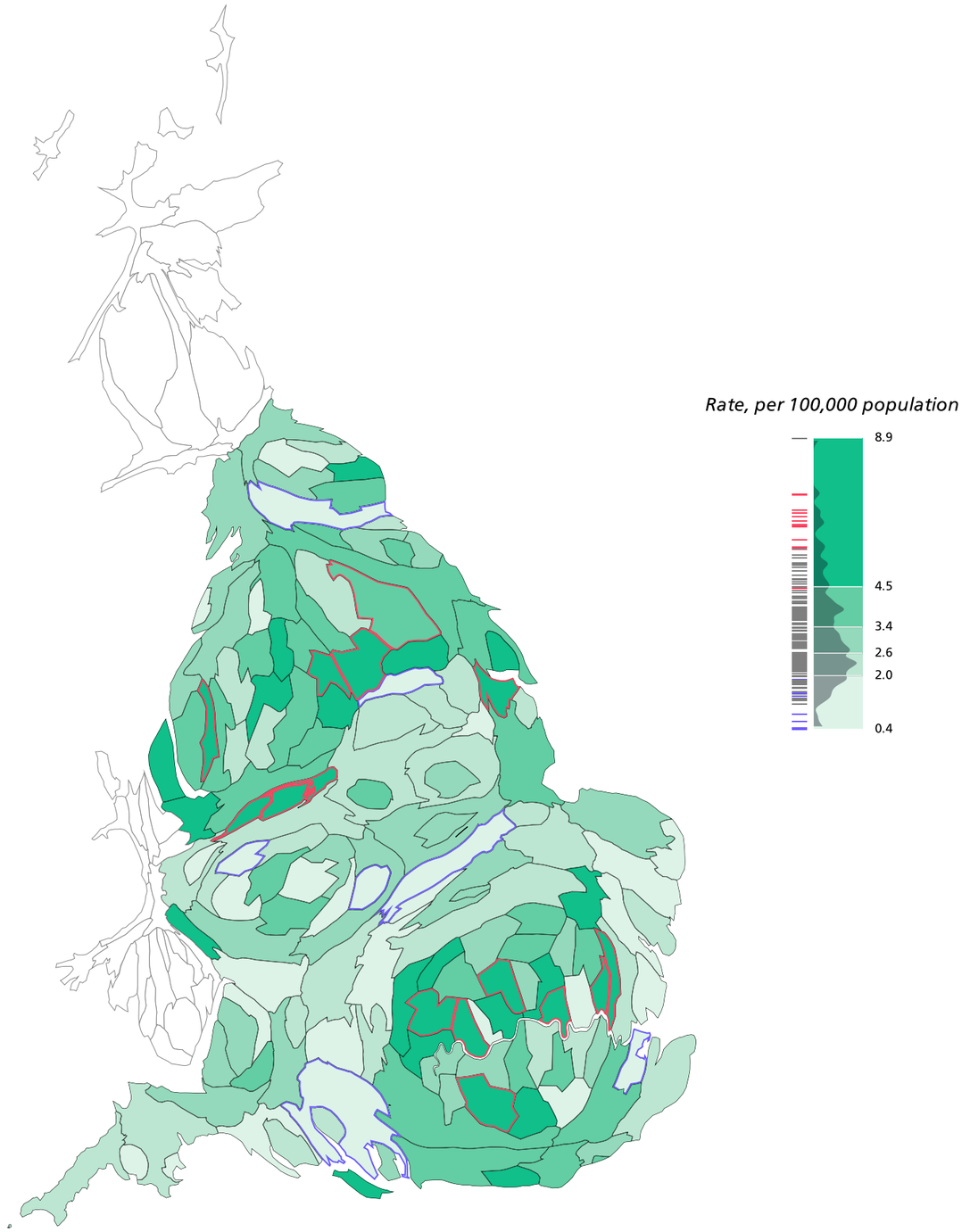
Source: Healthcare Associated Infections (HCAI) Data Capture System, HPA. 2010 population estimates, ONS. (Analysis by HPA)

Trend in the rate of meticillin-resistant Staphylococcus aureus (MRSA) diagnoses by region, England, 2007 to 2010



Source: Healthcare Associated Infections (HCAI) Data Capture System, HPA. 2010 population estimates, ONS. (Analysis by HPA)

Rate of meticillin-resistant Staphylococcus aureus (MRSA) diagnoses by primary care trust, England, 2010



Source: Healthcare Associated Infections (HCAI) Data Capture System, HPA. 2010 population estimates, ONS. (Analysis by HPA)

Direct maternal mortality rates are decreasing. Rates of indirect maternal mortality (from pre-existing/new conditions aggravated by pregnancy) are increasing, reflecting improved ascertainment and the development of broader inclusion criteria including domestic violence.

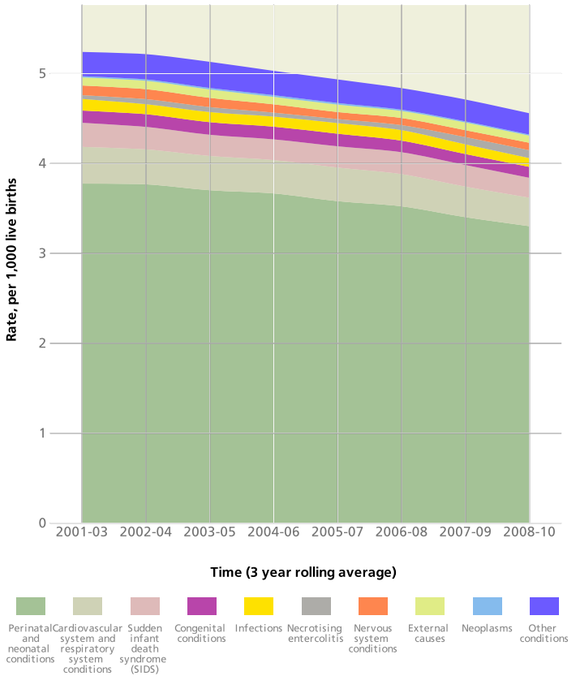
Perinatal and infant causes of mortality differ. Perinatal mortality (stillbirths and deaths within seven days of birth) reflects the overall health of the childbearing population and quality of antenatal care. Rates vary considerably geographically; the highest local authority rate is 2.7 times that of the lowest.

Infant mortality (deaths in under 1s) is influenced by wider issues, such as economic circumstances and living conditions. The infant mortality rate varies geographically within England. Although it is decreasing, it is doing so more slowly than in many other EU countries.

The category 'perinatal and neonatal conditions' (mortality due to conditions originating in the perinatal period and all neonatal deaths) accounts for the majority of deaths and has decreased most over time.

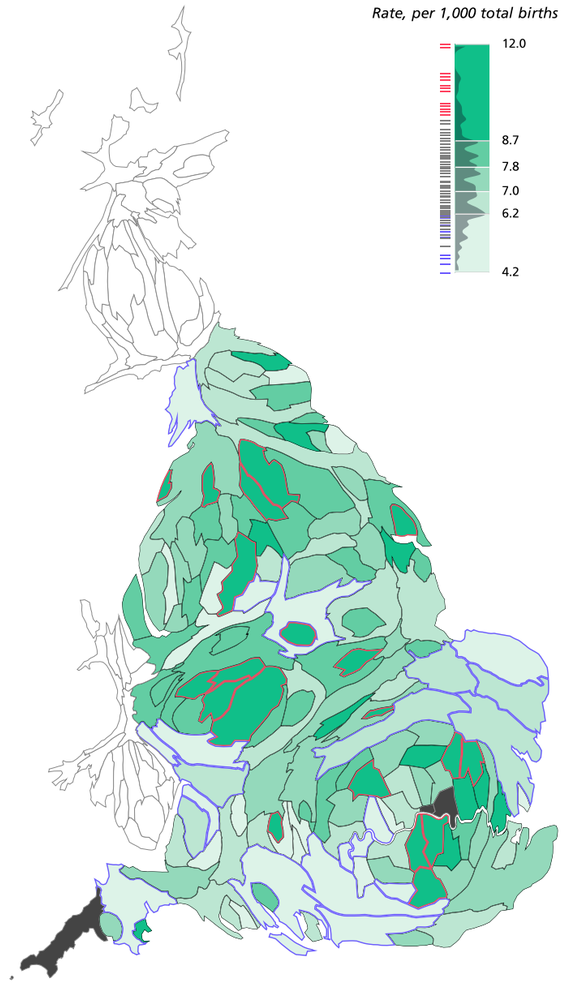
Inequalities in geographical rates of infant and perinatal mortality can be ameliorated through a focus on maternity services, maternal nutrition, smoking and substance use, teenage pregnancy and obesity.

Trend in infant mortality rates by cause of death, England, 2001-03 to 2008-10



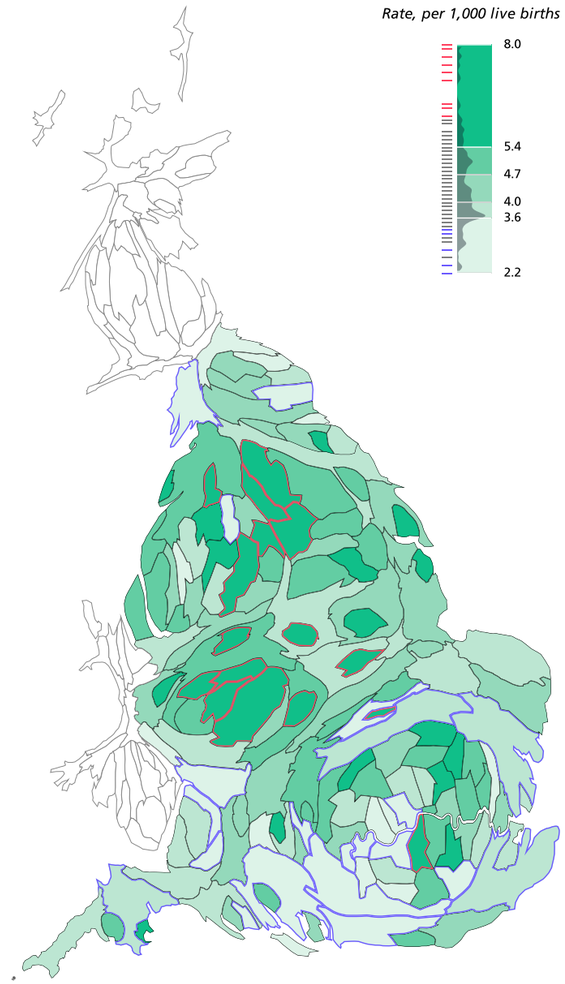
Source: Infant mortality statistics, ONS. (Provided by ChiMat)

Average annual perinatal mortality rates by upper tier local authority, England, 2008-10



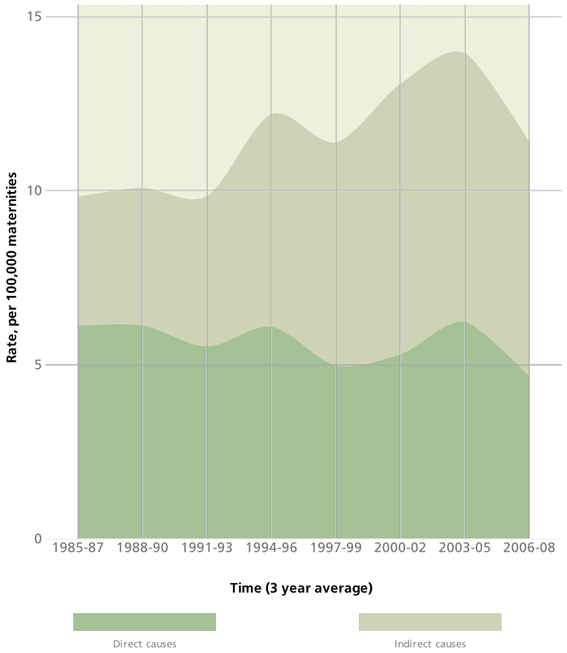
Source: Health and Social Care Information Centre Indicator Portal. (Provided by ChiMat)

Average annual infant mortality rates by upper tier local authority, England, 2008-10



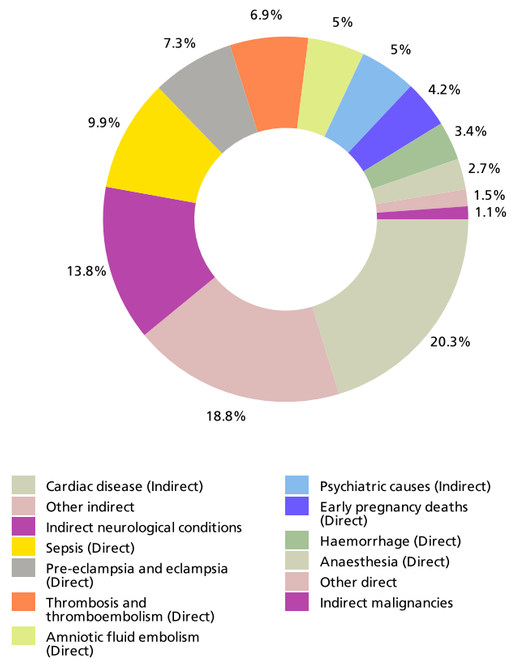
Source: Health and Social Care Information Centre Indicator Portal. (Provided by ChiMat). Note: the Isles of Scilly UA (rate per 1000 live births 19.2, 95%CI 2.7 to 123.4) is excluded from this map

Trend in maternal mortality from direct and indirect causes, United Kingdom, 1985-87 to 2006-08



Source: CMACE. Saving Mothers' Lives: reviewing maternal deaths to make motherhood safer: 2006-08. The Eighth Report on Confidential Enquiries into Maternal Deaths in the United Kingdom. BJOG 2011;118(Suppl. 1):1-203.

Maternal mortality due to different direct and indirect causes, United Kingdom, 2006-08



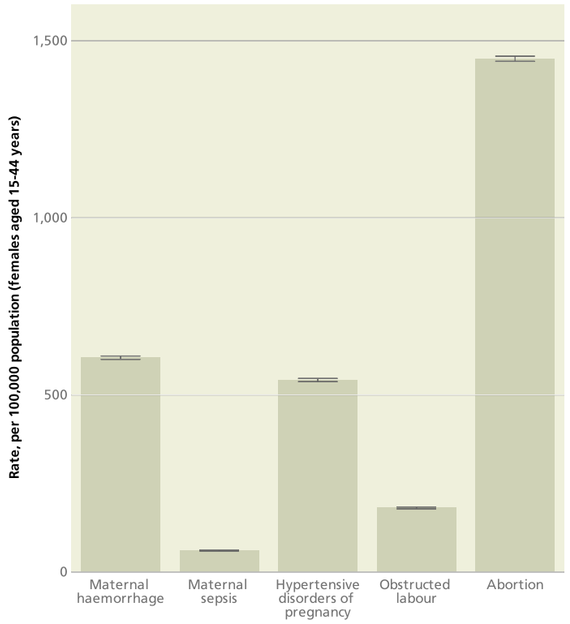
Source: CMACE. Saving Mothers' Lives: reviewing maternal deaths to make motherhood safer: 2006-08. The Eighth Report on Confidential Enquiries into Maternal Deaths in the United Kingdom. BJOG 2011;118(Suppl. 1):1-203.

Good maternal and infant health is key to the long term health of the population. The subsequent risk to a child from factors such as maternal obesity and diabetes is becoming clearer. Good antenatal care enables identification and monitoring of maternal conditions and timely referral. Early identification of perinatal conditions, particularly infection, greatly reduces the risk of negative outcomes.

The majority of pregnancy related admissions are for abortions (151,933 in 2010/11), emphasising the need for accessible and acceptable contraception. As data are for admissions, rates will underestimate conditions that arise/are identified in women already admitted for labour. In maternity care, haemorrhage and hypertensive disorders account for the highest proportion of total hospital bed days (a total of 230,605 in 2010/11).

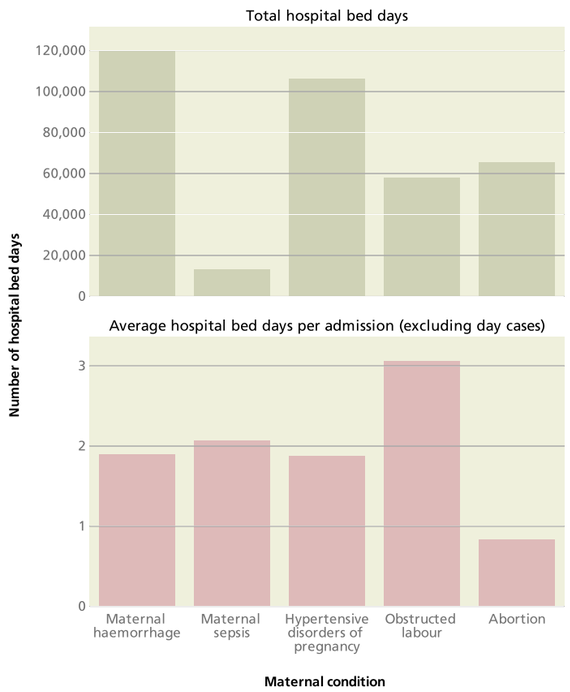
Many perinatal hospital admissions are likely to be due to infections. Such admissions have been increasing, potentially reflecting greater hospitalisation of more very premature babies. In 2010/11, there were approximately 1,003,000 hospital bed days due primarily to perinatal conditions; this accounted for 2% of all hospital bed days.

Hospital admission rates due to selected maternal conditions, England, 2010/11



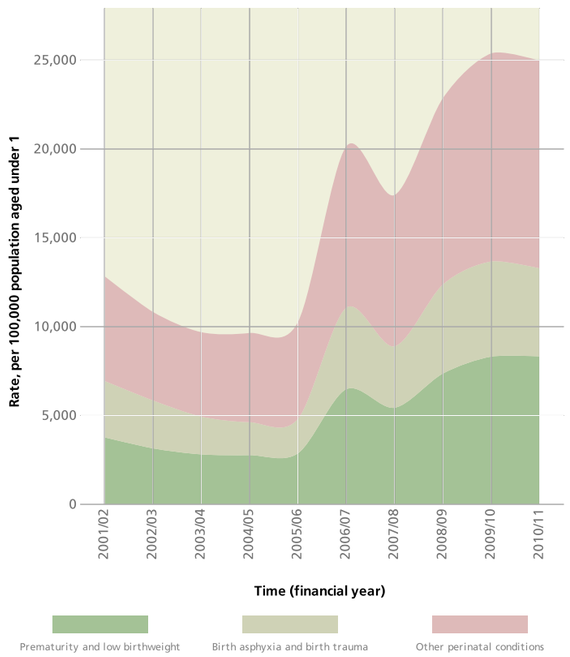
Source: Hospital Episode Statistics (HES), Health and Social Care Information Centre.Crown Copyright © 2012. 2010 population estimates supplied by ONS. (Analysis by PHOs, led by EMPHO, and DH)

Hospital bed days due to selected maternal conditions, England, 2010/11



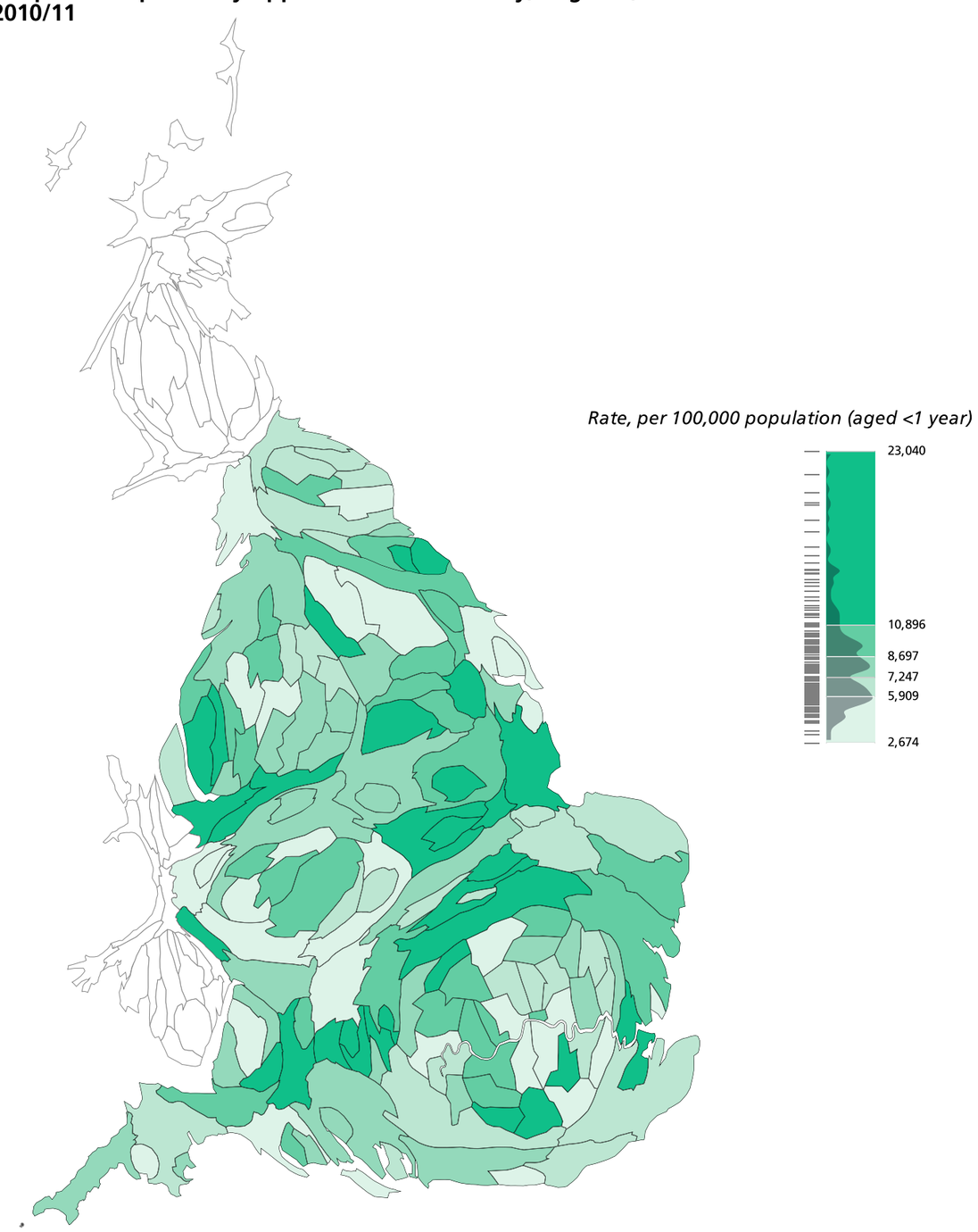
Source: Hospital Episode Statistics (HES), Health and Social Care Information Centre.Crown Copyright © 2012. (Analysis by PHOs, led by EMPHO, and DH)

Trend in hospital admission rates due to conditions arising during the perinatal period, England, 2001/02 to 2010/11



Source: Hospital Episode Statistics (HES), Health and Social Care Information Centre. Crown Copyright © 2012. 2001to 2010 population estimates supplied by ONS. (Analysis by PHOs, led by EMPHO)

Hospital admission rates due to conditions arising during the perinatal period by upper tier local authority, England, 2010/11



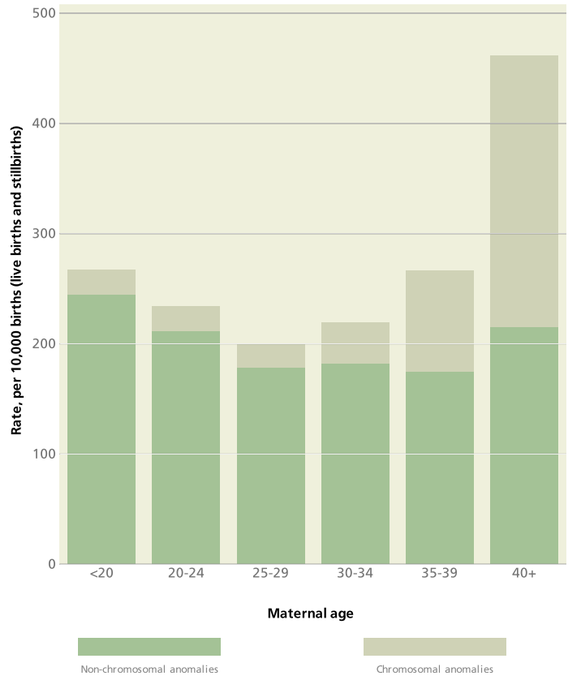
Source: Hospital Episode Statistics (HES), Health and Social Care Information Centre.Crown Copyright © 2012. 2010 population estimates supplied by ONS. (Analysis by PHOs, led by EMPHO)

Congenital anomalies are abnormalities present at birth. From 2000 to 2009 the reported prevalence of babies born with any anomaly decreased annually by an average of 1.1% (0.8%-1.4%*). From 2000 to 2009 the one year survival of live born babies with any anomaly significantly increased. All women of child bearing age can have a baby with a congenital anomaly. However, women over 40 are more likely to have a baby with an anomaly, especially a chromosomal anomaly (55% of which are Down syndrome). Women under 20 and over 40 are more likely to have a baby with non-chromosomal anomalies. Increasing maternal age and earlier prenatal diagnosis explain the upward trend of Down syndrome.

From 2000 to 2009, the prevalence of neural tube defects has decreased annually by an average of 2.4% (1.1%-3.7%*). Public health initiatives promoting peri-conceptional folic acid supplements may have contributed to this. In contrast the prevalence of gastroschisis and Down syndrome increased annually by an average of 3.0% (0.7%-5.3%*) and 1.2% (0.1%-2.2%*) respectively. The increasing trend for gastroschisis is being monitored. Understanding patterns of occurrence of specific anomalies helps to identify their causes. Public Health England must ensure nationwide coverage of the congenital anomaly register.

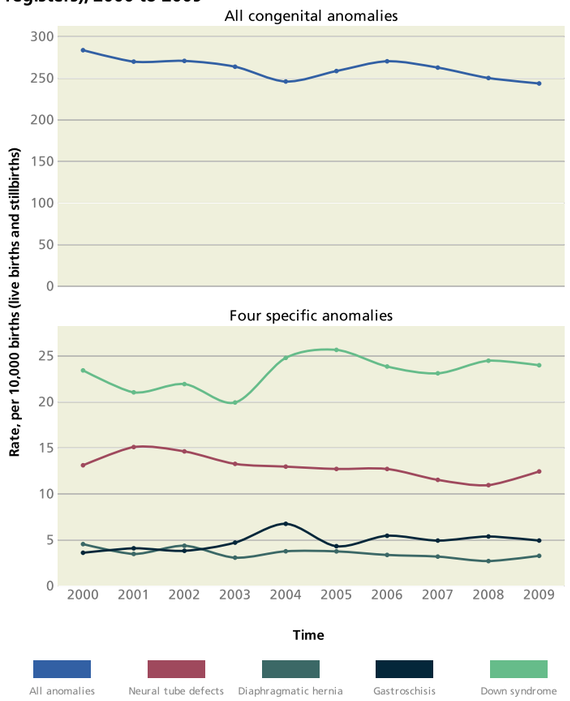
*95% CI

Prevalence of chromosomal and non-chromosomal anomalies by maternal age, England and Wales (based on selected anomaly registers), 2009



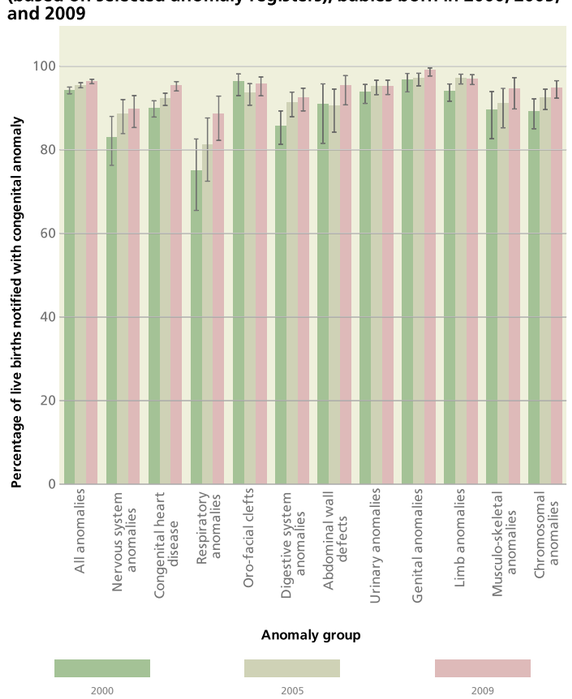
Source: British Isles Network of Congenital Anomaly Registers (BINOCAR).

Trend in prevalence of all congenital anomalies (and four specific anomalies), England and Wales (based on selected anomaly registers), 2000 to 2009



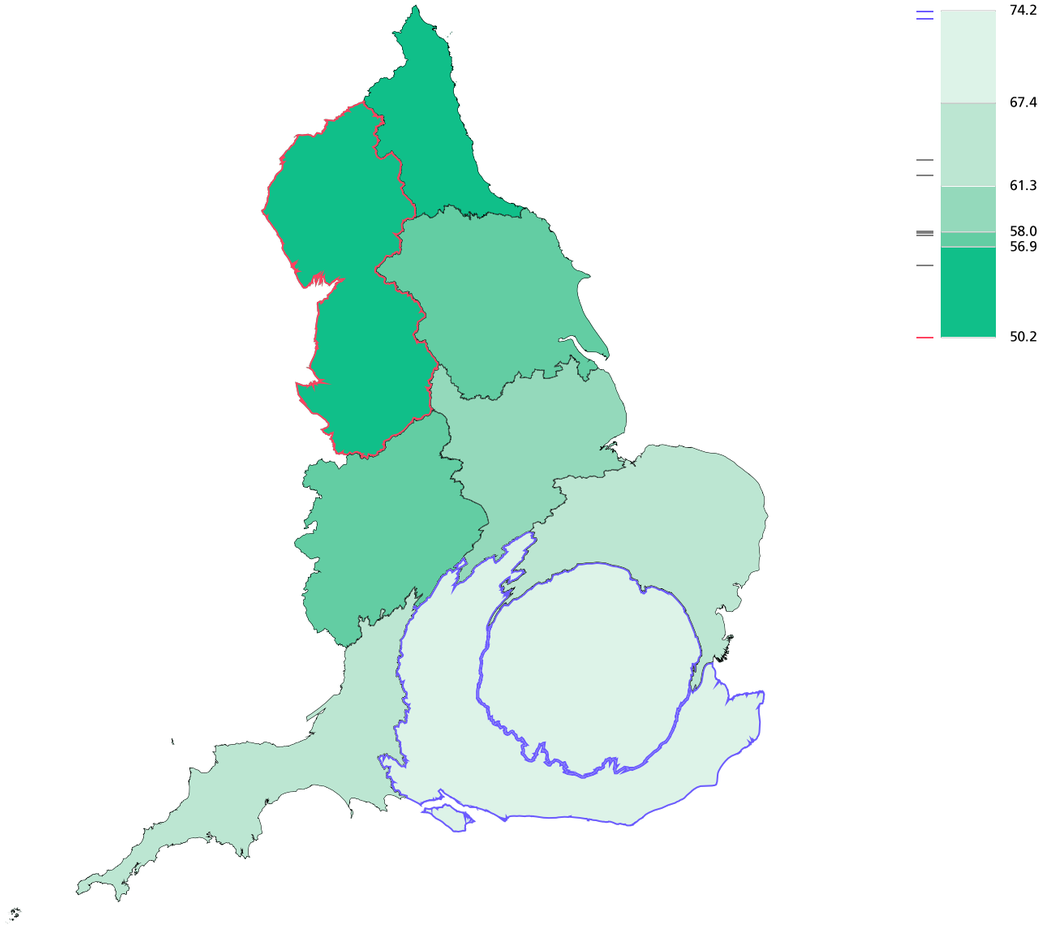
Source: British Isles Network of Congenital Anomaly Registers (BINOCAR).

Trend in the survival to one year with major congenital anomalies (all anomalies and major anomaly subgroups), England and Wales (based on selected anomaly registers), babies born in 2000, 2005, and 2009



Source: British Isles Network of Congenital Anomaly Registers (BINOCAR).

Proportion of Down syndrome notifications diagnosed prenatally by region, England, 2010



Source: National Down Syndrome Cytogenetic Register (NDSCR). (Analysis by DH)

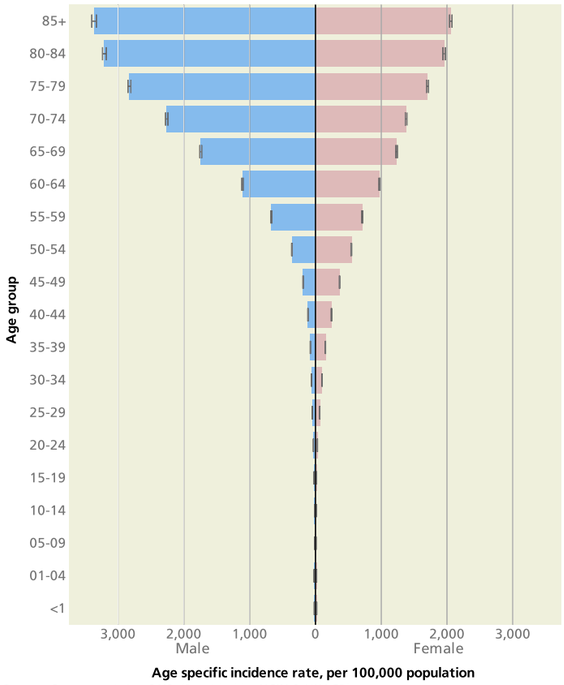
Cancer is a major cause of death, accounting for around a quarter of deaths in England. More than 1 in 3 people will develop cancer at some point in their life. In 2009, around 265,000 cancers were diagnosed, with lung, bowel, breast and prostate cancer accounting for over half. More than three in five cancers occur in people aged 65 and over.

The 'all cancer' incidence rate rose by 17% between 1985 and 2009. Over the last decade, there have been significant rises in the incidence of lung cancer and uterine cancer in women, prostate cancer in men, and melanoma, cancers of the liver, kidney, mouth and oropharynx in both sexes.

Over the same period stomach cancer rates fell in both sexes by around a third and lung cancer rates in men fell by 19%. The 30% fall seen in bladder cancer rates is partly due to changes in coding but a reduction in smoking and in exposure to chemicals in the workplace may also have contributed.

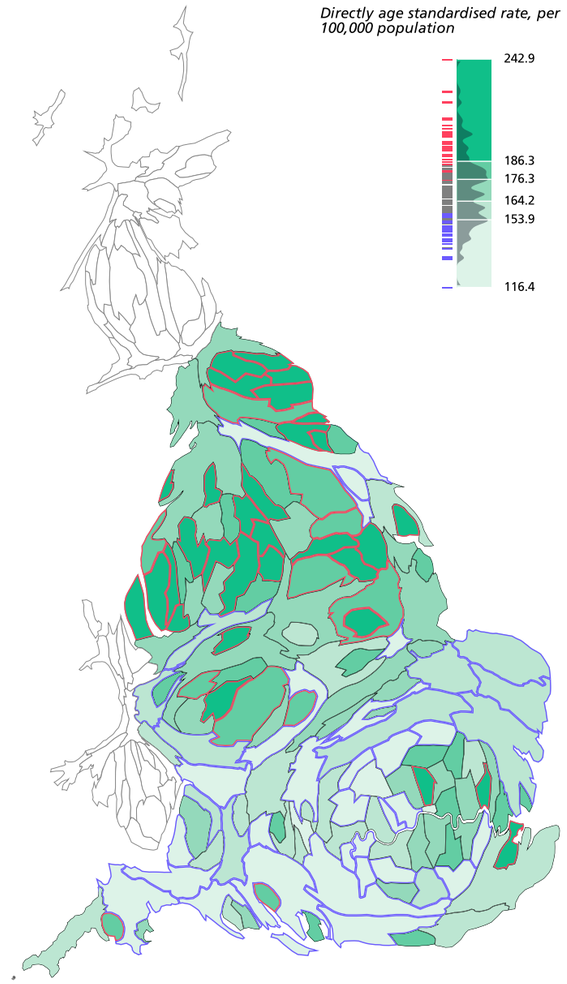
Mortality rates have fallen by 25% between 1985 and 2010, partly due to a fall in the number of cancers with a poor outcome (e.g. lung cancer in men), but improvements in diagnostic speed and treatment services have also undoubtedly contributed.

Average annual incidence of all cancers combined by age and sex, England, 2007-09



Source: Cancer statistics, ONS. (Provided by NCIN & UKACR)

Mortality due to cancer by upper tier local authority, England, 2010

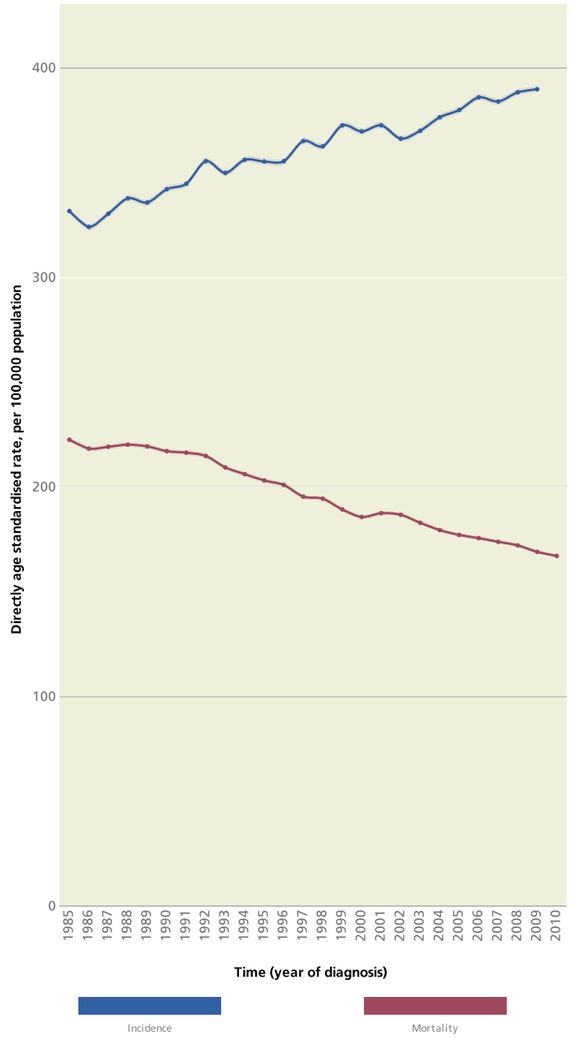


Source: Cancer statistics, ONS. (Provided by NCIN & UKACR)

Key facts

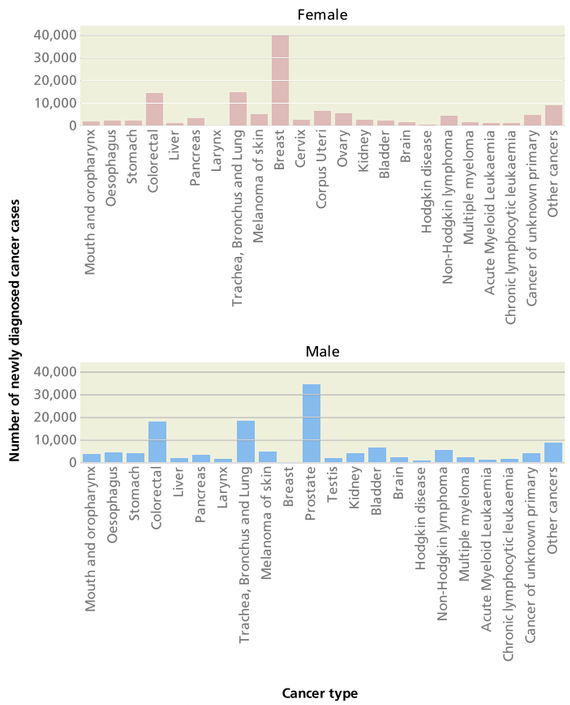
- Around 727,700 potential years of life lost (to age 75) in 2010 (32% of all PYLL)
- Around 3,027,000 hospital bed days in 2010/11 (7% of all bed days)
- Main causes - PYLL: trachea/ bronchus/lung cancer (20%); breast cancer (11%)
- Main causes - bed days: colorectal cancer (14%); trachea/bronchus/ lung cancer (10%)

Trend in incidence and mortality of all cancers combined, England, 1985 to 2009



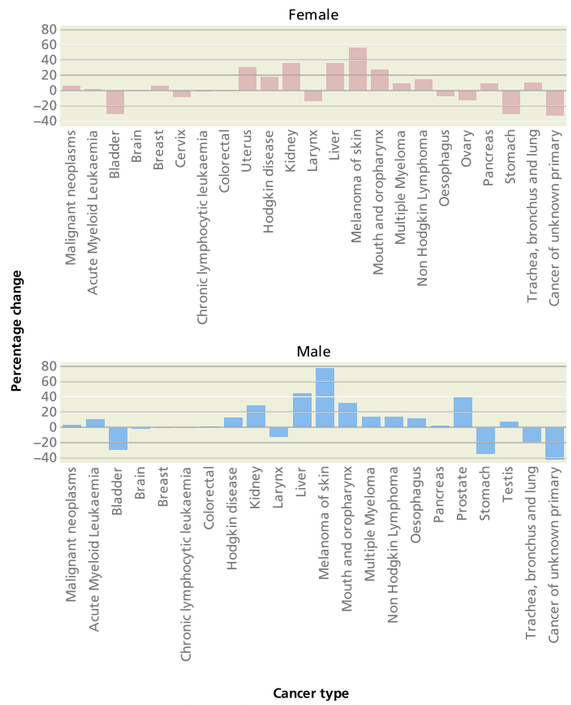
Source: Cancer statistics, ONS. (Provided by NCIN & UKACR)

All cancer incidence by sex and major cancer type, England, 2009



Source: Cancer statistics, ONS. (Provided by NCIN & UKACR)

Percentage change in age standardised cancer incidence rates from 1997-99 to 2007-09, England



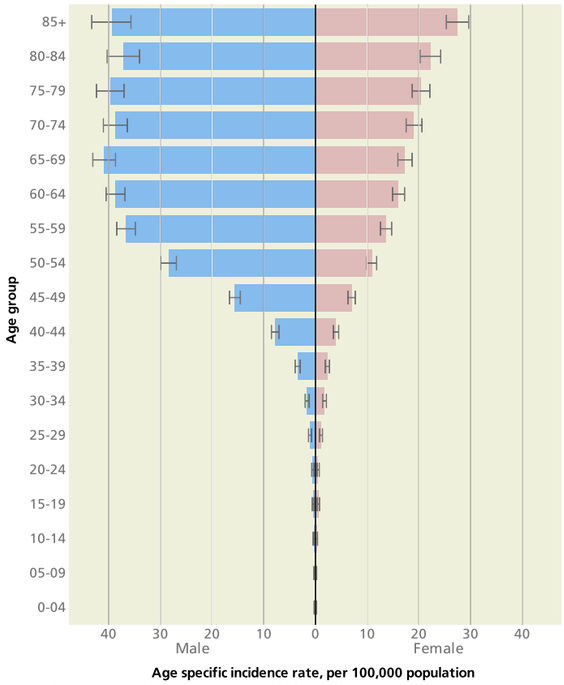
Source: Cancer statistics, ONS. (Provided by NCIN & UKACR)

Cancers of the mouth, pharynx and salivary glands account for almost 3% of new cancers in males and around 1.5% in females. The two most common types are cancer of the oral cavity with over 2,200 new cases in 2009 and cancer of the oropharynx with over 1,500 cases.

The incidence of oral cavity cancer has been rising over the last two decades, with a 76% rise in the age standardised rate between 1985 and 2009. The principal risk factors are smoking and alcohol. The chewing of betel quid is also a risk factor; this is predominantly an issue in immigrants from the Indian subcontinent.

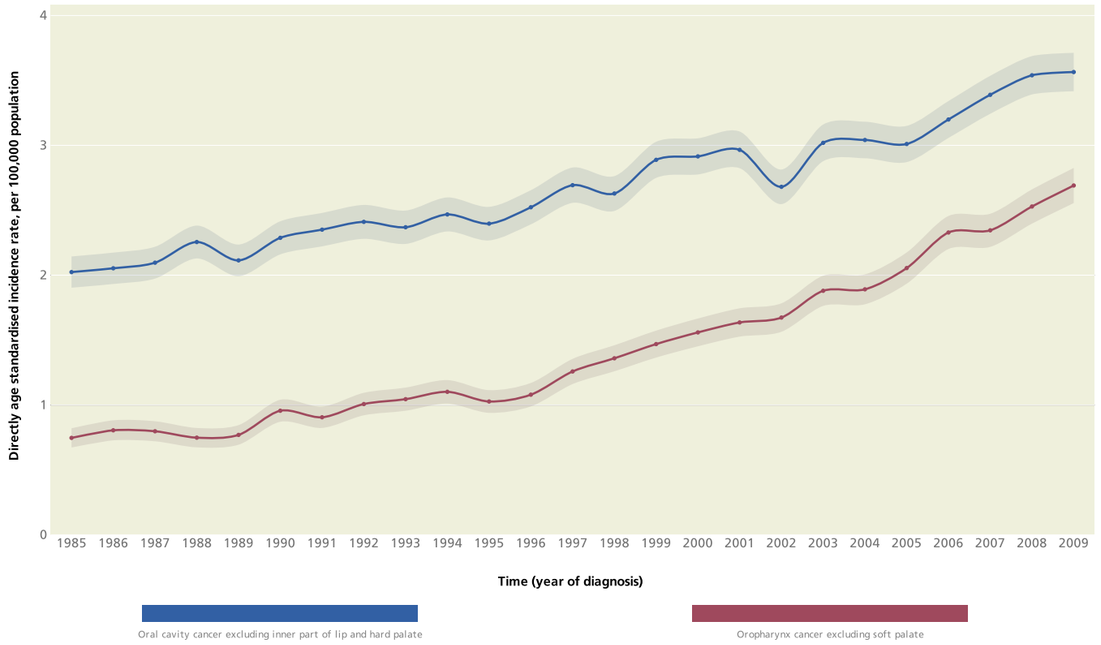
The steepest rise has been in the age-standardised incidence rate of cancer of the oropharynx which has more than doubled over the last two decades. In the past, smoking and alcohol have been the main risk factors but more recently infection with human papillomavirus (HPV) has been identified as an important risk factor. Patients with HPV related cancers are on average younger than other patients with oral cancer. Research in the USA has shown an association between having a higher number of sexual partners, and increased oral sexual behaviour, with HPV related cancers.

Average annual incidence of mouth, pharynx and salivary glands cancers by age and sex, England, 2007-09



Source: Cancer statistics, ONS. (Provided by NCIN & UKACR)

Trend in incidence for cancers of the oral cavity and oropharynx, England, 1985 to 2009

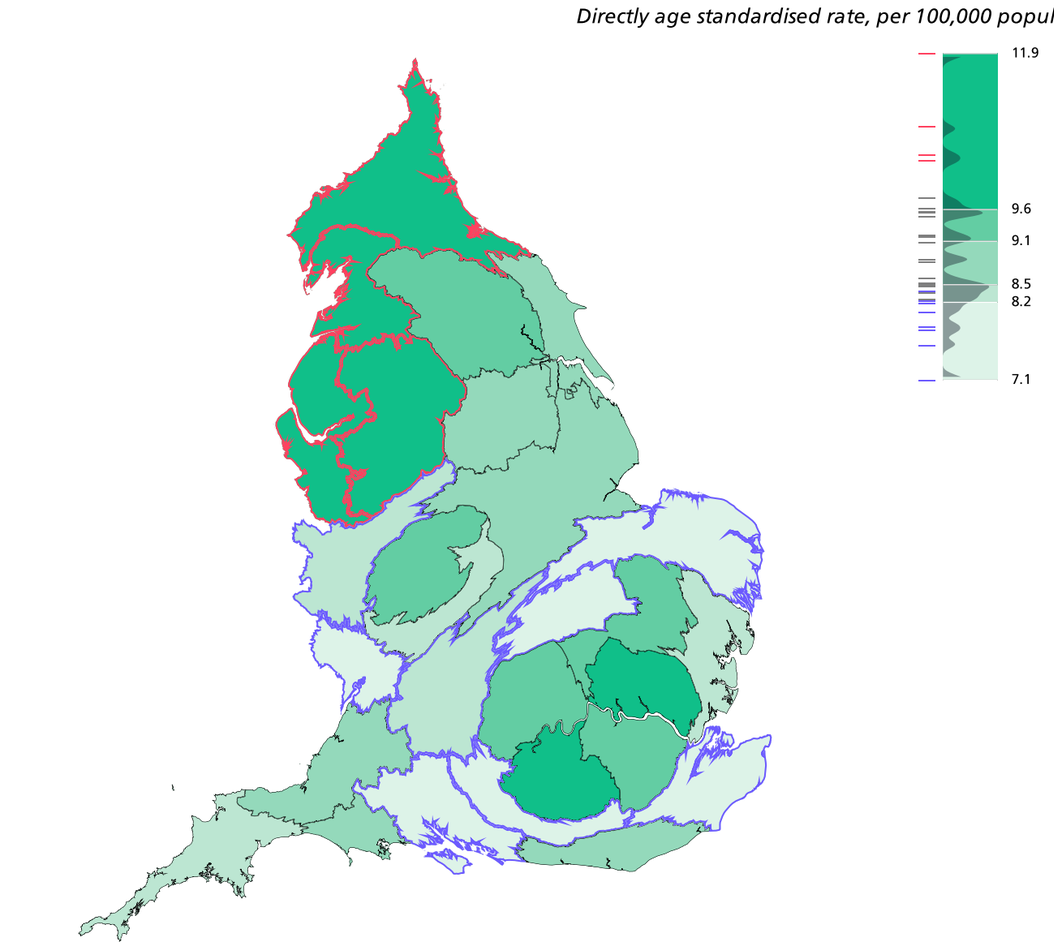


Source: Cancer statistics, ONS. (Provided by NCIN & UKACR)

Key facts

- Around 16,900 potential years of life lost (to age 75) in 2010 (<1% of all PYLL)
- Around 82,000 hospital bed days in 2010/11 (<1% of all bed days)

Average annual mouth, pharynx and salivary glands cancer incidence by cancer network, England, 2007-09



Source: Cancer statistics, ONS. (Provided by NCIN & UKACR)

In 2009, there were almost 6,700 new cases of oesophageal cancer in England and around 6,200 deaths in 2010. Oesophageal cancer is related to age, with over 95% of cases occurring in people aged over 50. Around two thirds of oesophageal cancer cases are in men.

The incidence of oesophageal cancer in men has been steadily increasing since 1985. This is largely explained by an increase in the incidence of lower oesophageal cancer, which is more common in men than women. Incidence of upper and middle oesophageal cancer has remained relatively stable over the last ten years.

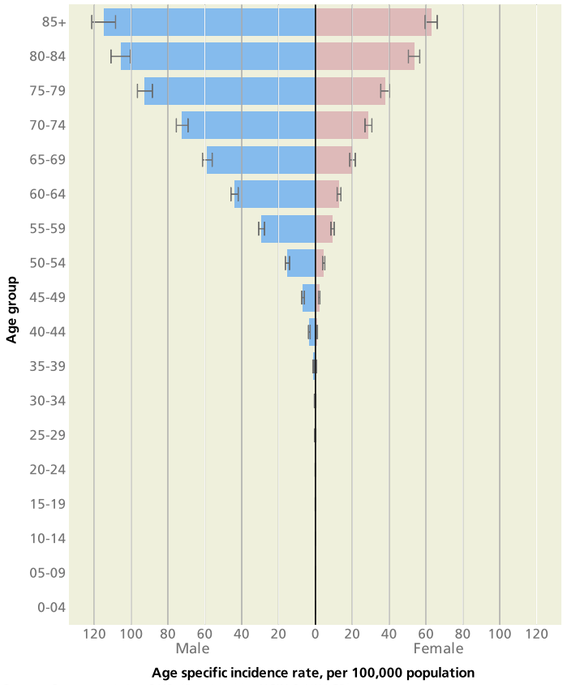
Mortality rates are higher in more deprived areas. Some of the known risk factors, including obesity, tobacco smoking and alcohol consumption, are associated with socioeconomic deprivation and therefore may partly explain this variation.

A higher risk of developing lower oesophageal cancer has been associated with increasing body mass index, gastro-oesophageal reflux disease and Barrett's oesophagus.

Survival remains poor reflecting the advanced stage of disease at diagnosis and health professionals should prioritise strategies focussing on raising public awareness of risk factors and earlier diagnosis.

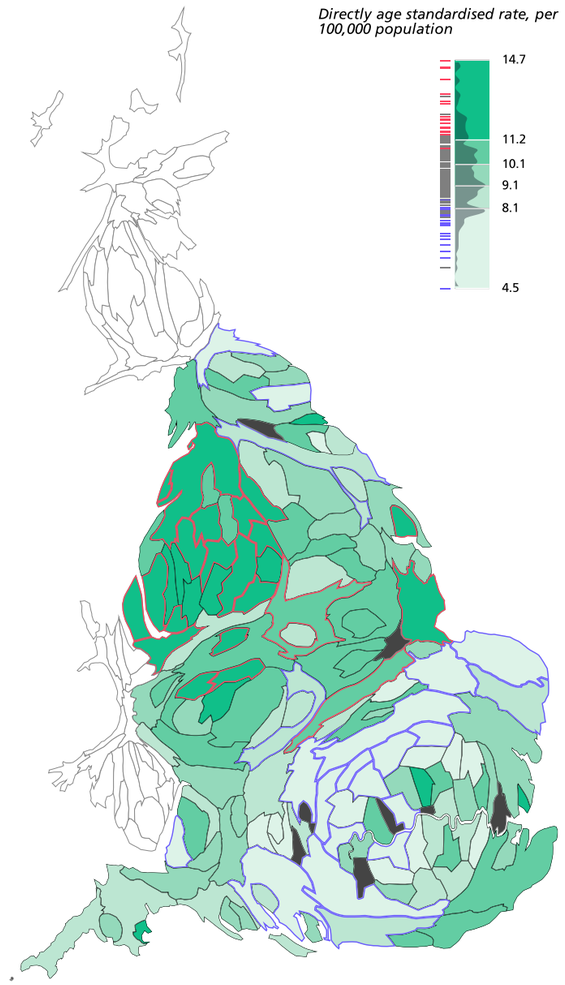
Erratum: Haringey is also significantly above the national average.

Average annual incidence of oesophageal cancer by age and sex, England, 2007-09



Source: Cancer statistics, ONS. (Provided by NCIN & UKACR)

Average annual oesophageal cancer incidence by upper tier local authority, England, 2007-09

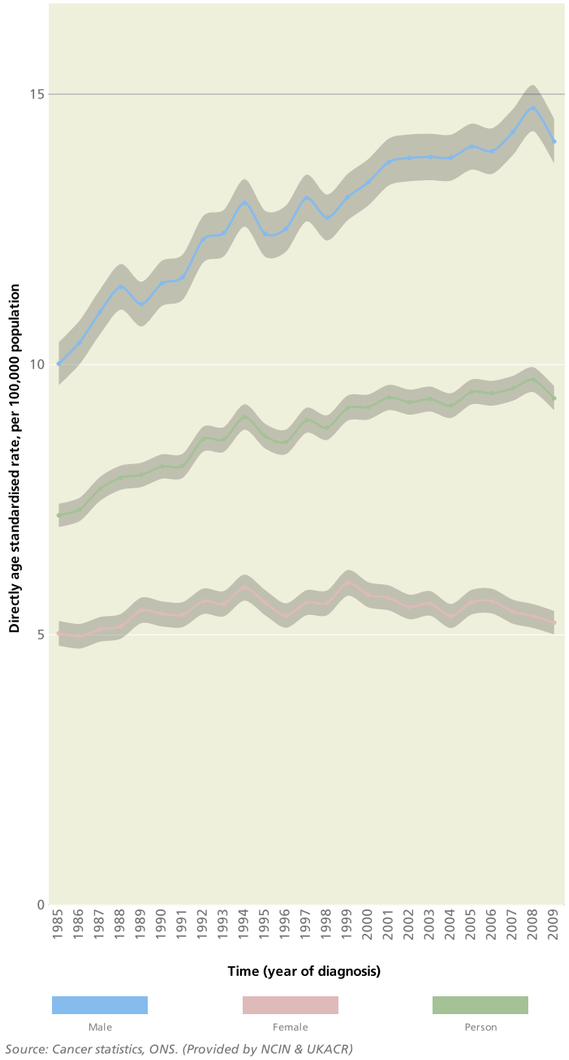


Source: Cancer statistics, ONS. (Provided by NCIN & UKACR)

Key facts

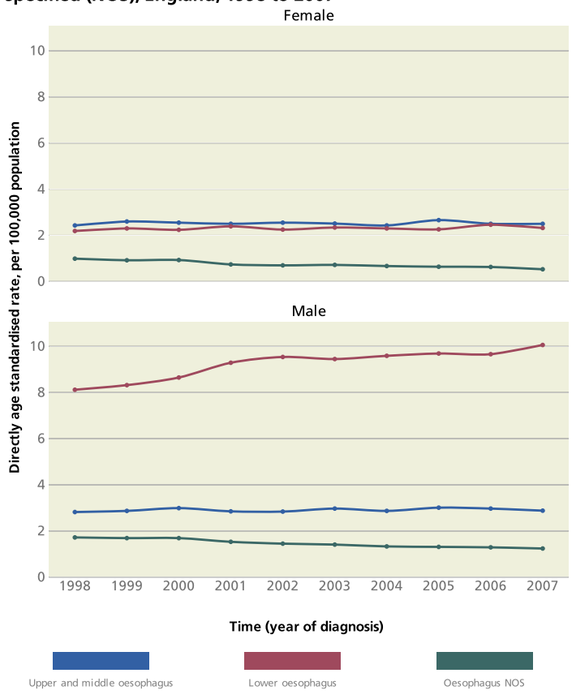
- Around 35,100 potential years of life lost (to age 75) in 2010 (2% of all PYLL)
- Around 106,000 hospital bed days in 2010/11 (<1% of all bed days)

Trend in incidence of oesophageal cancer by sex, England, 1985 to 2009



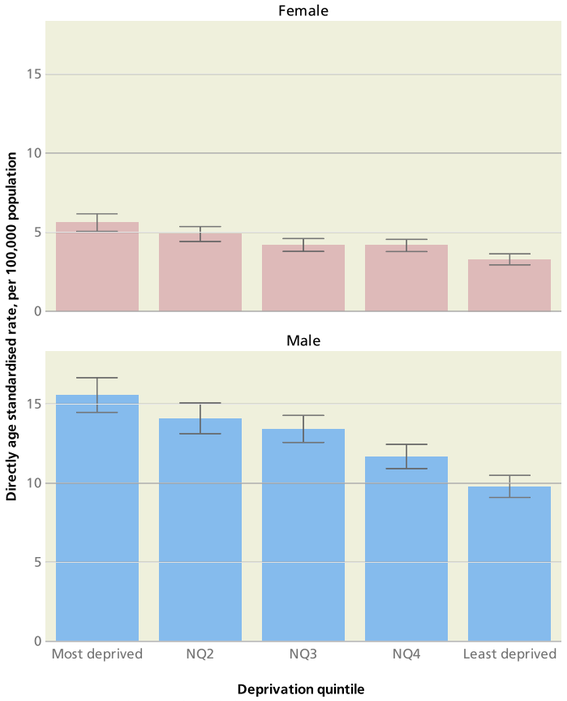
Source: Cancer statistics, ONS. (Provided by NCIN & UKACR)

Trend in incidence of cancer in the upper and middle oesophagus, the lower oesophagus and in the oesophagus not otherwise specified (NOS), England, 1998 to 2007



Source: Coupland VH, et al. Incidence and survival of oesophageal and gastric cancer in England between 1998 and 2007, a population-based study. BMC Cancer 2012, 12:11

Mortality due to oesophageal cancer by sex and deprivation, England, 2010



Source: Cancer statistics, ONS. (Provided by NCIN & UKACR)

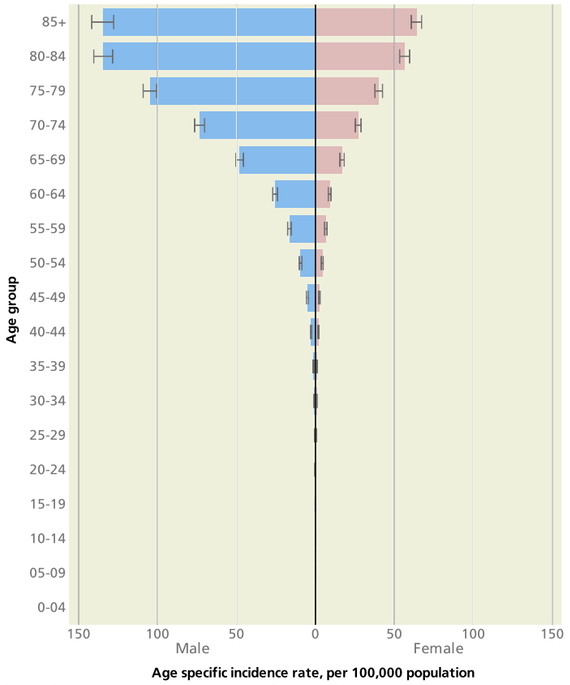
In 2009, there were around 6,000 new cases and 4,000 deaths from stomach cancer. Stomach cancer is related to age, with risk rapidly increasing in men aged over 60. Around two thirds of cases are diagnosed in men.

Incidence rates have declined significantly between 1985 and 2009. Mortality rates have also declined. Similar changes have been observed in other Western populations reflecting the declining prevalence of *Helicobacter pylori* infection due to antibiotic treatment and an increase of fresh food in the diet, as opposed to salt preserved foods.

Mortality rates are higher in more deprived areas. Risk factors include *Helicobacter pylori* infection, smoking and diet. There is an association between these risk factors and socioeconomic deprivation, which may explain the geographic variation.

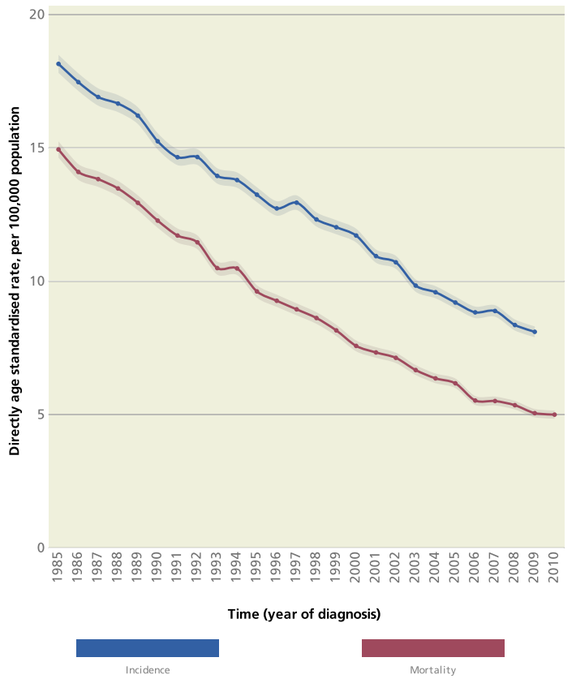
Survival is still poor reflecting the advanced stage of disease at diagnosis for many patients. Health professionals should prioritise improving early diagnosis.

Average annual incidence of stomach cancer by age and sex, England, 2007-09



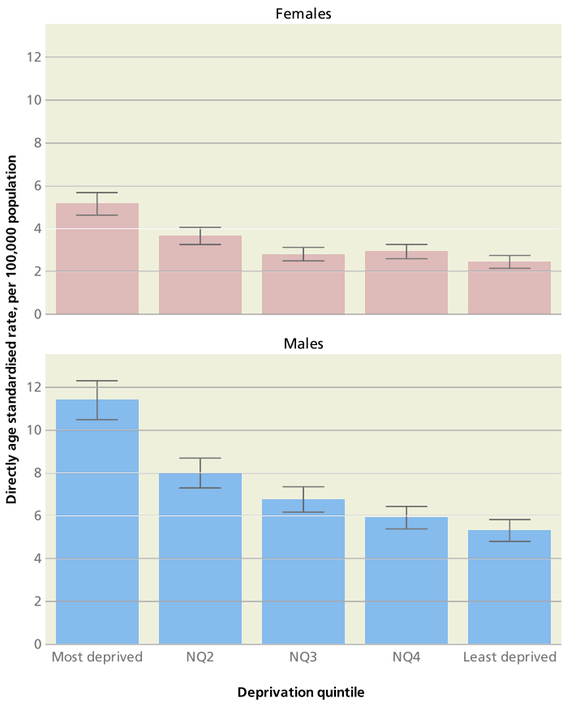
Source: Cancer statistics, ONS. (Provided by NCIN & UKACR)

Trend in incidence and mortality of stomach cancers, England, 1985 to 2010



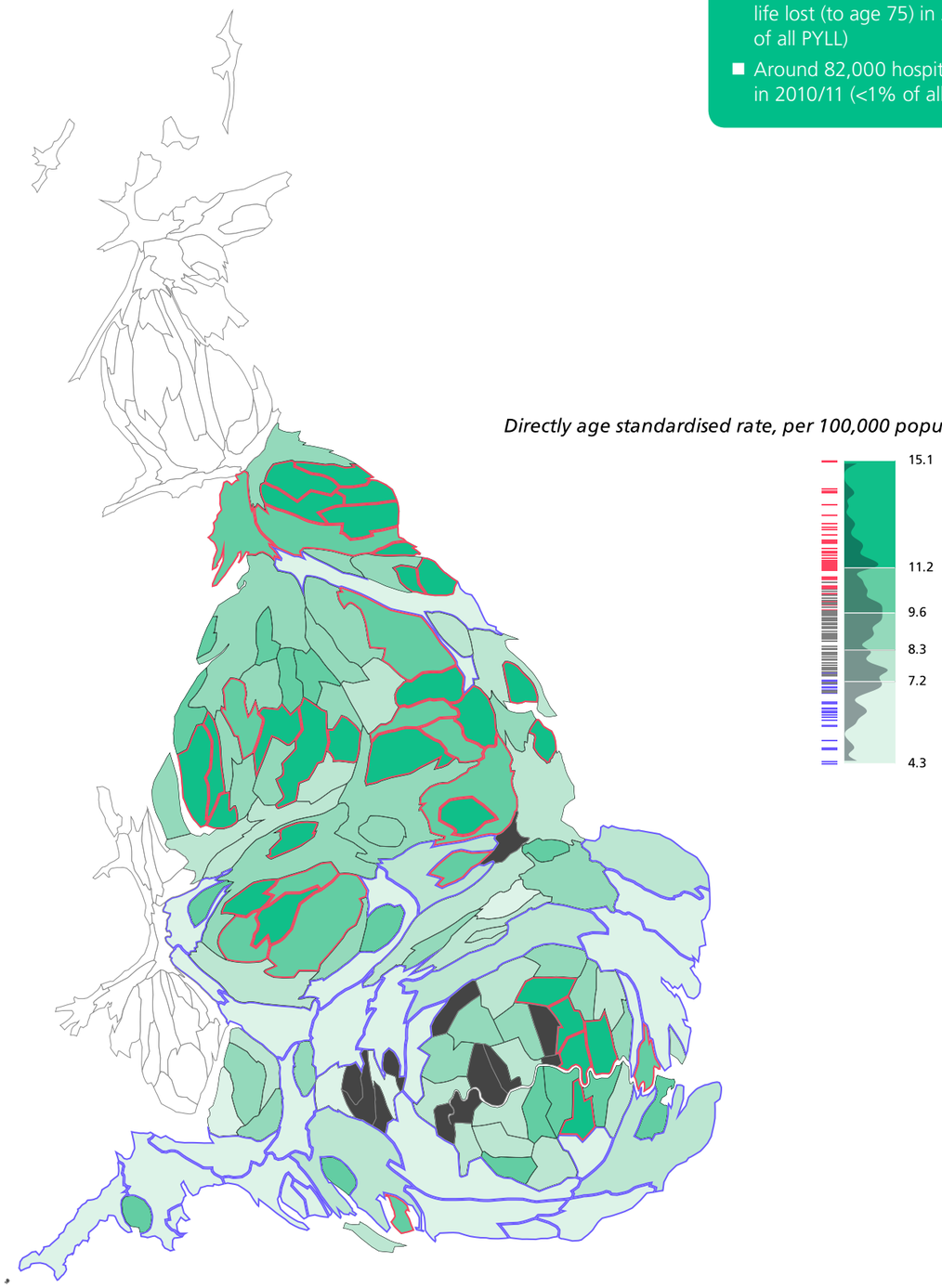
Source: Cancer statistics, ONS. (Provided by NCIN & UKACR)

Mortality due to stomach cancer by sex and deprivation, England, 2010



Source: Cancer statistics, ONS. (Provided by NCIN & UKACR)

Average annual incidence of stomach cancer by upper tier local authority, England, 2007-09



Source: Cancer statistics, ONS. (Provided by NCIN & UKACR)

Key facts

- Around 18,700 potential years of life lost (to age 75) in 2010 (<1% of all PYLL)
- Around 82,000 hospital bed days in 2010/11 (<1% of all bed days)

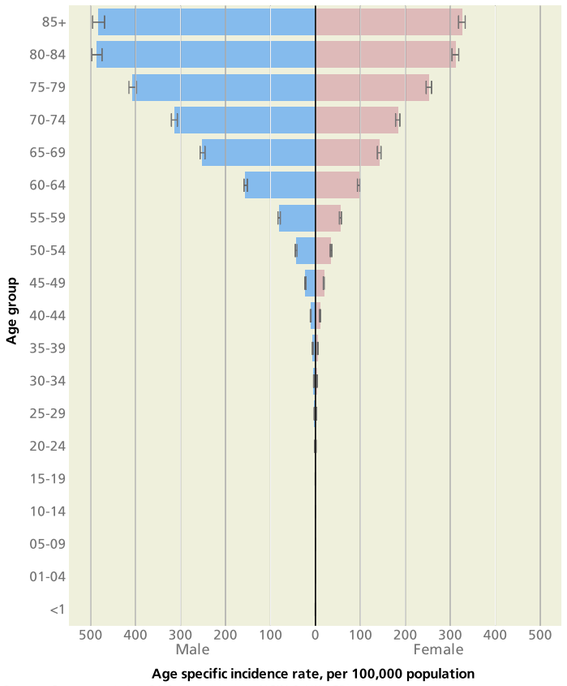
Colorectal cancer (colon and rectal cancers) is the fourth most common cancer in England, after breast, prostate and lung, and is the second most common reason for death due to cancer, after lung cancer. There were nearly 33,000 new cases and nearly 13,000 deaths in 2009.

Colorectal cancer risk is strongly related to age, with 95% of cases occurring in people aged 50 or over. Colorectal cancer is more common in men than women, with 55% of cases in men.

The incidence of colorectal cancer in England has been rising over the last two decades. This is partly due to the aging population, but age standardised incidence rates have also seen an increase of 6% between 2001 and 2009. Mortality rates have shown a steady fall of 13% between 2001 and 2010. Mortality rates are greatest in the most deprived; the difference between the most and least deprived is greater in men than women (33% versus 21%).

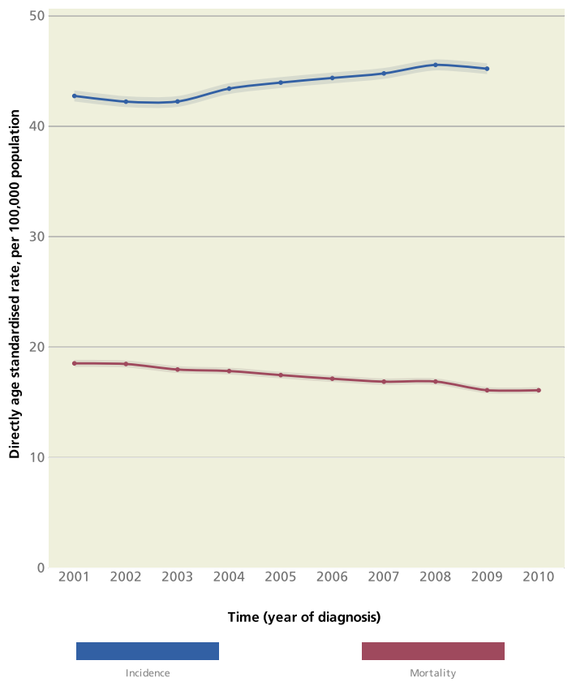
Many risk factors for colorectal cancer are now understood. These include diet, obesity, smoking, and alcohol consumption. Regular bowel cancer screening can reduce the risk of dying through earlier detection. A screening programme is now fully rolled out across England for 60-69 year olds and high uptake is key to reducing mortality rates.

Average annual incidence of colon and rectal cancers by age and sex, England, 2007-09



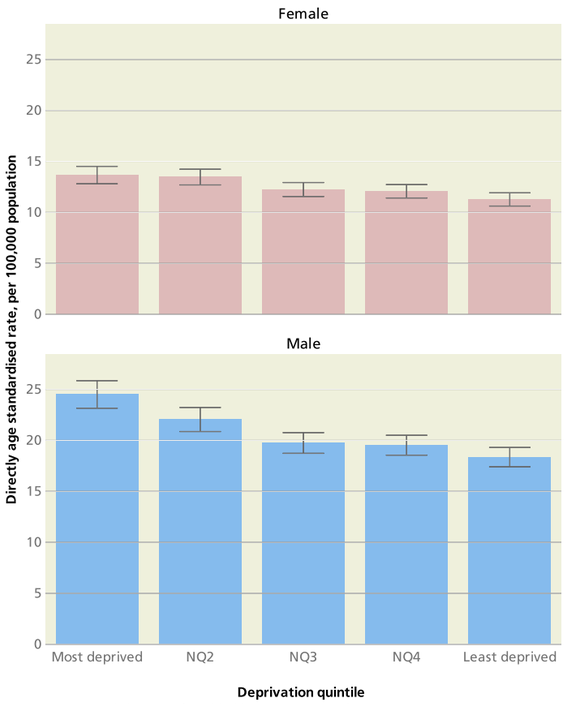
Source: Cancer statistics, ONS. (Provided by NCIN & UKACR)

Trend in incidence and mortality of colon and rectal cancers, England, 2001 to 2010



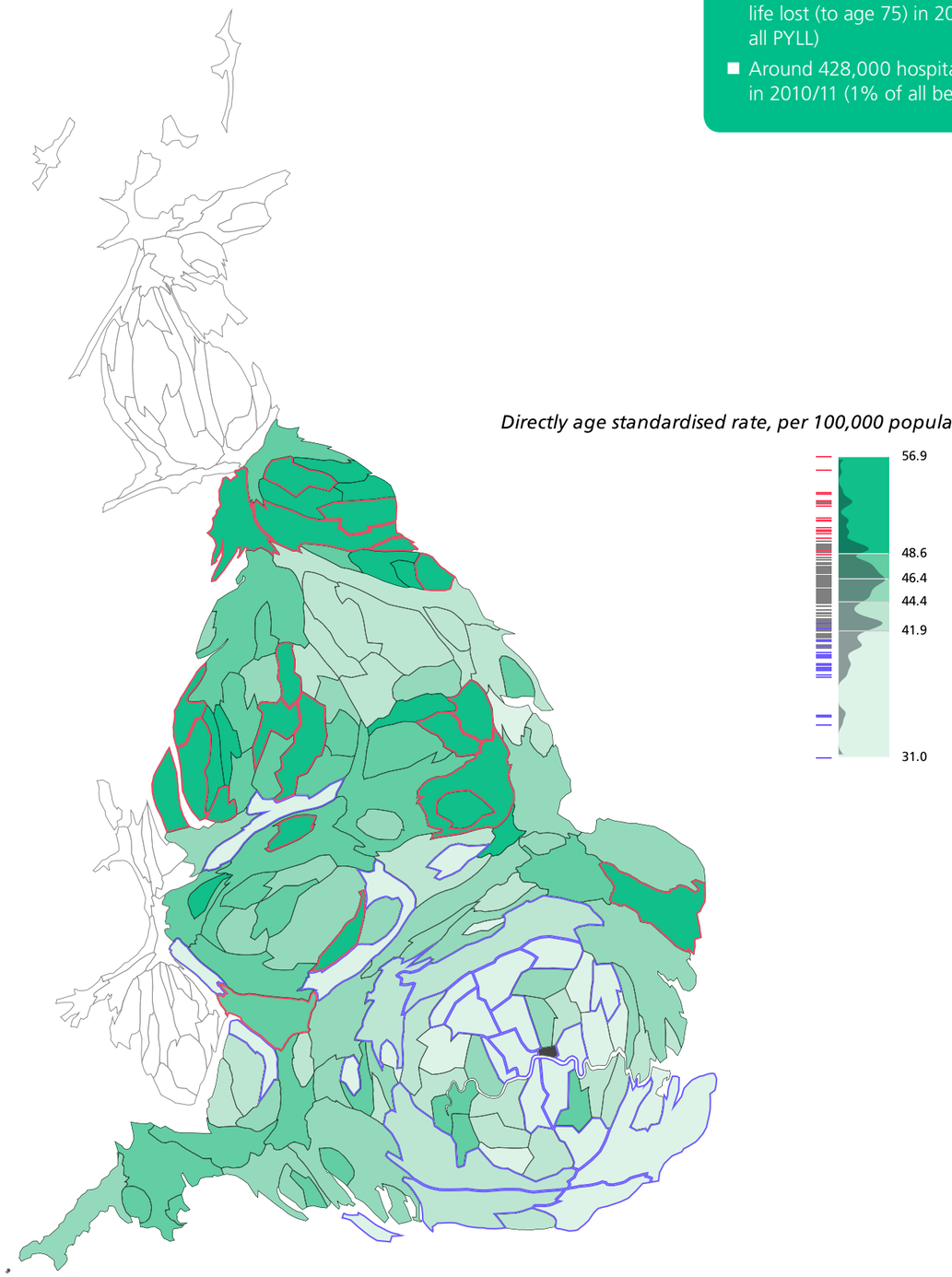
Source: Cancer statistics, ONS. (Provided by NCIN & UKACR)

Mortality due to Colorectal cancer by sex and deprivation, England, 2010



Source: Cancer statistics, ONS. (Provided by NCIN & UKACR)

Average annual colon and rectal cancer incidence by upper tier local authority, England, 2007-09



Source: Cancer statistics, ONS. (Provided by NCIN & UKACR)

Key facts

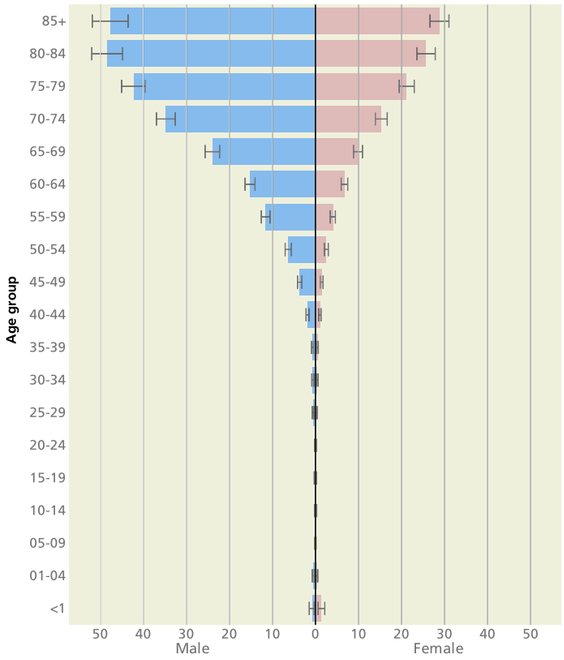
- Around 61,300 potential years of life lost (to age 75) in 2010 (3% of all PYLL)
- Around 428,000 hospital bed days in 2010/11 (1% of all bed days)

Primary liver cancer, excluding cancers that have spread to the liver from other parts of the body, only makes up around 1% of all cancers. However, the incidence and mortality rates have been increasing.

In 2009, there were over 3,000 new cases and nearly 3,000 deaths due to liver cancer. Incidence is related to age, with 93% of cases occurring in people aged 50 or over. It is more common in men than women, with 62% of all cases diagnosed in men.

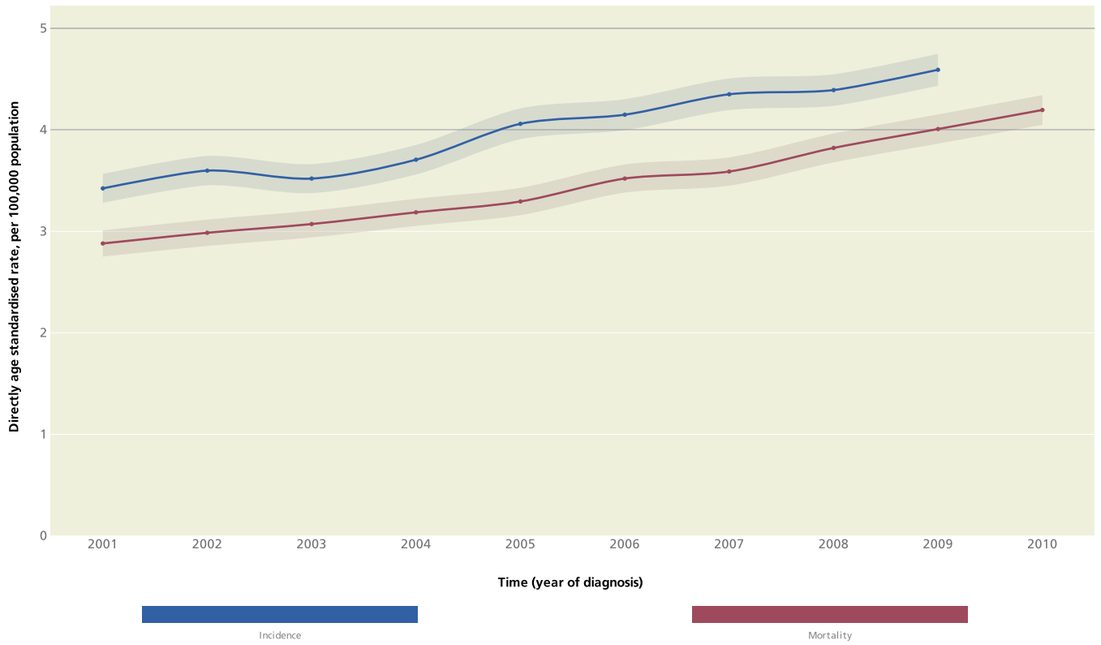
The main preventable risk factors are hepatitis B and hepatitis C infection and harmful alcohol use. Individuals who smoke and have hepatitis B or C infection are at a higher risk. Prevention, early detection and treatment of both liver disease and liver cancer will help to reduce mortality due to liver cancer. Raising public awareness of risk factors associated with liver cancer will also assist. Incidence rates of liver cancer tend to be highest in the North West.

Average annual incidence of liver cancer by age and sex, England, 2007-09



Source: Cancer statistics, ONS. (Provided by NCIN & UKACR)

Trend in incidence and mortality of liver cancers, England, 2001 to 2010



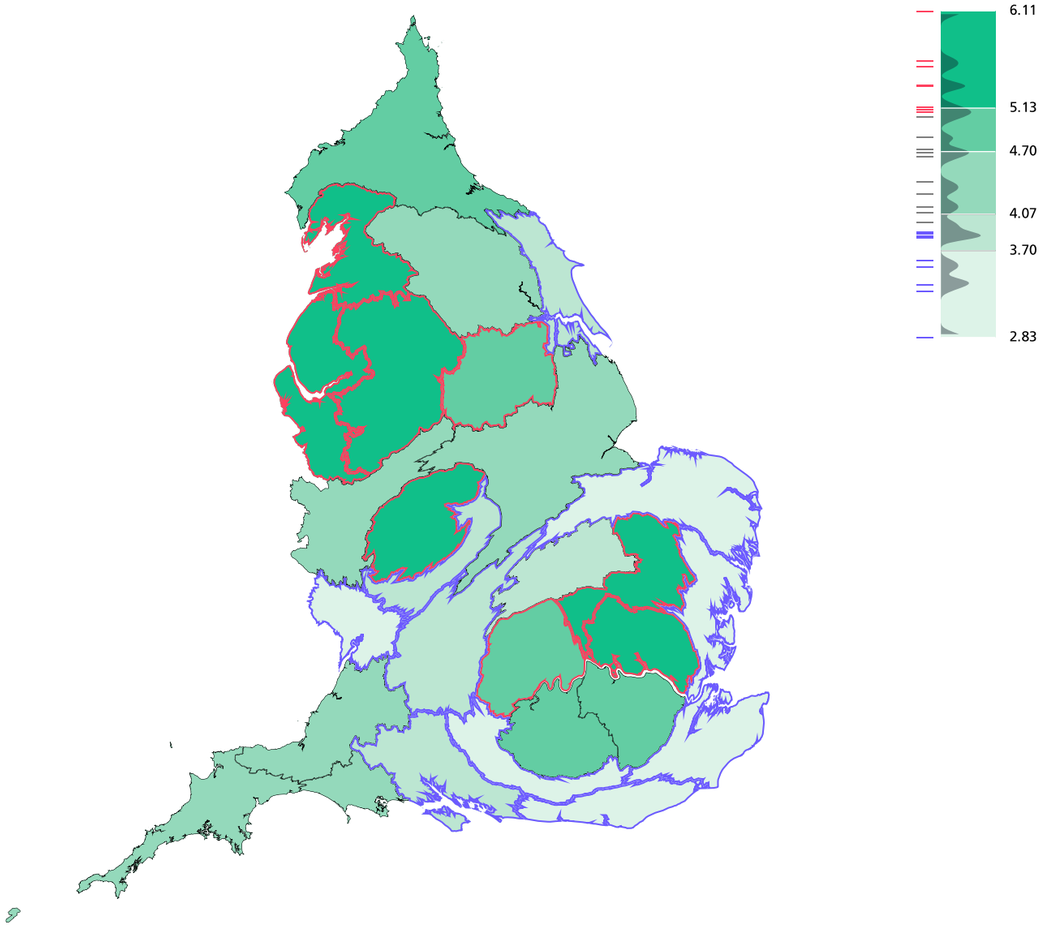
Source: Cancer statistics, ONS. (Provided by NCIN & UKACR)

Key facts

- Around 19,500 potential years of life lost (to age 75) in 2010 (<1% of all PYLL)
- Around 54,000 hospital bed days in 2010/11 (<1% of all bed days)

Average annual incidence of liver cancer by cancer network, England, 2007-09

Directly age standardised rate, per 100,000 population



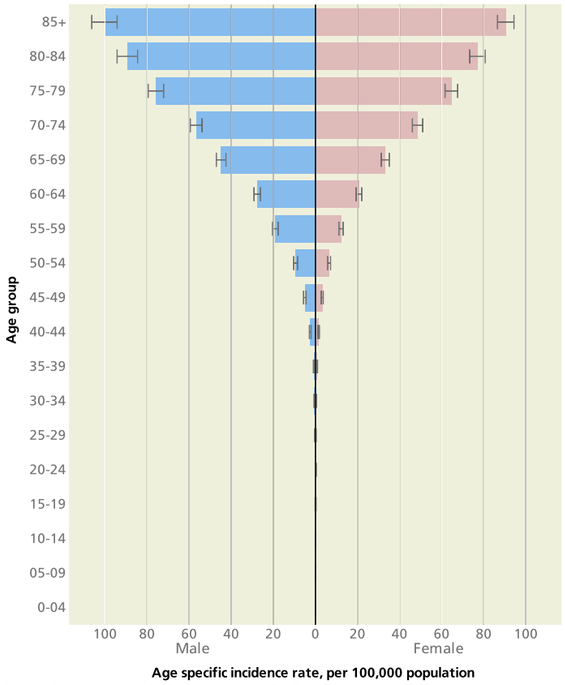
Source: Cancer statistics, ONS. (Provided by NCIN & UKACR)

In 2009, there were nearly 7,000 new cases and over 6,500 deaths due to pancreatic cancer. Pancreatic cancer risk increases with age and around 96% of cases occur in people aged 50 or over. There are a similar number of cases diagnosed in men and women.

Incidence remained unchanged between 1985 and 2009. Mortality is high and has remained stable despite improvements in treatment. This is likely to reflect the advanced stage of disease at presentation in most patients. Therefore, health professionals should prioritise initiatives aimed at ensuring patients are diagnosed at an earlier stage.

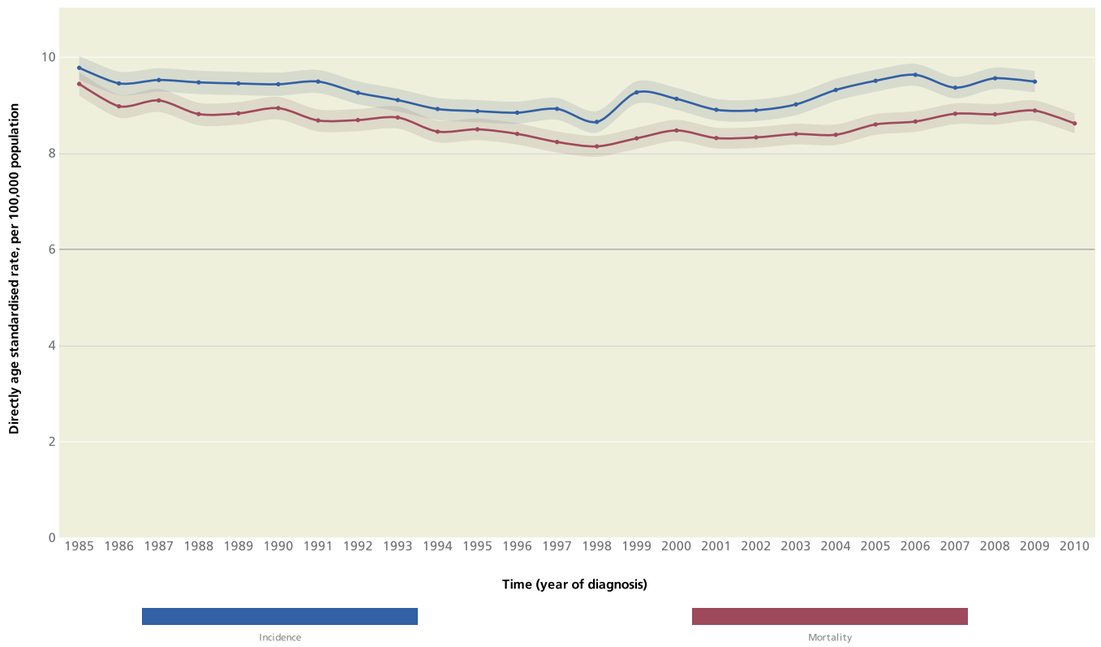
Risk factors for pancreatic cancer include smoking (approximately 20-30% of cases are associated with tobacco), a history of diabetes, and both chronic and hereditary pancreatitis. A relatively weaker association has been found with obesity.

Average annual incidence of pancreatic cancer by age and sex, England, 2007-09



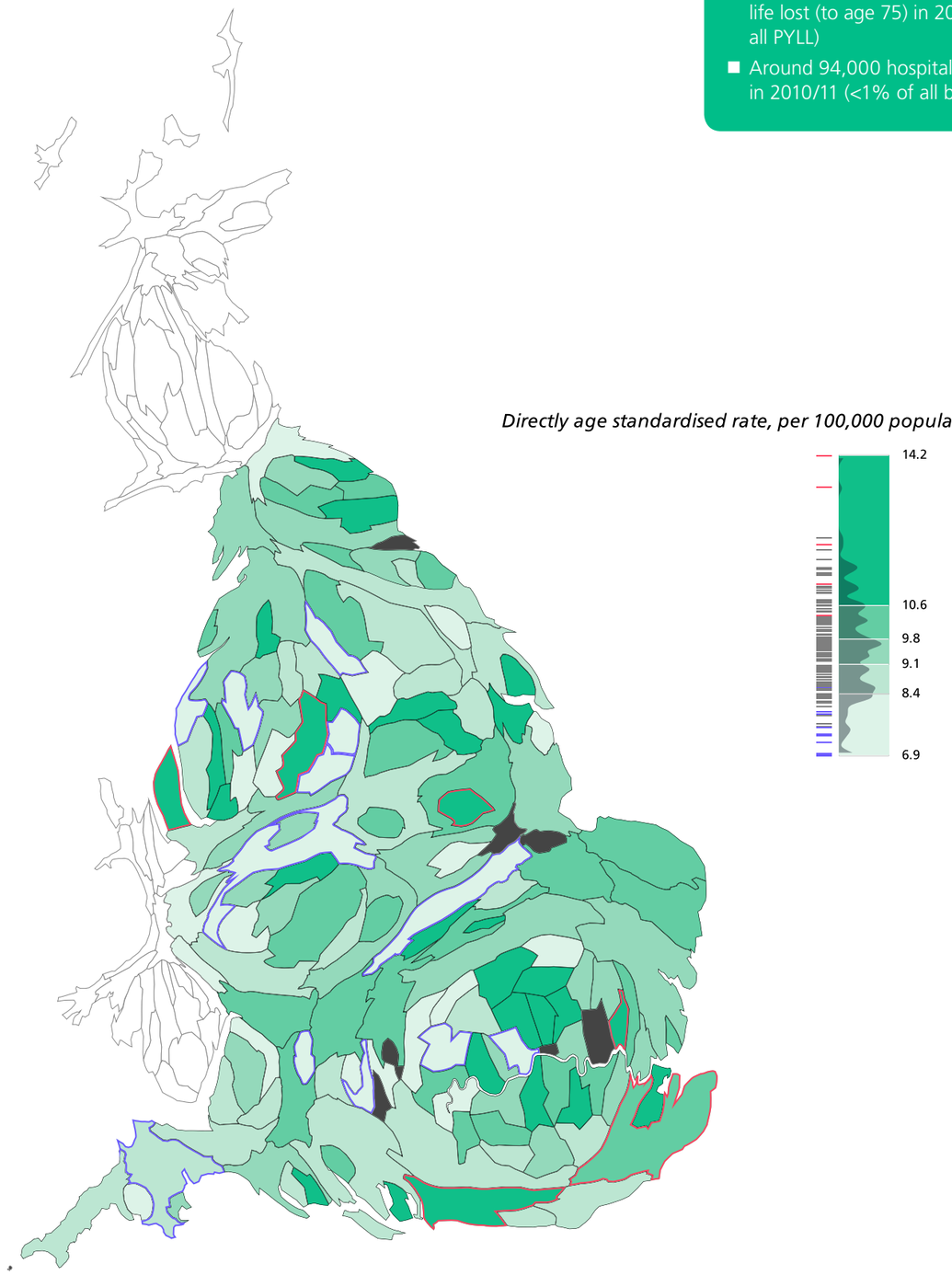
Source: Cancer statistics, ONS. (Provided by NCIN & UKACR)

Trend in incidence and mortality of pancreatic cancer, England, 1985 to 2010



Source: Cancer statistics, ONS. (Provided by NCIN & UKACR)

Average annual incidence of pancreatic cancer by upper tier local authority, England, 2007-09



Source: Cancer statistics, ONS. (Provided by NCIN & UKACR)

Key facts

- Around 35,200 potential years of life lost (to age 75) in 2010 (2% of all PYLL)
- Around 94,000 hospital bed days in 2010/11 (<1% of all bed days)

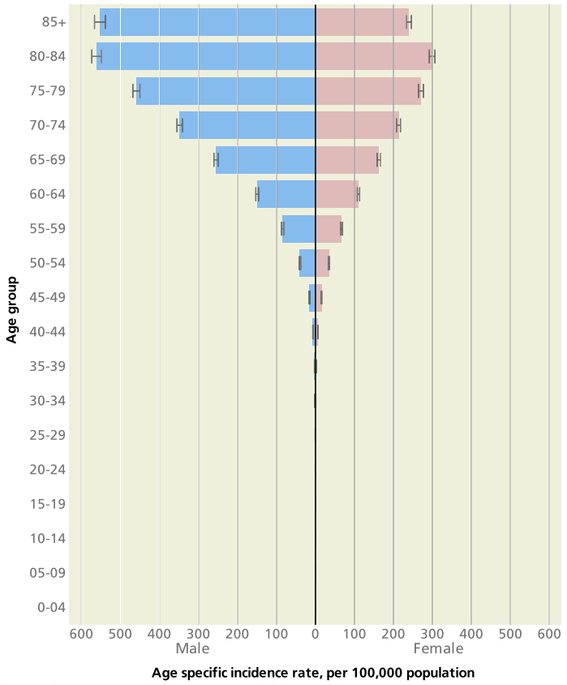
Lung cancer is the second most common cancer after breast cancer and kills more people than any other cancer. More than 33,000 people were diagnosed with lung cancer in England in 2009, and just over 28,000 people died of the disease in 2010.

Tobacco smoking is the main cause of lung cancer and about 90% of lung cancers can be attributed to it. Lung cancer incidence increases sharply after middle age. More than 75% of lung cancers are diagnosed in people over the age of 65.

The decline in smoking prevalence among men is reflected in the sharp decrease in the incidence of lung cancer over the past two decades. However, due to the rise in women who took up smoking after World War II, the incidence among women continues to increase. The difference in smoking prevalence between men and women has given rise to a dramatic change in the male to female lung cancer incidence ratio from 10:3 in 1985 to 3:2 in 2009.

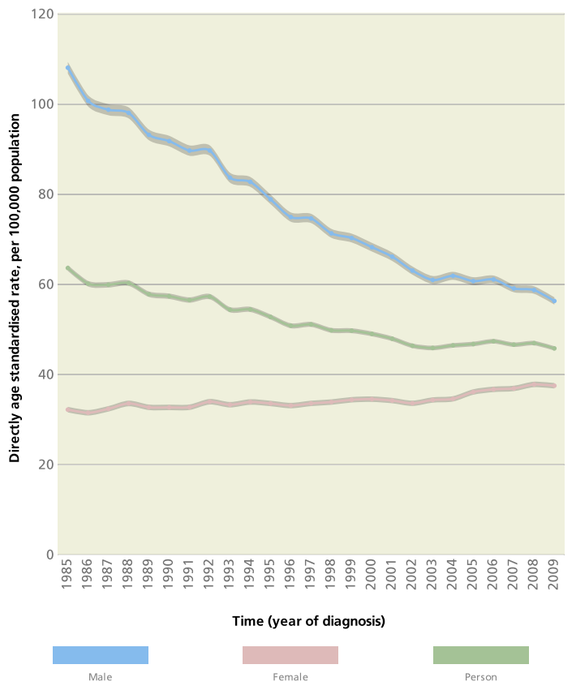
Smoking is more prevalent in deprived areas and lung cancer mortality is approximately 2.5 times higher in the most deprived areas compared to the least deprived areas. With over 17,000 emergency admissions in 2010, there are more emergency admissions due to lung cancer than any other cancer.

Average annual incidence of trachea, bronchus and lung cancer by age and sex, England, 2007-09



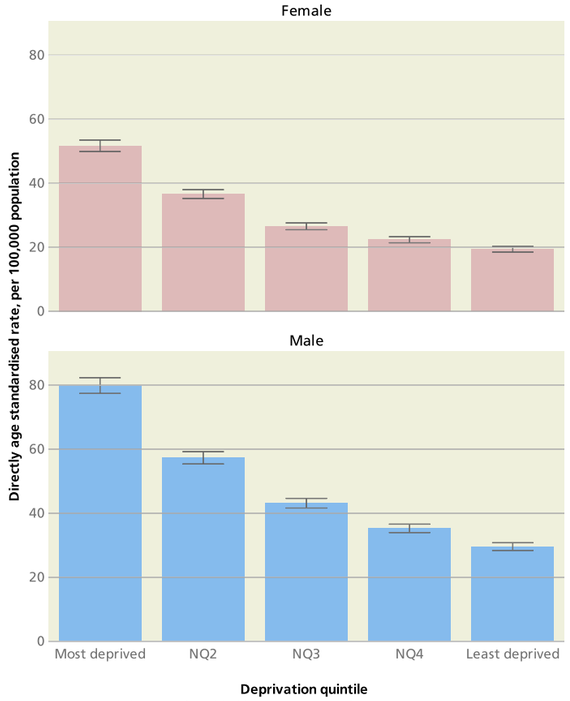
Source: Cancer statistics, ONS. (Provided by NCIN & UKACR)

Trend in incidence of trachea, bronchus and lung cancers by sex, England, 1985 to 2009



Source: Cancer statistics, ONS. (Provided by NCIN & UKACR)

Mortality due to trachea, bronchus and lung cancer by sex and deprivation, England, 2010

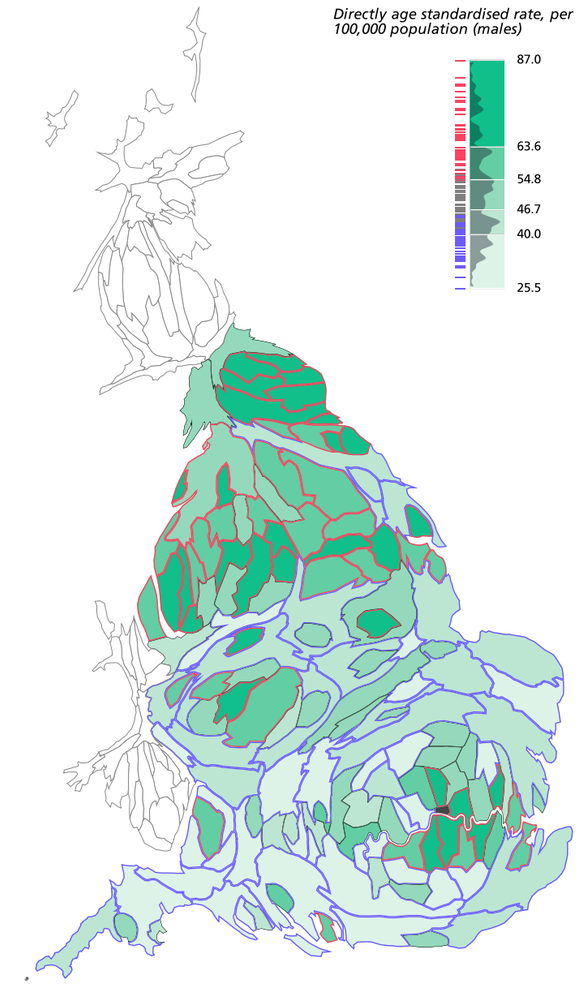


Source: Cancer statistics, ONS. (Provided by NCIN & UKACR)

Key facts

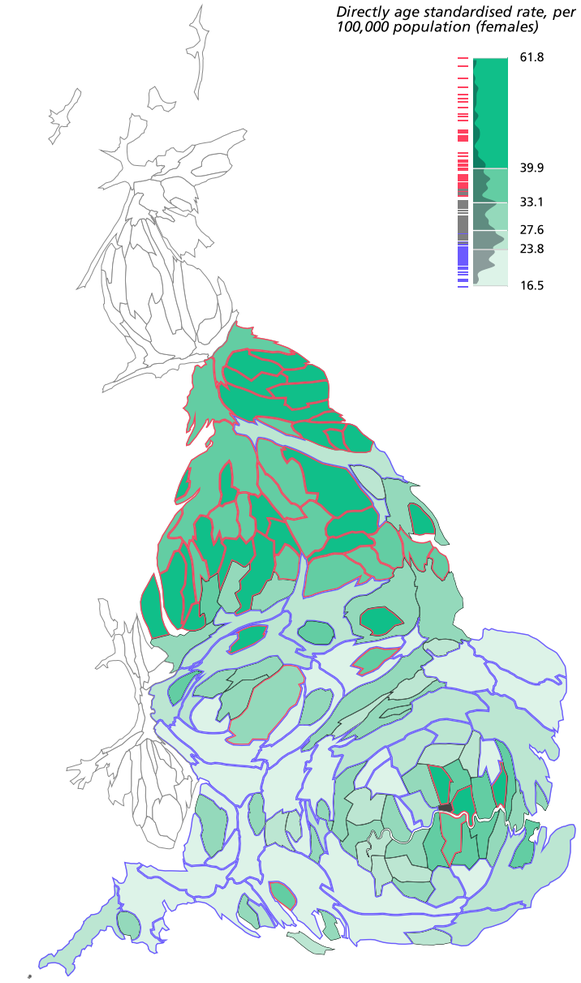
- Around 146,500 potential years of life lost (to age 75) in 2010 (6% of all PYLL)
- Around 305,000 hospital bed days in 2010/11 (<1% of all bed days)

Average annual mortality due to trachea, bronchus and lung cancer in males by upper tier local authority, England, 2007-09



Source: Cancer statistics, ONS. (Provided by NCIN & UKACR)

Average annual mortality due to trachea, bronchus and lung cancer in females by upper tier local authority, England, 2007-09



Source: Cancer statistics, ONS. (Provided by NCIN & UKACR)

Malignant melanoma, a skin cancer, is the sixth most common cancer in England with almost 9,800 cases recorded in 2009. Mortality rates are low with around 1,800 deaths in 2010. Around 95% of deaths occur in the over 40s.

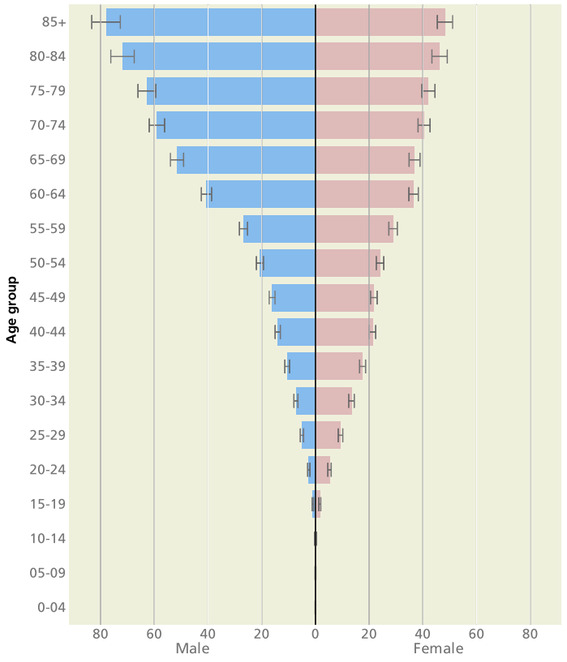
Non-melanoma skin cancers (NMSC) are about 10 times as common as malignant melanomas but their true number is significantly under reported. Although NMSC mortality rates are very low, around 25% require complex surgery, and their high incidence therefore means that their treatment is costly.

Between 1999 and 2009 the incidence rate for malignant melanoma has increased faster than any other cancer, most markedly by 85% in those aged 60-79. Of those diagnosed in 2007-2009, just over 50% of female cases were in those aged 40-69, and almost 50% of all male cases were in those aged 60-79.

Malignant melanoma is more common in the south of England. Some local authorities in the south have a rate more than double that found in some local authorities in the north. It is also more common in least deprived areas. Lifestyle factors including sun exposure, foreign travel and outdoor pursuits are likely to increase risk.

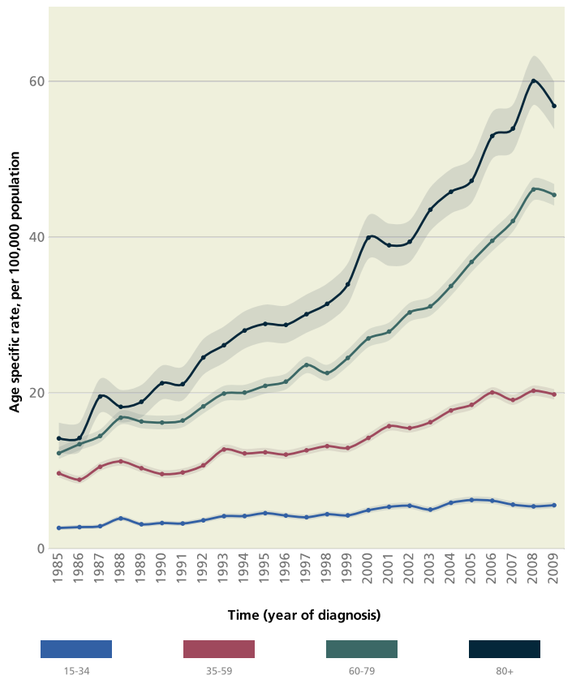
Raising awareness of risk factors and minimising ultraviolet exposure will help reduce incidence.

Average annual incidence of melanoma by age and sex, England, 2007-09



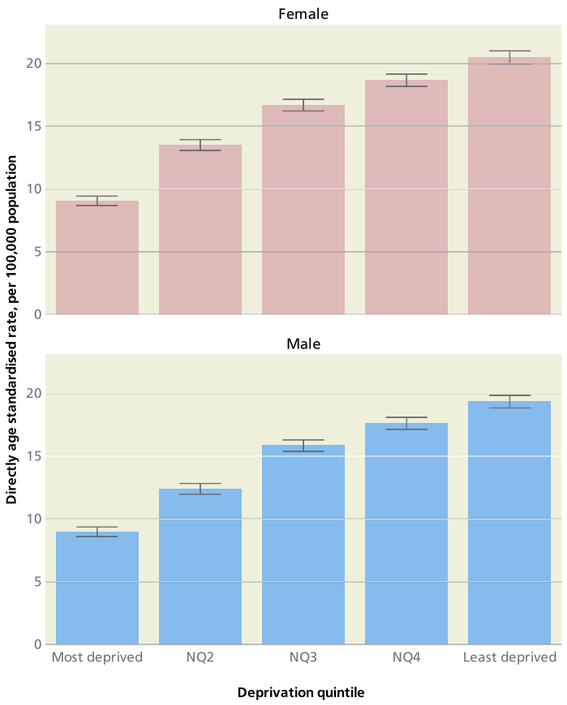
Source: Cancer statistics, ONS. (Provided by NCIN & UKACR)

Trend in incidence of melanoma by age group, England, 1985 to 2009



Source: Cancer statistics, ONS. (Provided by NCIN & UKACR)

Average annual incidence of malignant melanoma by sex and deprivation, England, 2005-09

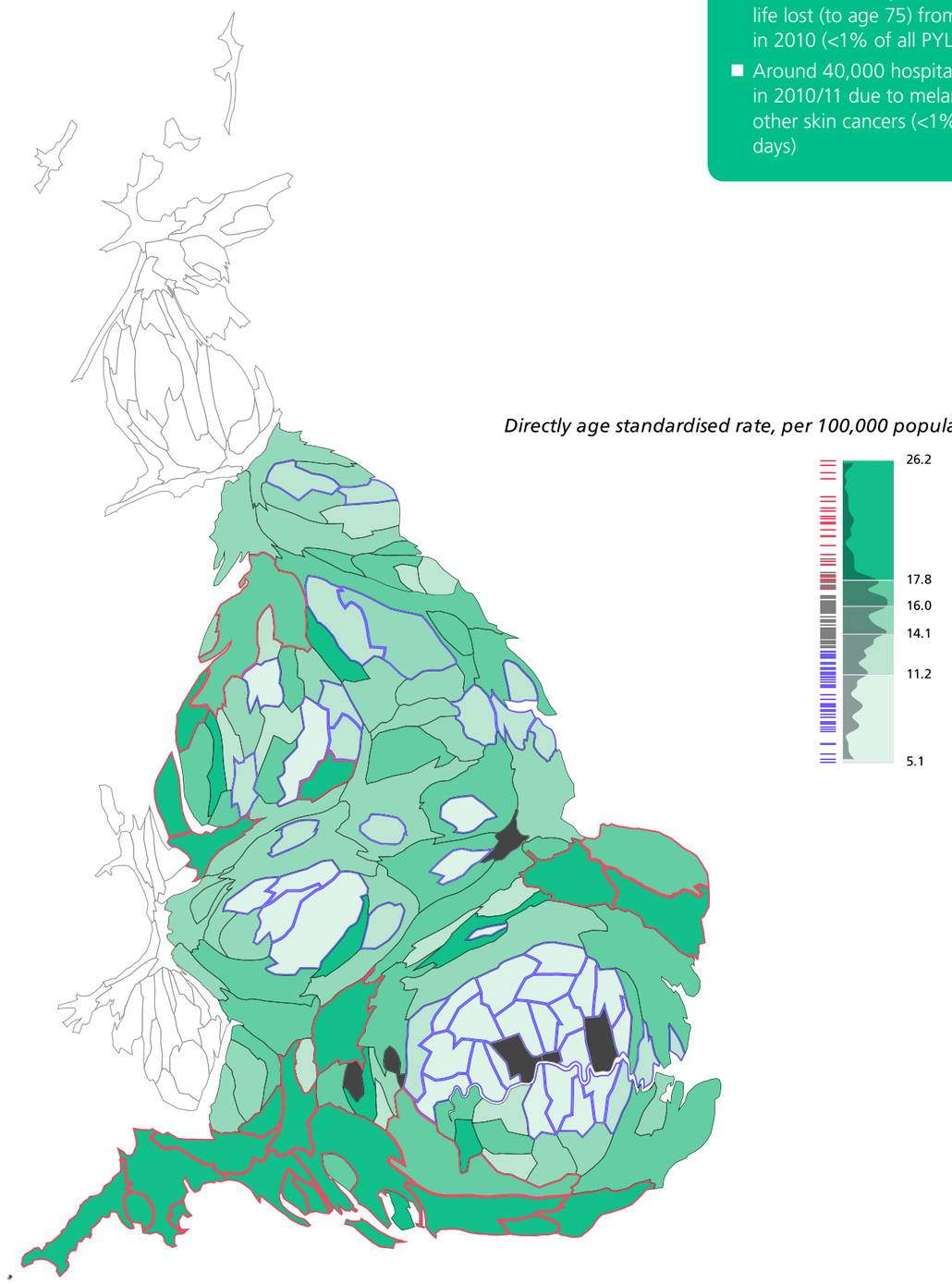


Source: Cancer statistics, ONS. (Provided by NCIN & UKACR)

Key facts

- Around 16,900 potential years of life lost (to age 75) from melanoma in 2010 (<1% of all PYLL)
- Around 40,000 hospital bed days in 2010/11 due to melanoma and other skin cancers (<1% of all bed days)

Average annual incidence of malignant melanoma by upper tier local authority, England, 2007-09



Source: Cancer statistics, ONS. (Provided by NCIN & UKACR)

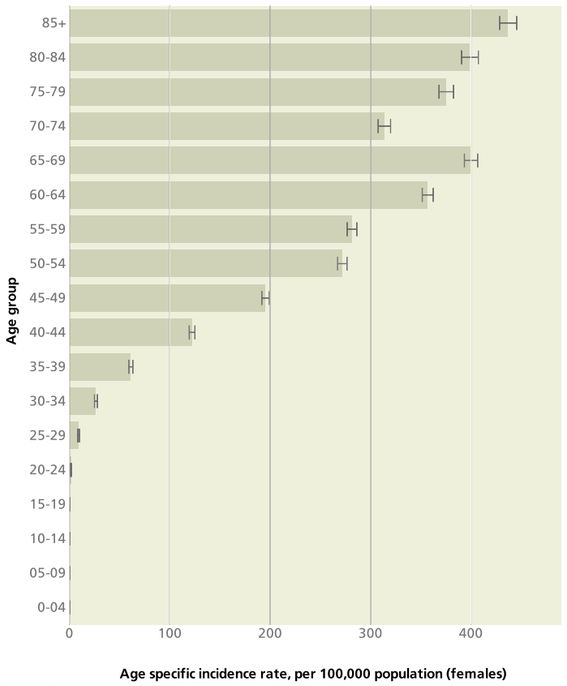
Invasive breast cancer is the most common cancer in women and the second most common cause of death from cancer in women; in 2009 there were over 40,000 new cases and over 9,000 deaths. Nearly a third of all new cancers in women are invasive breast cancers.

Breast cancer risk is strongly related to age, with 80% of cases of invasive breast cancer occurring in women aged 50 or over. Although more than 99% of cases are in women, there were 325 new cases in men in 2009.

The incidence of invasive breast cancer has risen over the last two decades, with a 45% rise in age standardised rates between 1985 and 2009. Mortality rates have shown a steady (42%) fall over the same time period, reflecting improvements in treatment and the impact of the NHS Breast Screening Programme. In 2007, 32% of invasive breast cancers in all women and 56% diagnosed in women aged 50 to 69, were screen-detected. Ensuring high uptake remains key to reducing mortality.

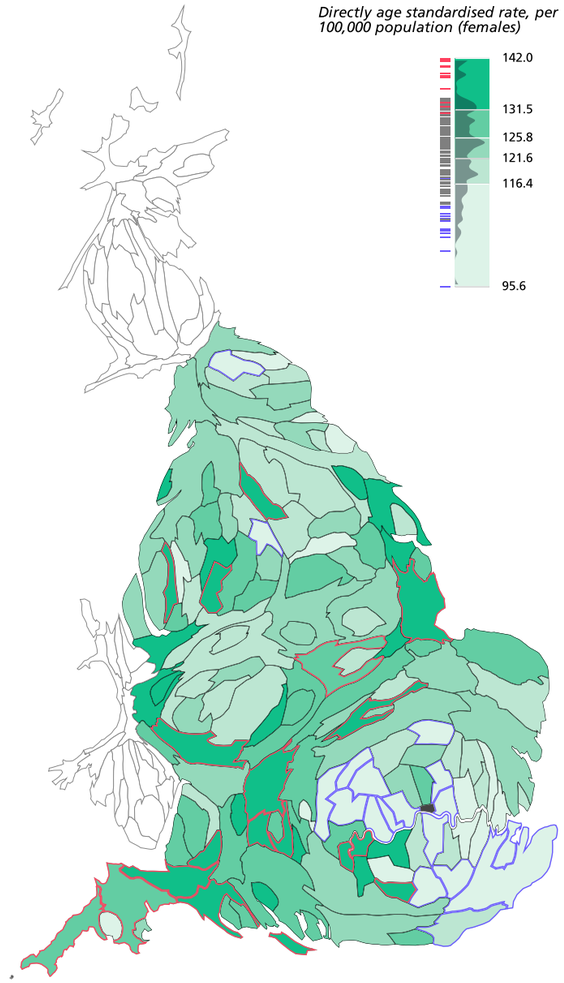
Breast cancer is one of the few cancers which is more common in least deprived areas. The main risk factors for breast cancer include later age at first pregnancy and fewer full term pregnancies; these risk factors are more prevalent in least deprived areas.

Average annual incidence of invasive breast cancer by age, England, 2007-09



Source: Cancer statistics, ONS. (Provided by NCIN & UKACR)

Average annual incidence of invasive breast cancer by upper tier local authority, England, 2007-09

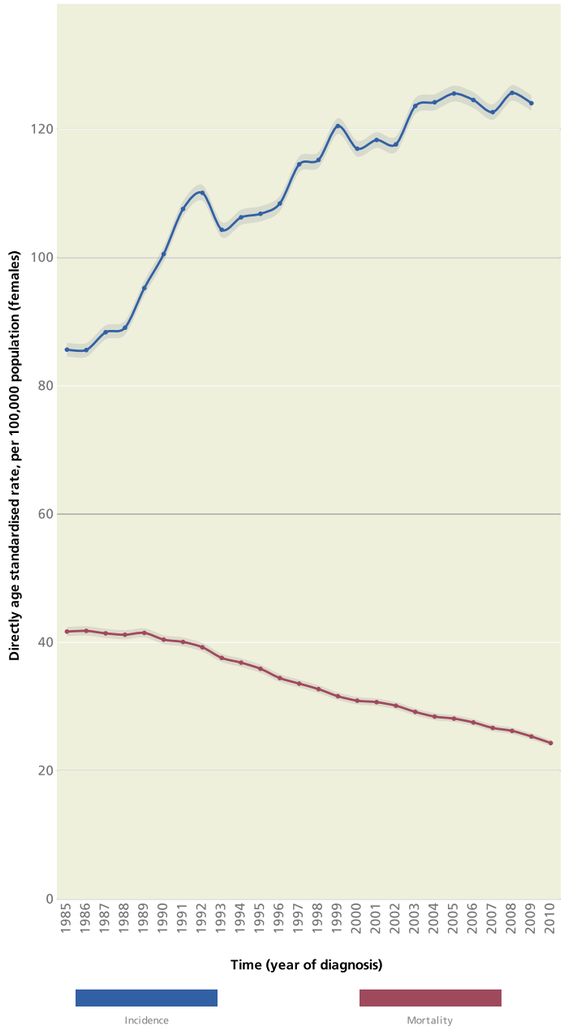


Source: Cancer statistics, ONS. (Provided by NCIN & UKACR)

Key facts

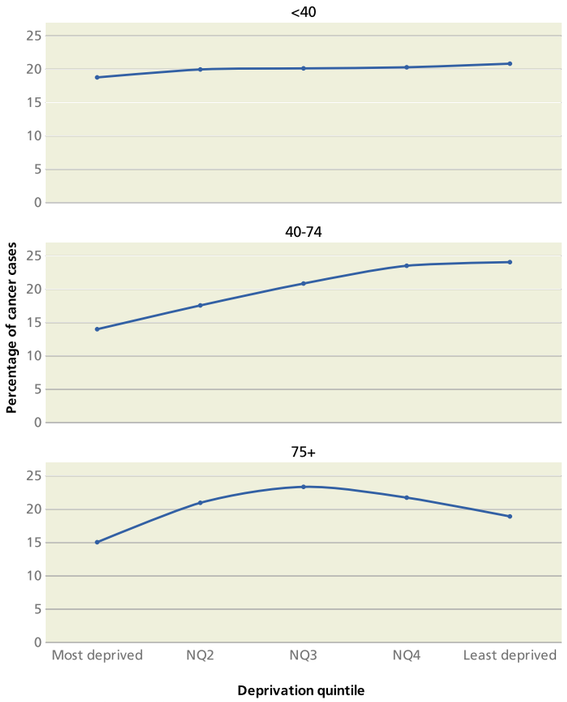
- Around 77,900 potential years of life lost (to age 75) in 2010 (3% of all PYLL)
- Around 142,000 hospital bed days in 2010/11 (<1% of all bed days)

Trend in the incidence and mortality of invasive breast cancers, England, 1985 to 2010



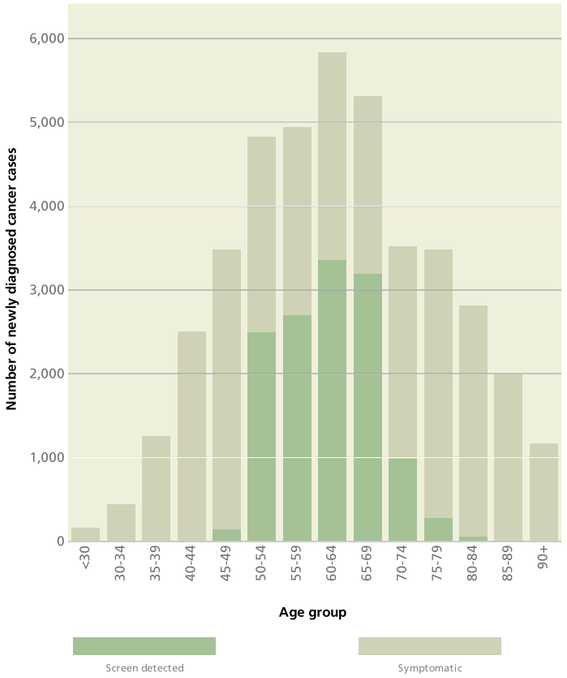
Source: Cancer statistics, ONS. (Provided by NCIN & UKACR)

Age at diagnosis for women with invasive breast cancer by deprivation, England, 2007



Source: WMCIU. (Provided by NCIN & UKACR)

Invasive breast cancer by age group and route of diagnosis, England, 2007



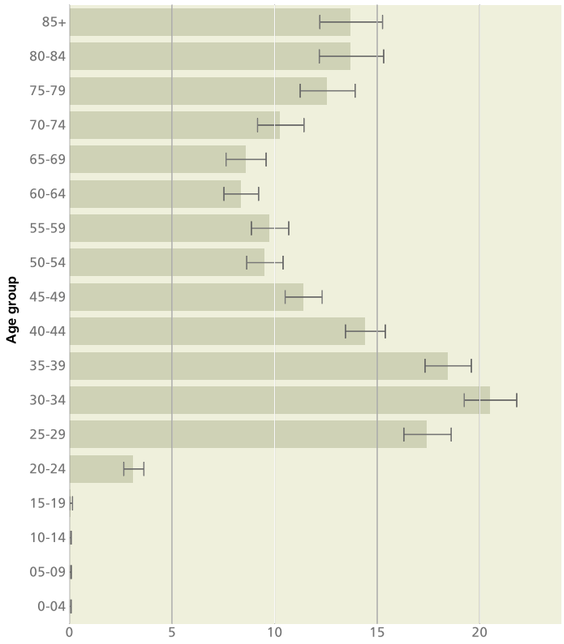
Source: WMCIU. (Provided by NCIN & UKACR)

Cervical cancer is the tenth most common cancer in women, with over 2,700 new cases in 2009. There were around 750 deaths from cervical cancer in 2010. Following the establishment of the Cervical Screening Programme in 1988, incidence rates have decreased by a third whilst mortality has more than halved. Incidence and mortality rates tend to be highest in the north and the Midlands, and lowest in the East and in and around London.

Between 2008 and 2009 there was a 14% increase in the overall incidence of cervical cancer, most notable in women aged 25-39. This is likely to be due to earlier detection of cancers, linked to increased screening coverage following the media attention around the diagnosis and subsequent death of the celebrity Jade Goody.

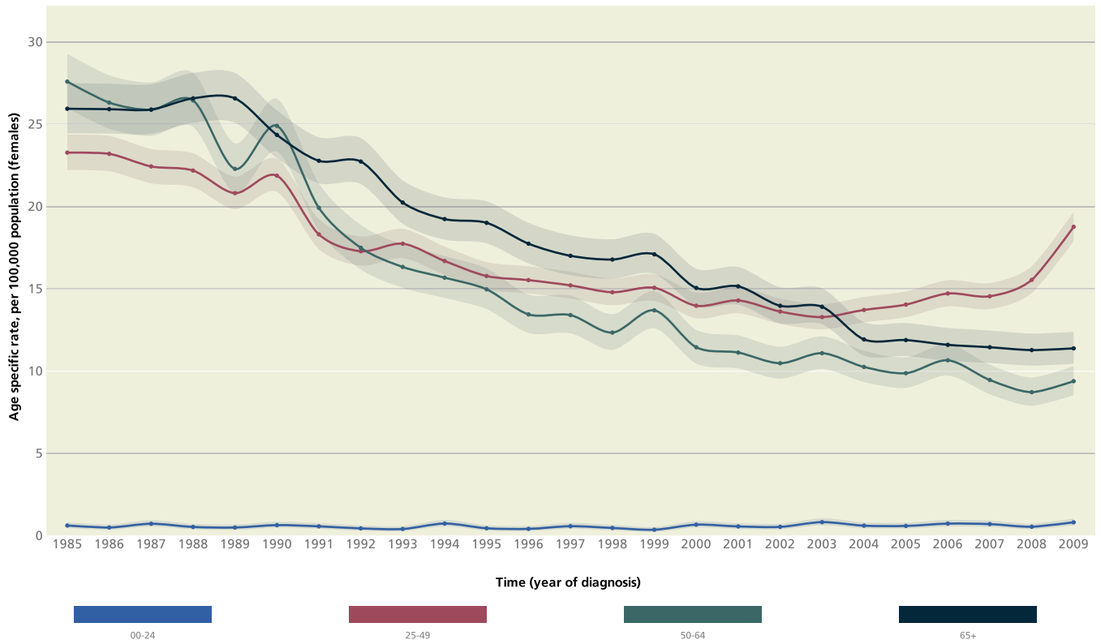
As a result of the screening programme many cervical cancers are detected in younger women, with around 60% of cases occurring in women aged 25-49. Since 2008, girls aged 12-13 have been vaccinated against human papillomavirus (HPV) types 16 and 18, which cause around 75% of cervical cancers. In the future, the incidence is expected to fall and the pattern of disease to change as a result of vaccination, but ensuring high vaccine uptake will be key to this.

Average annual incidence of cervical cancer by age, England, 2007-09



Source: Cancer statistics, ONS. (Provided by NCIN & UKACR)

Trend in incidence of cervical cancer by age group, England, 1985 to 2009



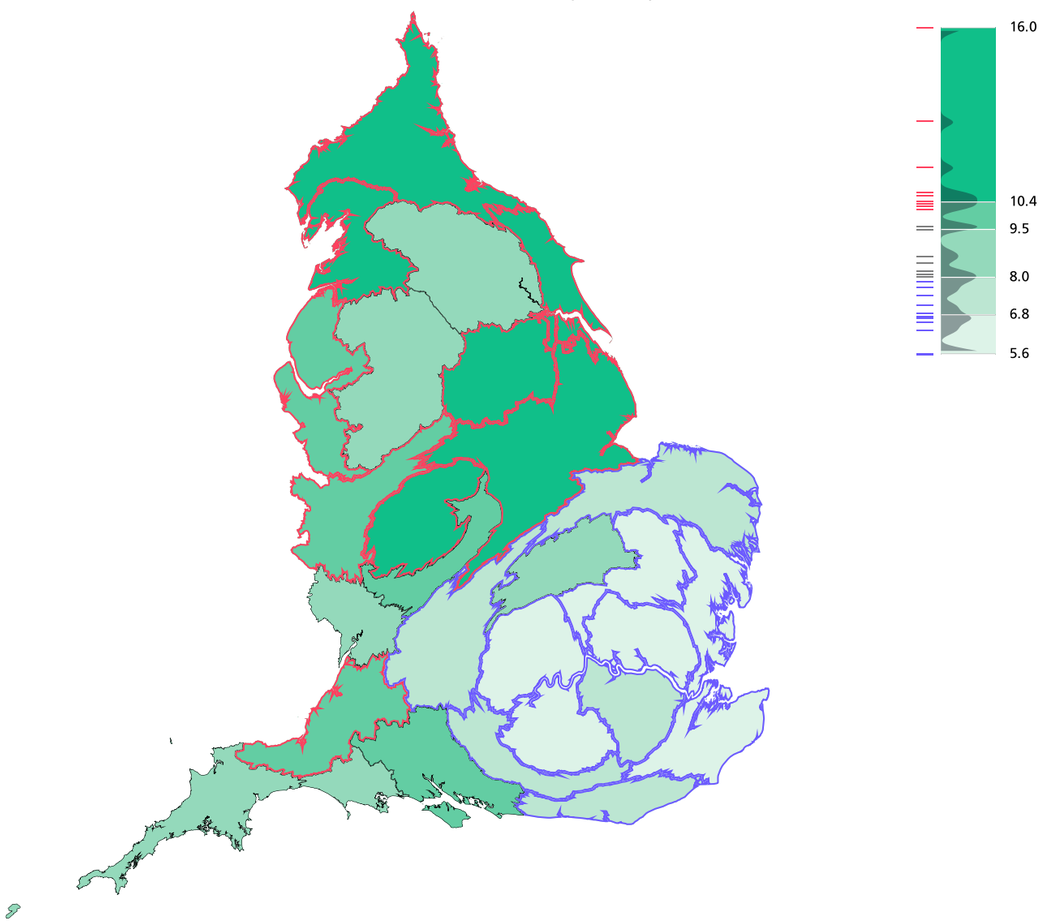
Source: Cancer statistics, ONS. (Provided by NCIN & UKACR)

Key facts

- Around 11,200 potential years of life lost (to age 75) in 2010 (<1% of all PYLL)
- Around 18,000 hospital bed days in 2010/11 (<1% of all bed days)

Average annual incidence of cervical cancer by cancer network, England, 2007-09

Directly age standardised rate, per 100,000 population (females)



Source: Cancer statistics, ONS. (Provided by NCIN & UKACR)

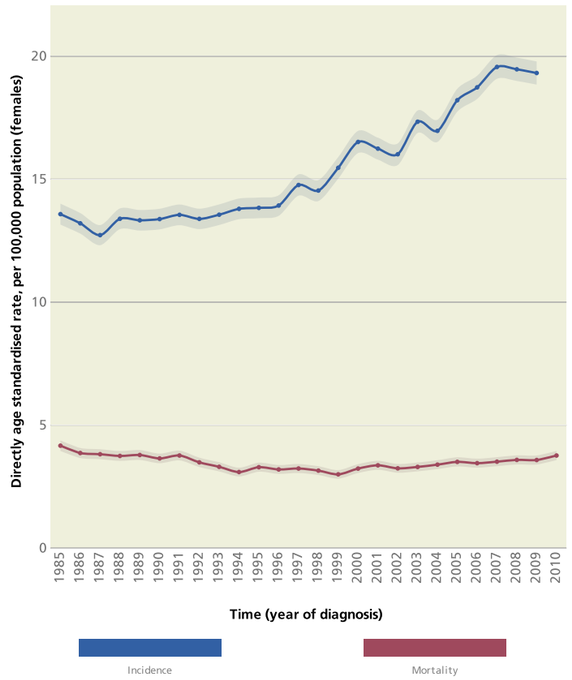
Uterine cancer is the fourth most common cancer in women, with over 6,200 new cases in 2009 and 1,500 deaths in 2010. Ovarian cancer is the fifth most common cancer and cause of death from cancer in women, with over 5,700 new cases in 2009 and over 3,400 deaths in 2010.

Uterine and ovarian cancer risk are both strongly related to age. Over 70% of women diagnosed with uterine cancer are aged 55-79, and almost 90% of deaths are in those aged 60 or over. For ovarian cancer, almost half of women diagnosed are aged 60-79, and over 80% of deaths are in those aged 60 or over.

Between 1997 and 2009, uterine cancer incidence increased by almost a third. Between 1997 and 2010, uterine cancer mortality increased by 16%. The increase in uterine cancer incidence is linked to the rise in population obesity and as such, action on this will be key to reversing the upward trend.

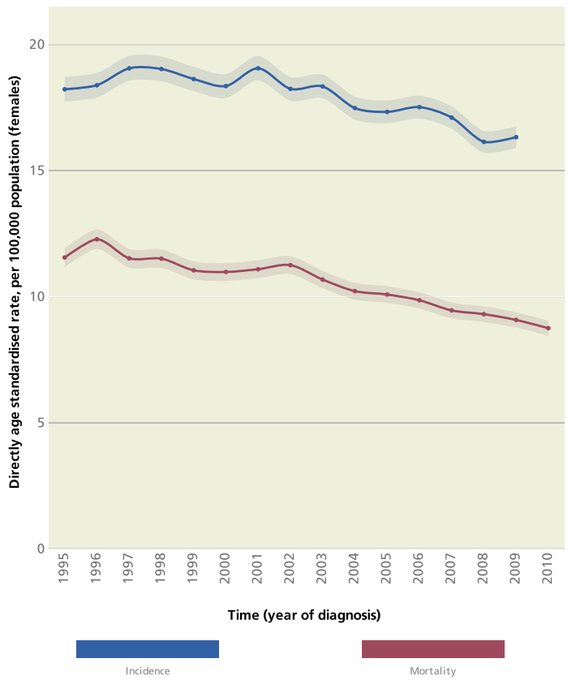
Between 1995 and 2009, ovarian cancer incidence remained stable, dropping slightly over the last few years. Between 1989 and 2010, mortality rates were stable until 2002 but have fallen by over 20% since. Improved detection and management of the disease are likely to be factors in the recent fall in mortality rates and need to be built upon to ensure continued success.

Trend in the incidence and mortality of uterine cancers, England, 1985 to 2010



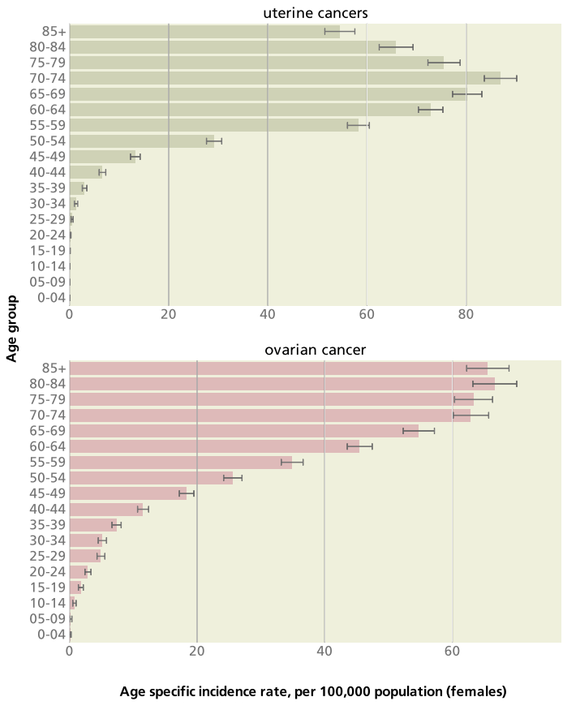
Source: Cancer statistics, ONS. (Provided by NCIN & UKACR)

Trend in incidence and mortality of ovarian cancer, England, 1995 to 2010



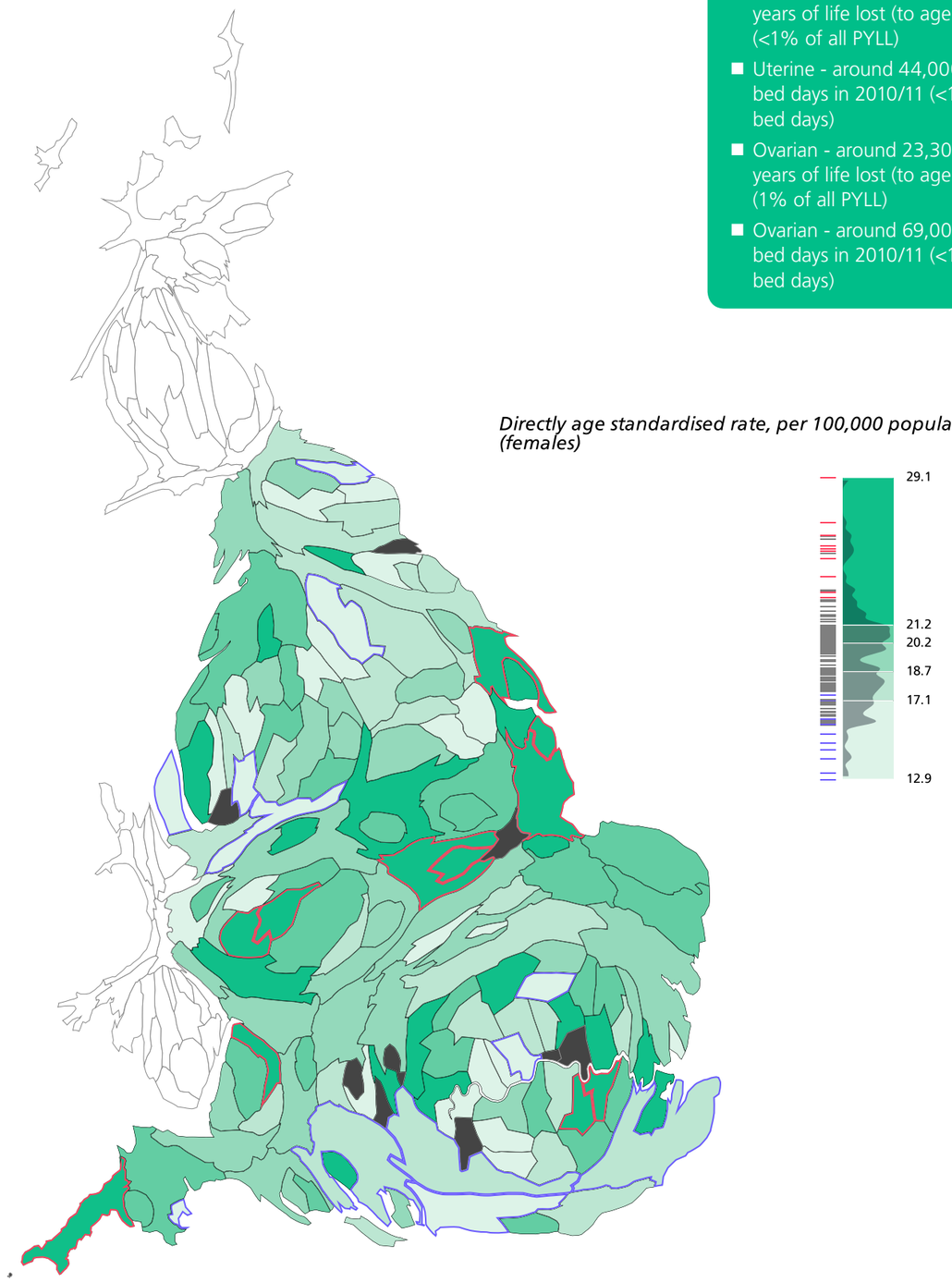
Source: Cancer statistics, ONS. (Provided by NCIN & UKACR)

Average annual incidence of ovarian cancer and uterine cancer by age, England, 2007-09



Source: Cancer statistics, ONS. (Provided by NCIN & UKACR)

Average annual incidence of uterine cancer by upper tier local authority, England, 2007-09



Source: Cancer statistics, ONS. (Provided by NCIN & UKACR)

Key facts

- Uterine - around 8,400 potential years of life lost (to age 75) in 2010 (<1% of all PYLL)
- Uterine - around 44,000 hospital bed days in 2010/11 (<1% of all bed days)
- Ovarian - around 23,300 potential years of life lost (to age 75) in 2010 (1% of all PYLL)
- Ovarian - around 69,000 hospital bed days in 2010/11 (<1% of all bed days)

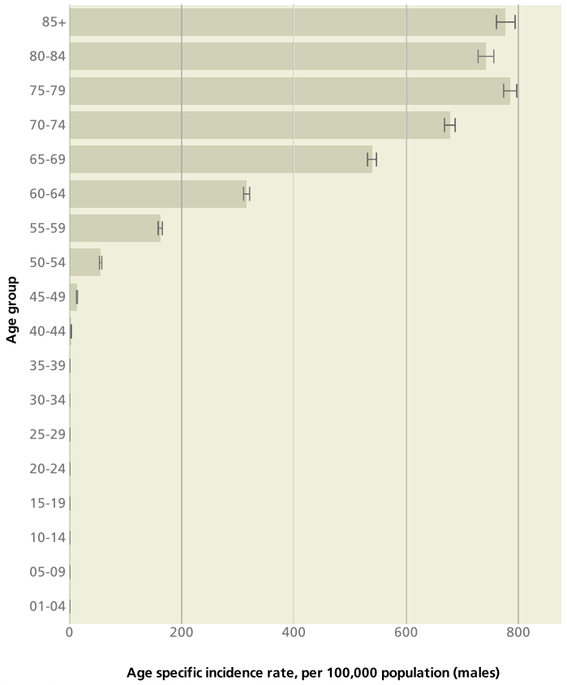
Prostate cancer is the most common cancer in men and the second most common cause of death from cancer in men. In 2009 there were over 34,500 new cases and in 2010 over 9,000 deaths. Around a quarter of all new cancers in men are prostate cancers.

Prostate cancer risk is strongly related to age. Between 2007 and 2009, almost 90% of new cases occurred in men aged 60 or over.

Between 1990 and 2009 the incidence rate of prostate cancer more than doubled, with the majority of the increase seen in those aged 55-74. Much of the increase in diagnosis is thought to be linked to greater clinical use of PSA (prostate specific antigen) testing which started in the UK around 1989. To date, the evidence demonstrates that a national screening programme based on PSA would not be cost effective.

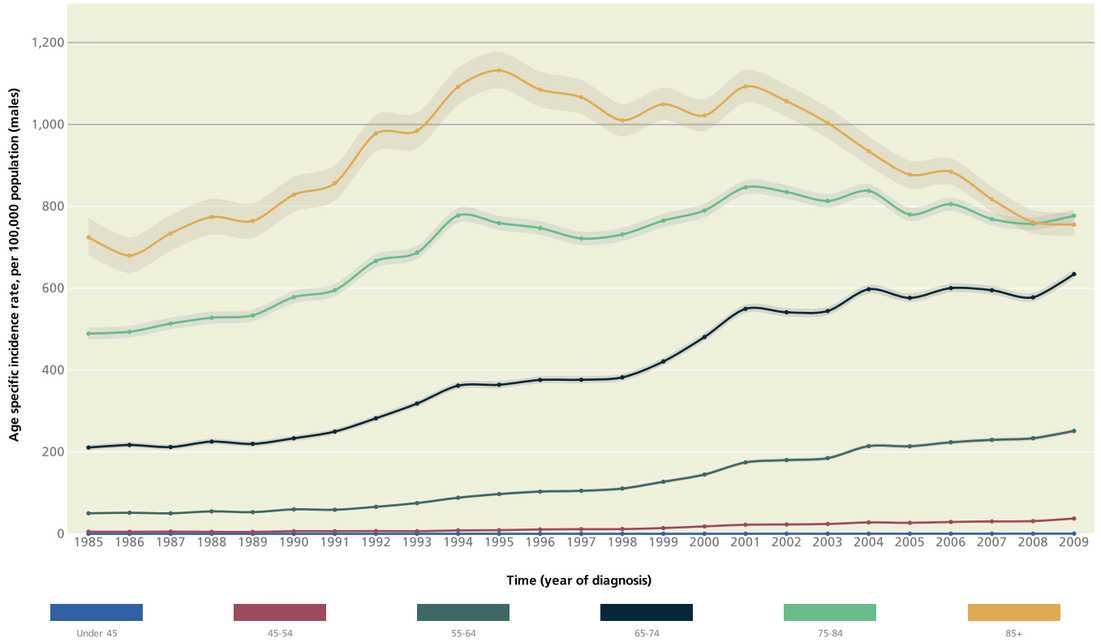
Prostate cancer mortality rates in England in 2010 were a fifth lower than their peak in 1992.

Average annual incidence of prostate cancer by age, England, 2007-09



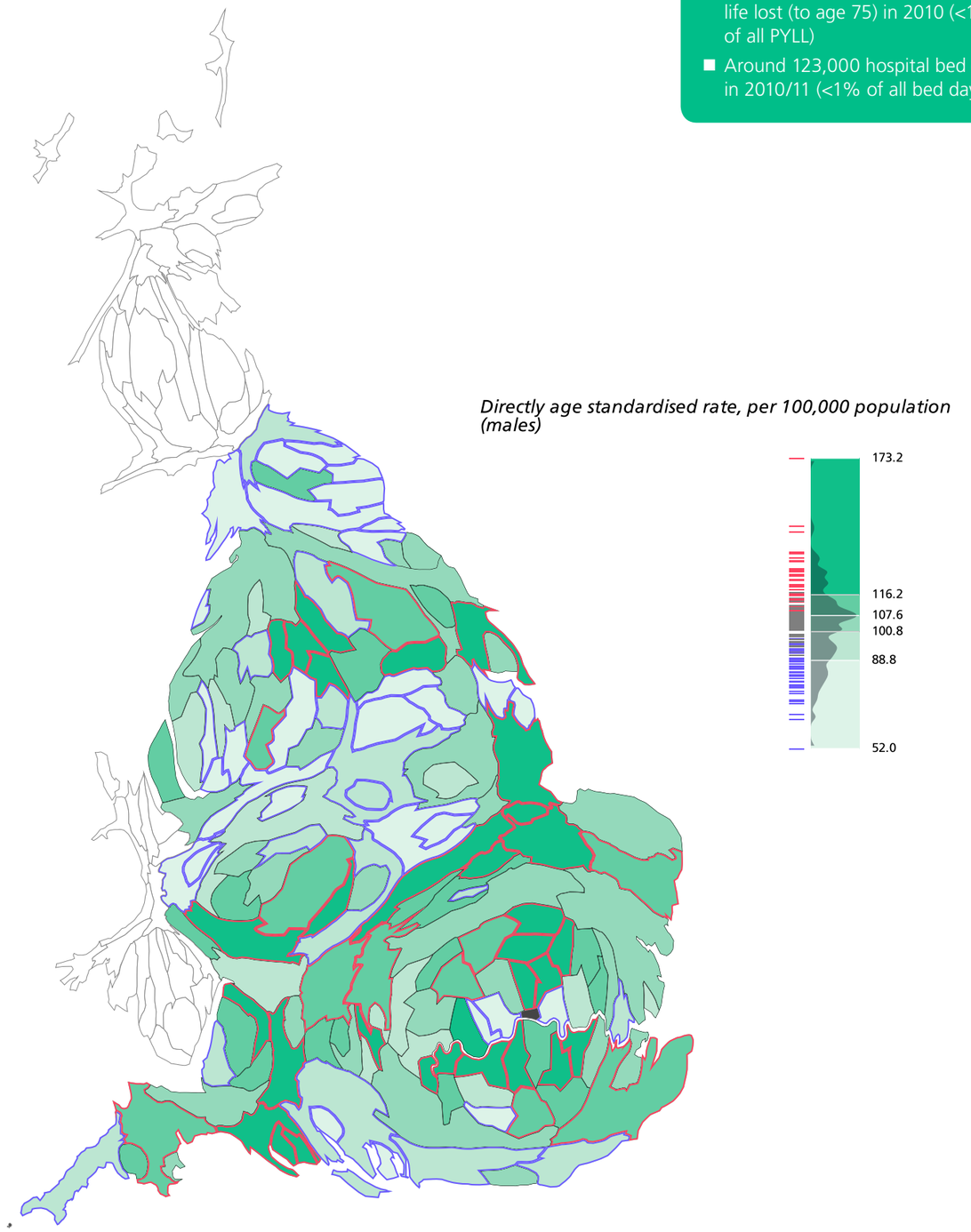
Source: Cancer statistics, ONS. (Provided by NCIN & UKACR)

Trend in incidence of prostate cancer by age group, England, 1985 to 2009



Source: Cancer statistics, ONS. (Provided by NCIN & UKACR)

Average annual incidence of prostate cancer by upper tier local authority, England, 2007-09



Source: Cancer statistics, ONS. (Provided by NCIN & UKACR)

Key facts

- Around 16,600 potential years of life lost (to age 75) in 2010 (<1% of all PYLL)
- Around 123,000 hospital bed days in 2010/11 (<1% of all bed days)

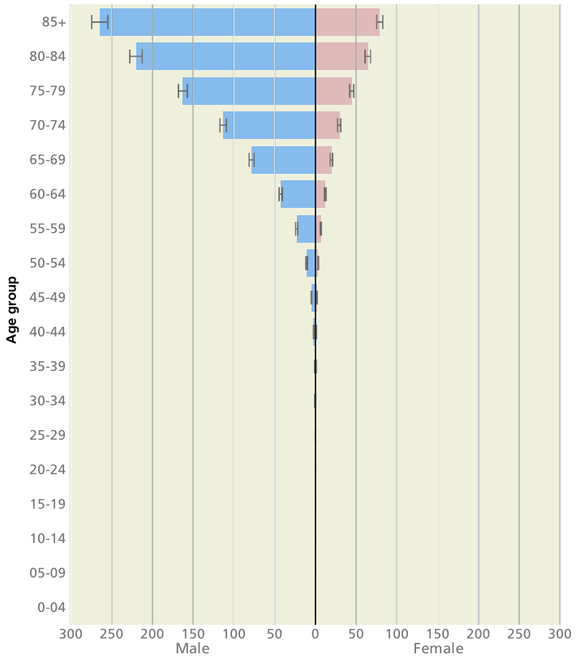
Bladder cancer is the seventh most common cancer and the eighth most common cause of death from cancer, with almost 9,000 new cases in 2009 and over 4,100 deaths in 2010. Almost three quarters of cases occur in men, with bladder cancer being the fourth most common cancer in men.

Bladder cancer risk is strongly related to age and, between 2007 and 2009, 90% of cases occurred in those aged 60 or over.

The rate of bladder cancer deaths reduced by 17% between 2000 and 2010. The incidence rate of bladder cancer has reduced by 15% since 2000. Incidence trends in England using data prior to 2000 are difficult to interpret following a change in the coding of bladder cancers.

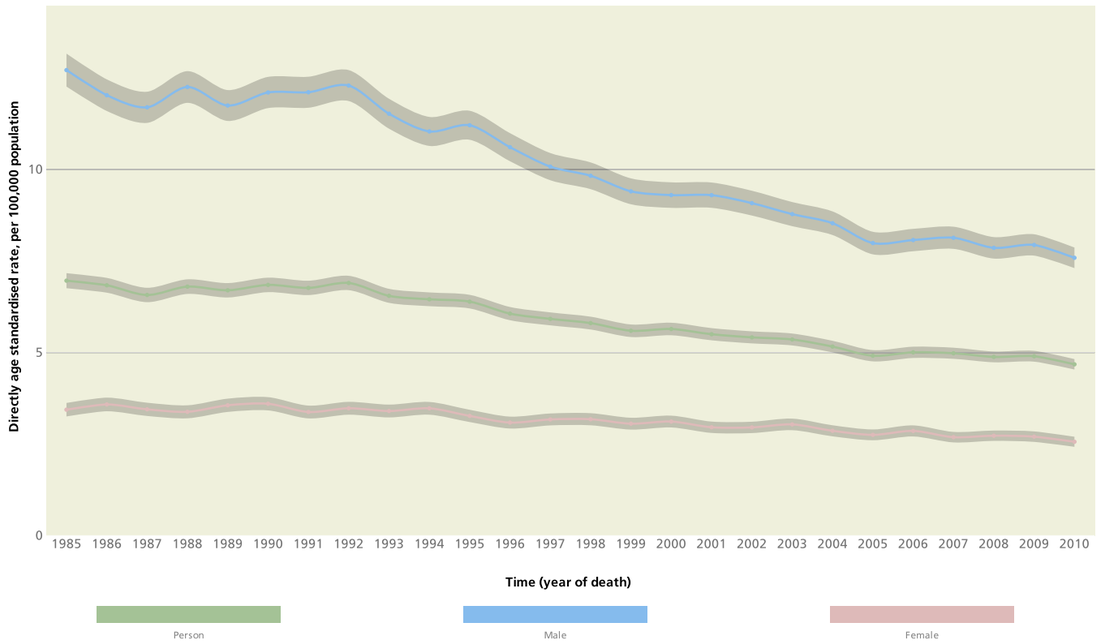
The major risk factor for bladder cancer is smoking. Over 50% of cases are smoking related, and the declining incidence is consequently related to success in reducing smoking prevalence.

Average annual incidence of bladder cancer by age and sex, England, 2007-09



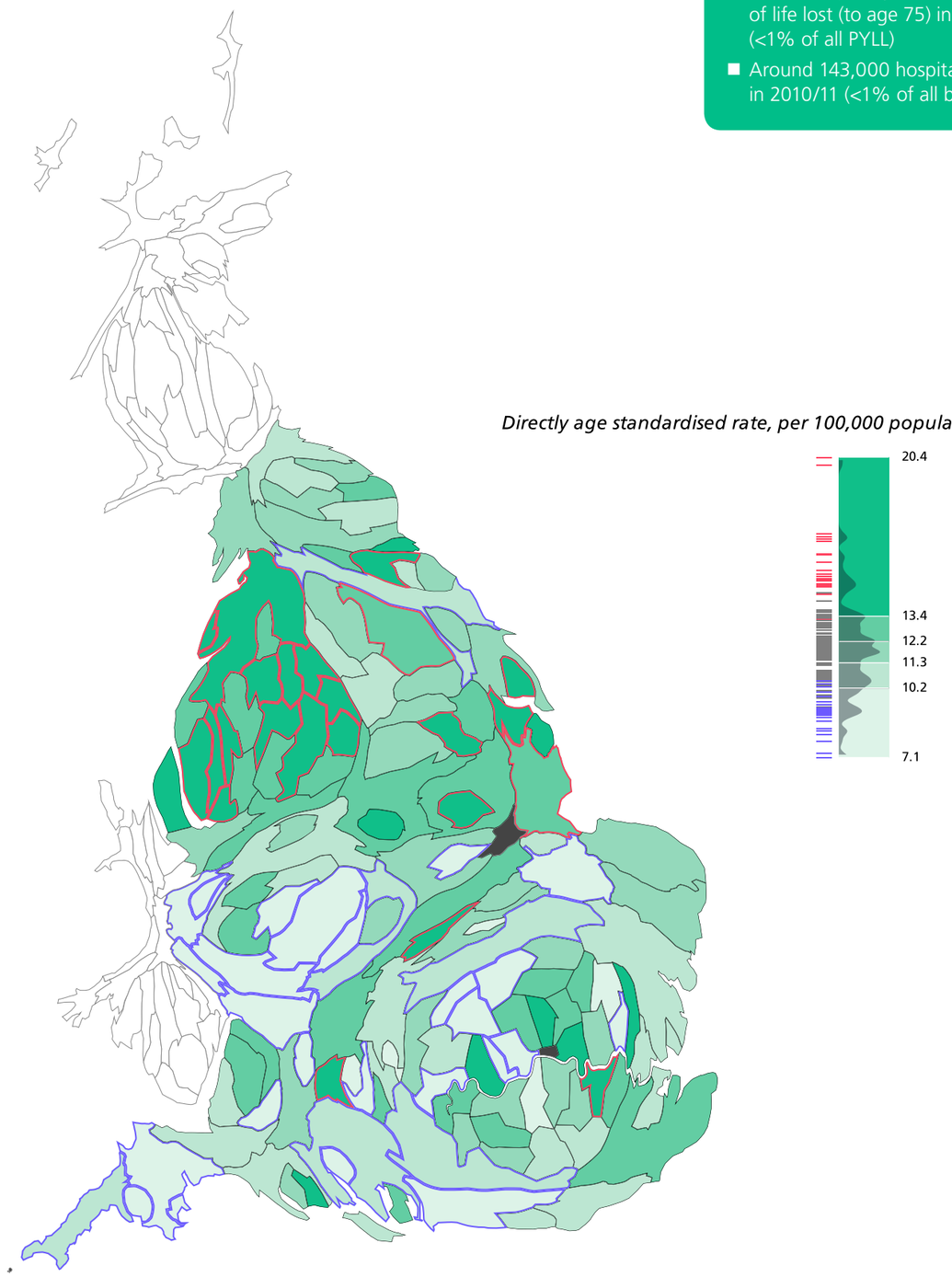
Source: Cancer statistics, ONS. (Provided by NCIN & UKACR)

Trend in mortality due to bladder cancer by sex, England, 1985 to 2010



Source: Cancer statistics, ONS. (Provided by NCIN & UKACR)

Average annual incidence of bladder cancer by upper tier local authority, England, 2007-09



Source: Cancer statistics, ONS. (Provided by NCIN & UKACR)

Key facts

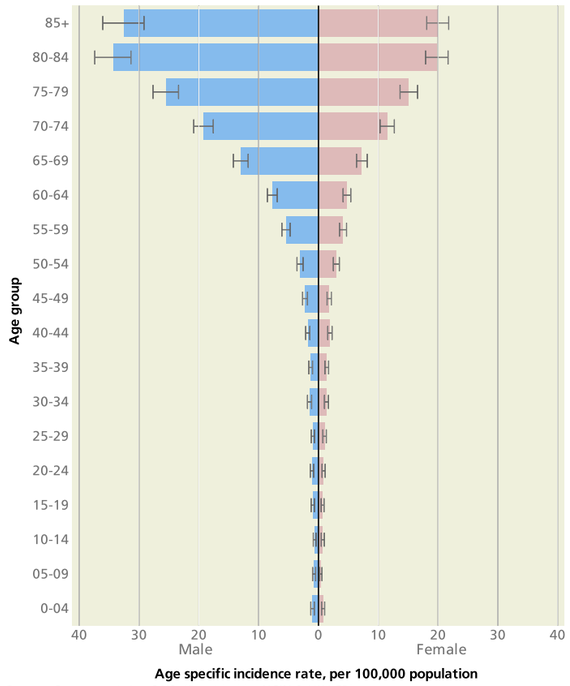
- Around 11,400 potential years of life lost (to age 75) in 2010 (<1% of all PYLL)
- Around 143,000 hospital bed days in 2010/11 (<1% of all bed days)

Acute Myeloid Leukaemia (AML) is one of the most common types of leukaemia, with over 2,000 new cases in 2009. It is chiefly a disease of older people, with over 80% of cases in people aged over 50.

After adjusting for the ageing population, registrations of AML in England have largely been constant over the last decade, as has the mortality rate. There is very little variation between different parts of the country in leukaemia incidence.

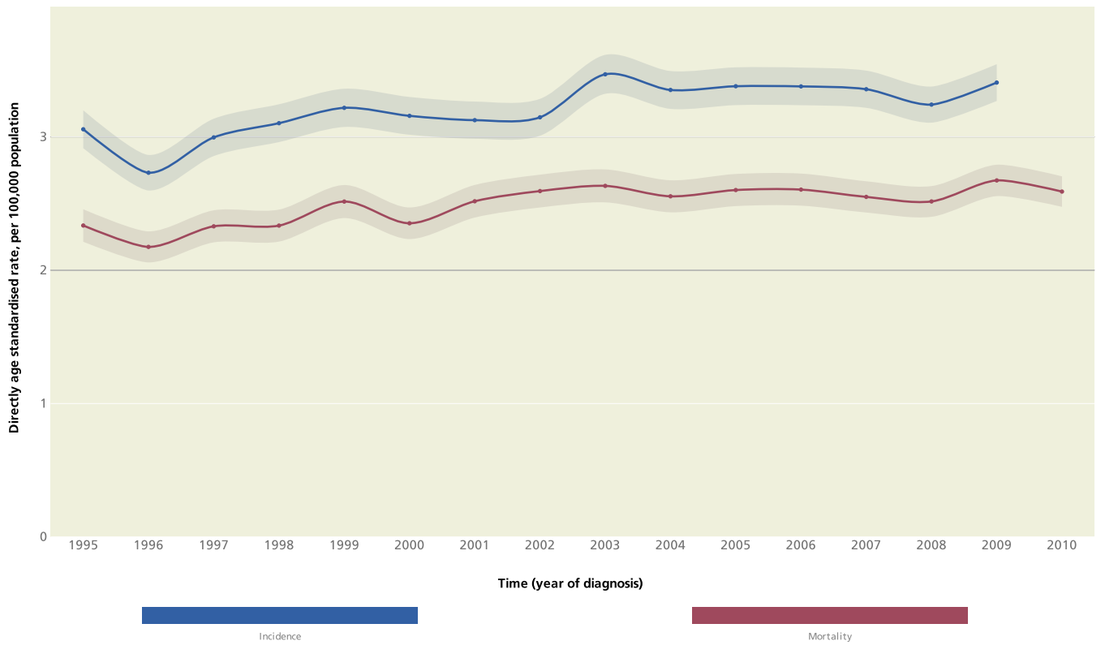
Management of AML requires patients to spend many days as a hospital inpatient, or day case, meaning that the overall costs of treatment are high compared to many cancers.

Average annual incidence of acute myeloid leukaemia by age and sex, England, 2007-09



Source: Cancer statistics, ONS. (Provided by NCIN & UKACR)

Trend in incidence and mortality of acute myeloid leukaemia, England, 1995 to 2010

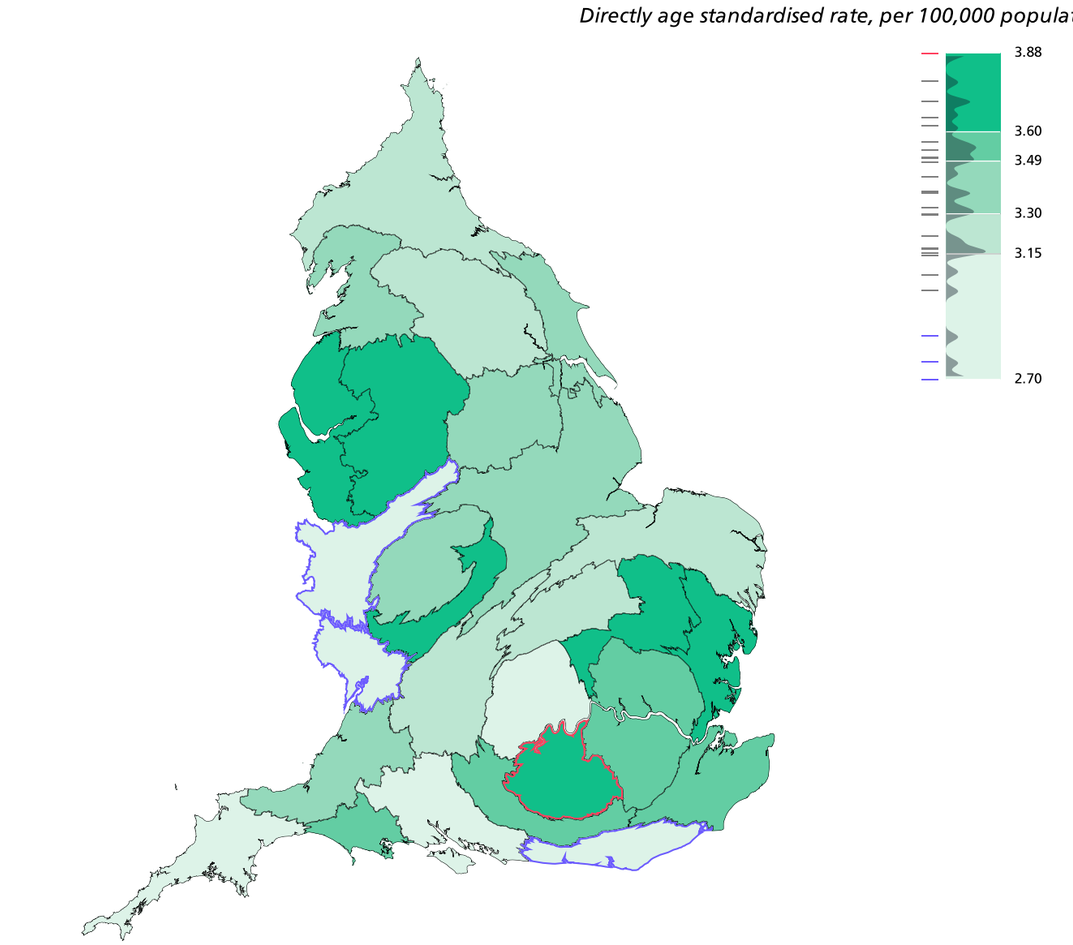


Source: Cancer statistics, ONS. (Provided by NCIN & UKACR)

Key facts

- Around 13,200 potential years of life lost (to age 75) in 2010 (<1% of all PYLL)
- Around 120,000 hospital bed days in 2010/11 (<1% of all bed days)

Average annual incidence of acute myeloid leukemia by cancer network, England, 2007-09



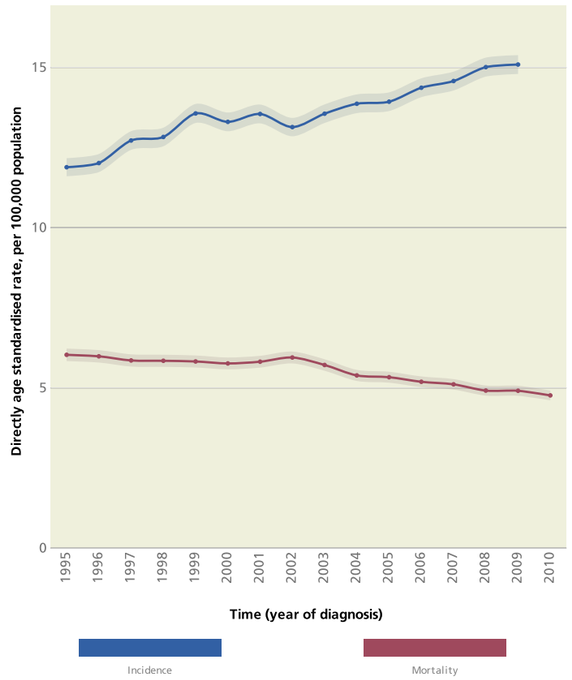
Source: Cancer statistics, ONS. (Provided by NCIN & UKACR)

Considered as a group, non-Hodgkin lymphoma (NHL) is the fifth most common cancer, with over 10,000 new cases and nearly 4,000 deaths in 2009. NHL risk is strongly related to age, with over 85% of cases occurring in people aged 50 or over.

Registrations of NHL in England have been rising over the last decade. Even adjusting for the aging population the age standardised rates have risen. Mortality rates have fallen over this time period. Trends need to be interpreted carefully as there have been changes in diagnosis, classification and registration rates over the same time period, which may explain much of this apparent rise in incidence.

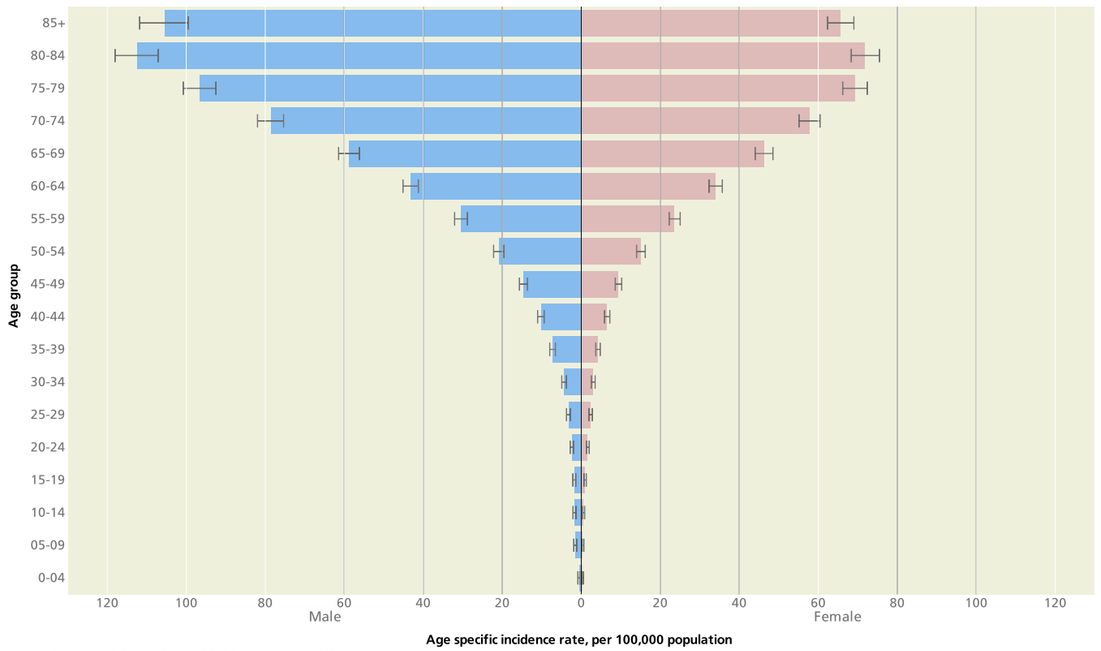
There are many sub-types of NHL, with significant heterogeneity in incidence, mortality, prognosis and treatment. Care must be taken not to generalise outcomes from the grouped data for specific sub-groups of NHL.

Trend in incidence and mortality of non-Hodgkin lymphoma, England, 1995 to 2010



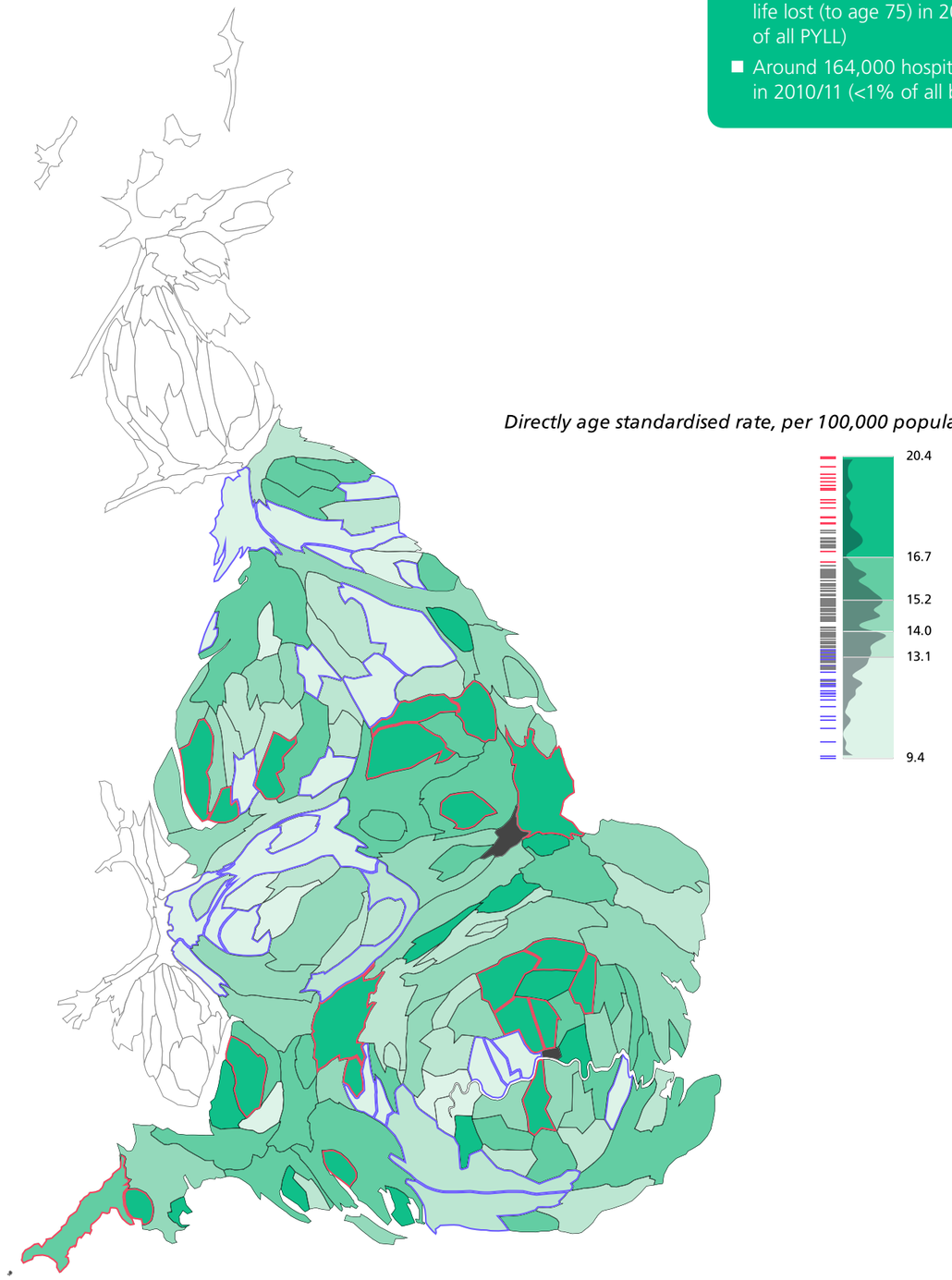
Source: Cancer statistics, ONS. (Provided by NCIN & UKACR)

Average annual incidence of non-Hodgkin lymphoma by age and sex, England, 2007-09



Source: Cancer statistics, ONS. (Provided by NCIN & UKACR)

Average annual incidence of non-Hodgkin lymphoma by upper tier local authority, England, 2007-09



Source: Cancer statistics, ONS. (Provided by NCIN & UKACR)

Key facts

- Around 21,000 potential years of life lost (to age 75) in 2010 (<1% of all PYLL)
- Around 164,000 hospital bed days in 2010/11 (<1% of all bed days)

Diabetes is a metabolic condition, associated with insulin insufficiency and resistance, resulting in an inability to regulate blood glucose levels. Type 1 is an auto-immune condition where the pancreatic beta cells that produce insulin are destroyed. Type 2 occurs when the body becomes resistant to the action of insulin, initially compensating by increasing production, the pancreatic beta cells are unable to keep up with demand and eventual beta cell failure ensues.

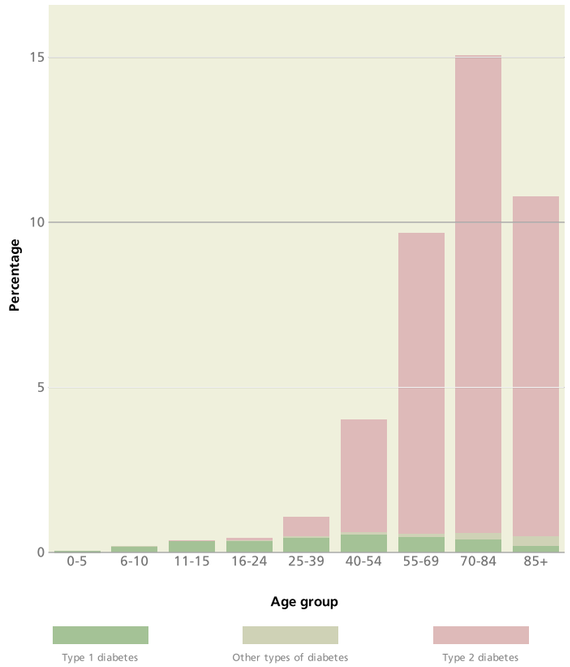
2.5 million adults have diagnosed diabetes, though many are undiagnosed. The highest PCT rate is 2.5 times the lowest. Type 2 diabetes (≈90% of diabetes) increases with age and is strongly associated with obesity, inactivity and ethnicity. Geographical patterns broadly reflect the presence of these risk factors.

Diabetes can lead to long term micro and macro vascular complications including loss of sight. It increases the risk of heart attack and stroke by around a factor of three and end-stage kidney disease by around four.

Compared to people of a similar age, people with Type 1 and Type 2 are 2.6 and 1.6 times, respectively, more likely to die prematurely. This results in 24,000 excess deaths per year[1].

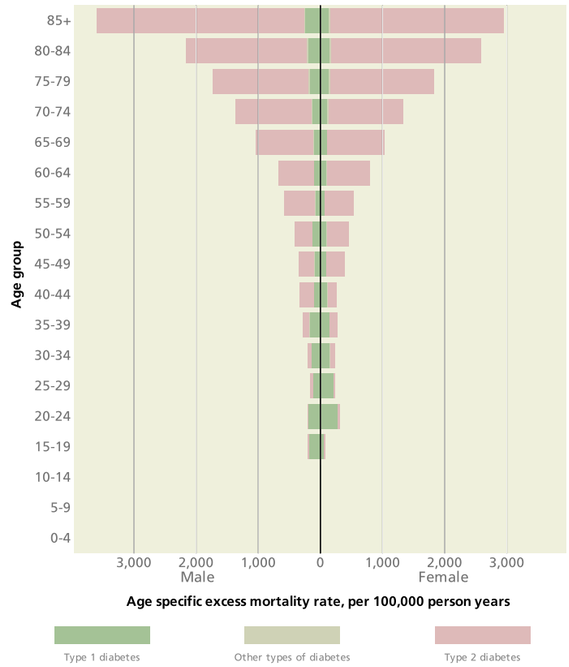
1 The NHS Information Centre, National Diabetes Audit 2007-2008 Mortality Analysis.

Prevalence of diabetes by type and age, England, 2009/10



Source: National Diabetes Audit 2009/10, Health and Social Care Information Centre.Crown Copyright © 2012.

Excess mortality in persons with diabetes, compared to the general population, by age and sex, England, November 2008 - October 2009

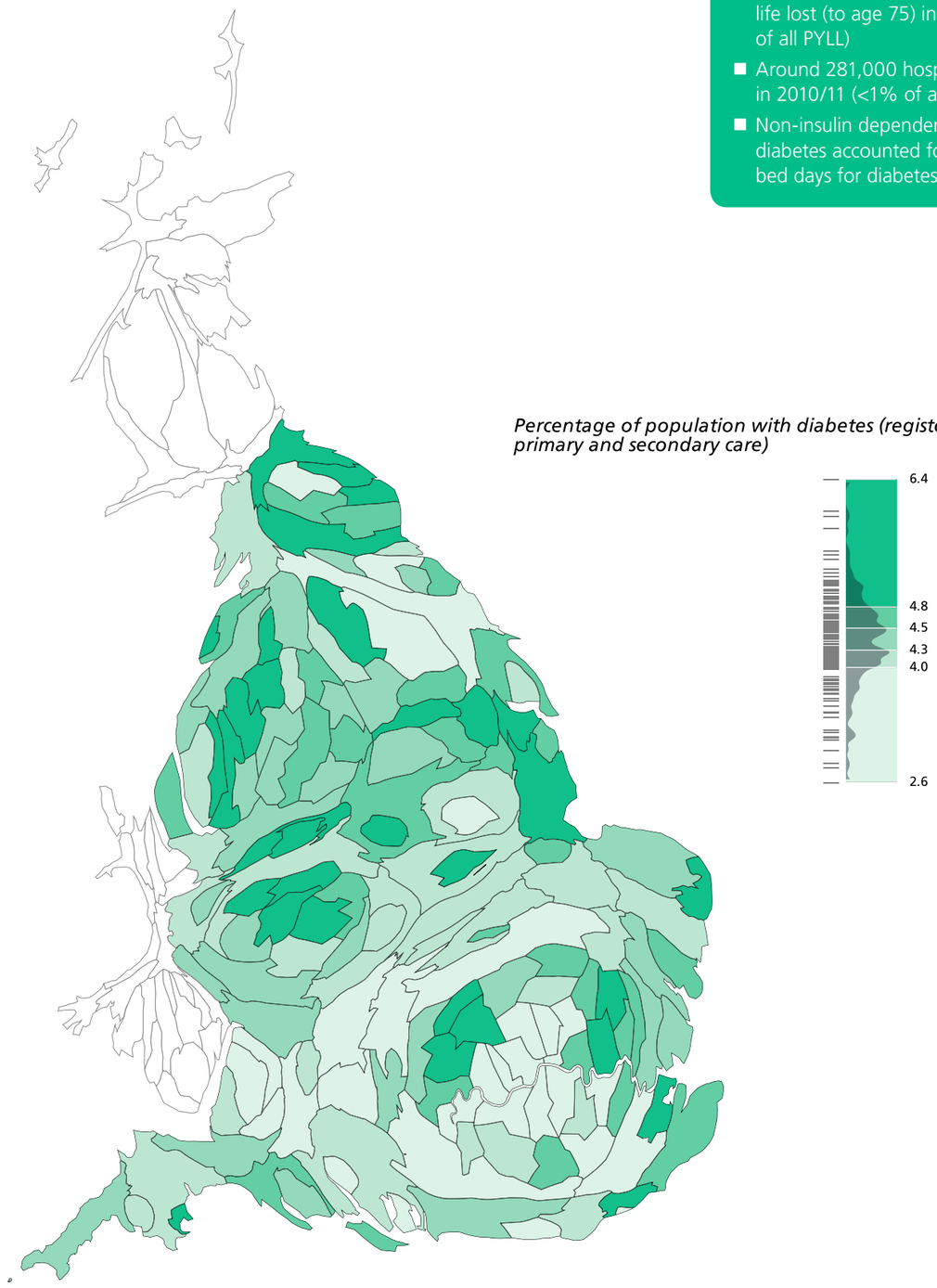


Source: National Diabetes Audit data matched to ONS death registrations. (Analysis by Health and Social Care Information Centre.Crown Copyright © 2012)

Prevalence of all types of diabetes by primary care trust, England, 2009/10

Key facts

- Around 18,100 potential years of life lost (to age 75) in 2010 (<1% of all PYLL)
- Around 281,000 hospital bed days in 2010/11 (<1% of all bed days)
- Non-insulin dependent (type 2) diabetes accounted for 66% of bed days for diabetes mellitus



Source: National Diabetes Audit 2009/10, Health and Social Care Information Centre. Crown Copyright © 2012.

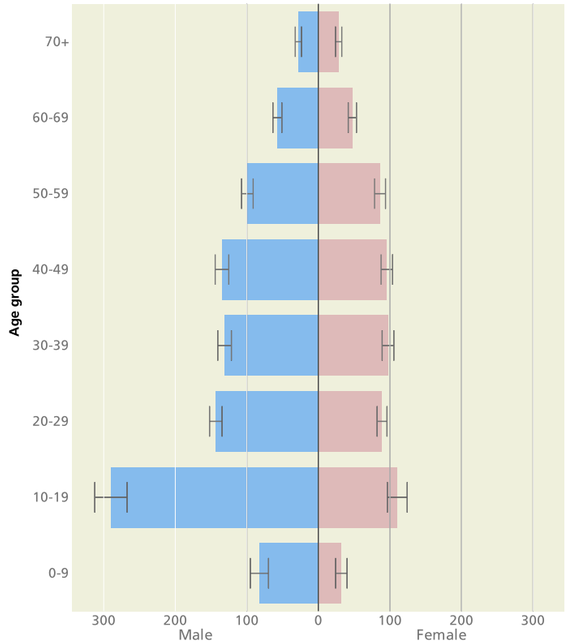
Learning disabilities refers to the presence from childhood of significant general difficulty in learning and understanding (see also congenital anomalies), excluding specific learning difficulties such as dyslexia. Around 190,000 adults are registered with a GP as having learning disabilities but it is estimated there are approximately 300,000 children and 900,000 adults affected[1].

The rate of people with learning disability registered with GPs varies geographically by PCT. The highest rate is around three times that of the lowest.

The rate of learning disabilities varies across age ranges. Low numbers in those aged under nine reflects incomplete recognition. The peak in males aged 10–19 years may reflect a new group of survivors of premature birth. The sharp reduction after the age of 49 reflects reduced life expectancy. The median age of death of people with a learning disability is 25 years younger than that of the general population. Poverty, less healthy lifestyles, worse access to services and (for some) genetic predisposition are likely to contribute to this.

To reduce health inequalities, it is helpful to have more responsive services emphasising early detection of problems, such as annual health checks.

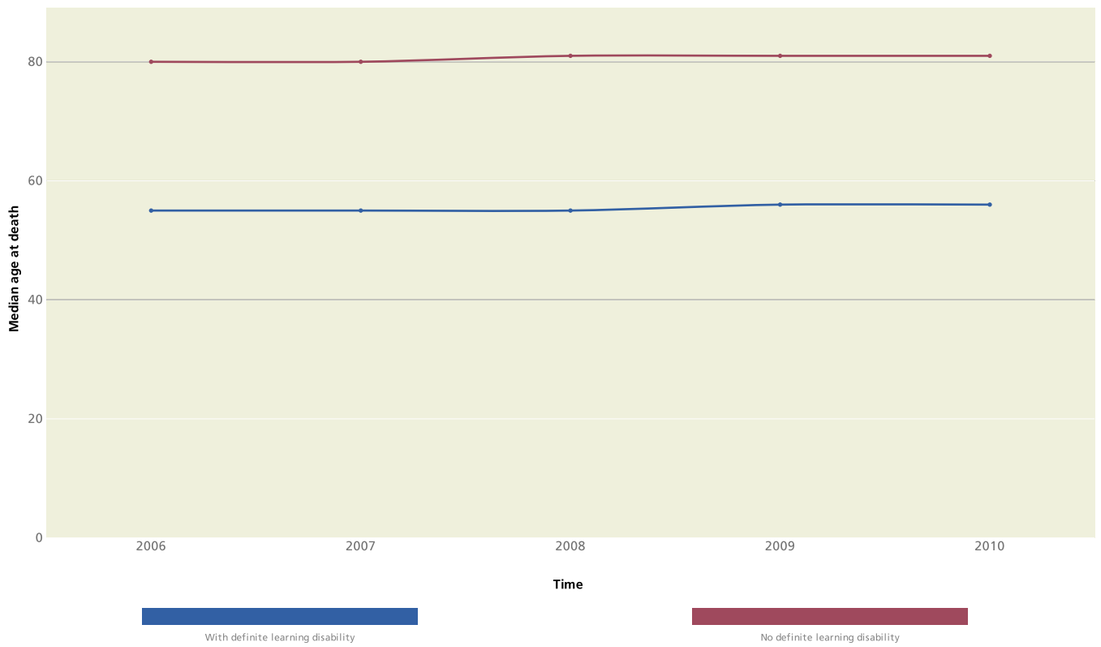
Estimated prevalence of persons with learning disabilities by age and sex, England, March 2012



Source: Learning Disability registers for the City of Sheffield (all ages) and the City and County of Leicestershire (aged 20 and over). (Analysis by NEPHO)

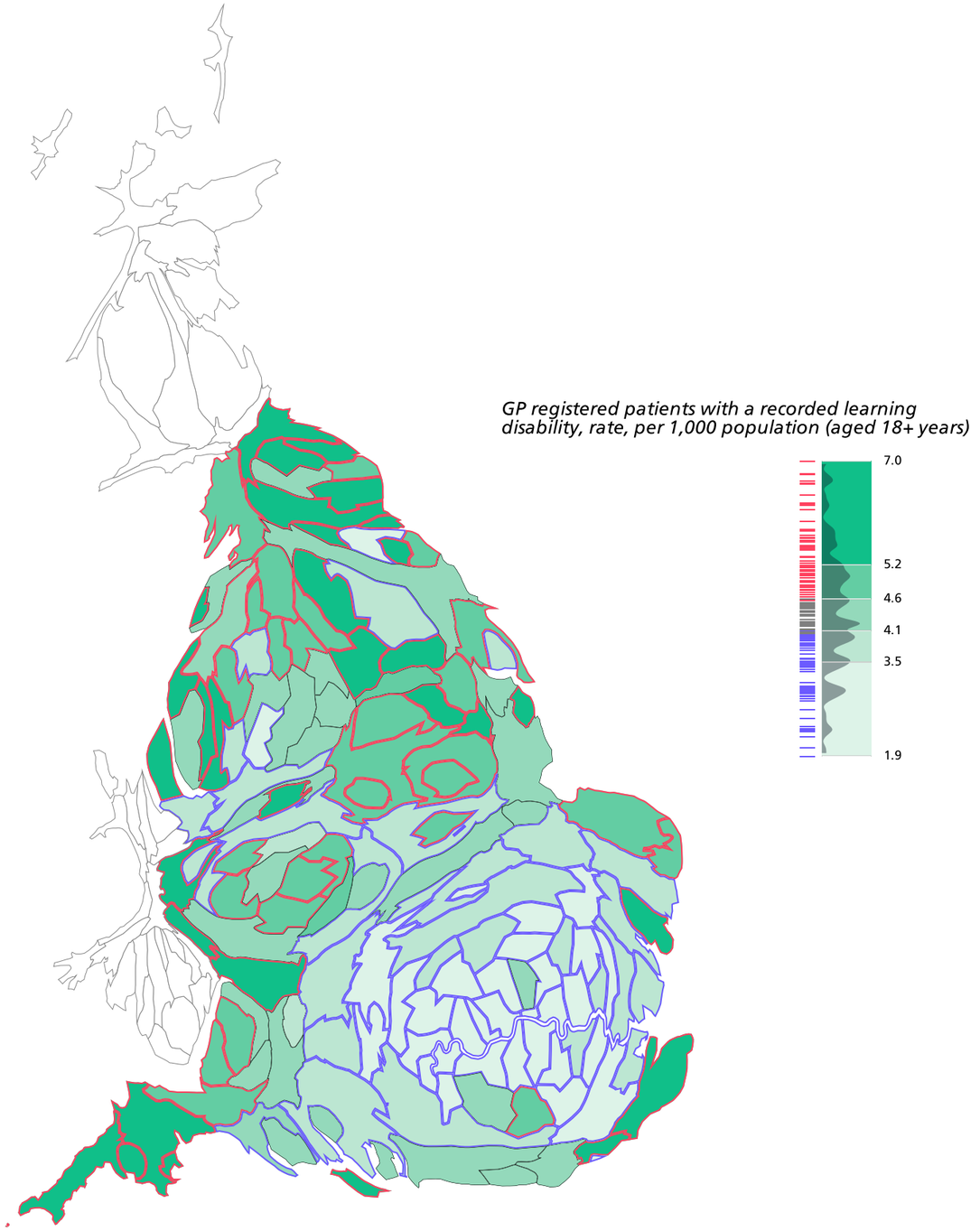
1 Learning Disability Observatory. (www.improvinghealthandlives.org)

Trend in median age at death for persons with learning disabilities, England, 2006 to 2010



Source: Death registrations and 2006 to 2010 population estimates, ONS. (Analysis by NEPHO)

Prevalence of learning disabilities in persons aged 18 years and over by primary care trust, England, 2010/11



Source: Quality and Outcomes Framework (QOF), Health and Social Care Information Centre. Crown Copyright © 2012. (Provided by NEPHO)

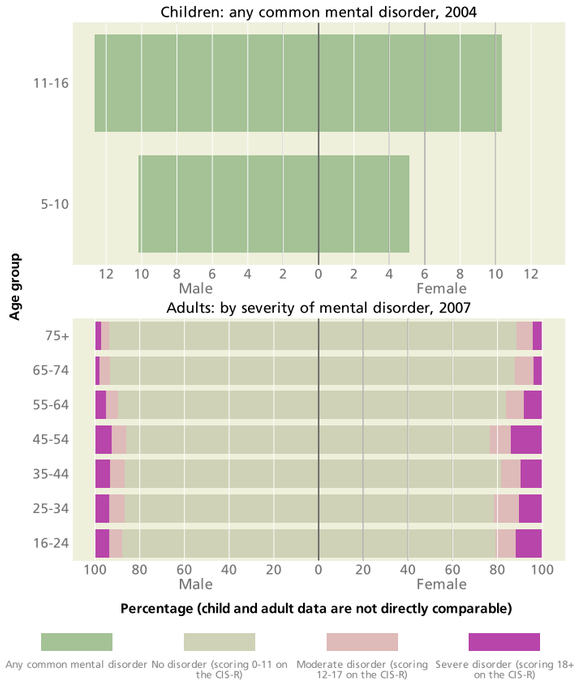
‘Mental health problems’ describes all diagnosable mental illnesses/disorders, including personality disorders, common mental disorders such as depression and anxiety, developmental disorders and other less common conditions such as psychosis. They vary in severity, may manifest at different ages, may present as behavioural problems and may be acute or chronic. Dementia is examined separately in this report.

The rate of people with severe mental health problems (schizophrenia, bipolar disorder and other psychoses) registered with a GP varies geographically, ranging from 0.5% to 1.5% of those registered (with an average of 0.8%). It is likely that this does not represent the total population with severe mental health problems.

Trends in prevalence and service use for mental health problems have been informed by English psychiatric morbidity surveys since 1993. These studies show a slight increase and, since 2000, a plateauing of common mental disorders in adults. They also show a strong association between deprivation and many mental health problems which are likely to be both a cause and a result of deprivation.

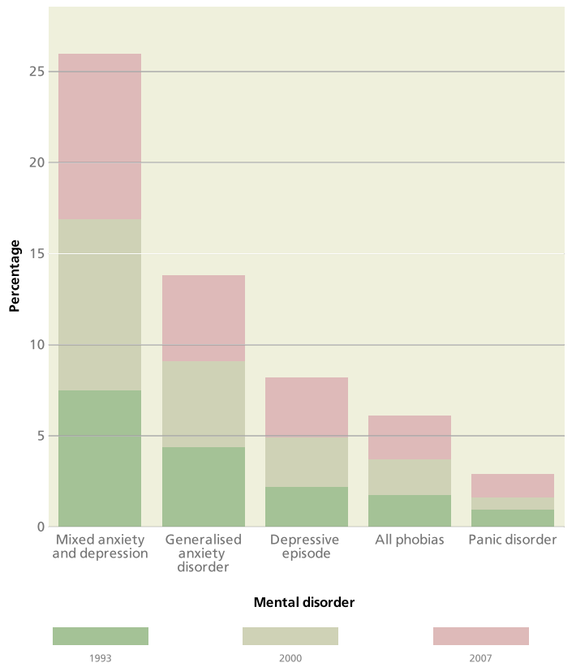
Many evidence-based treatments exist for mental health problems but to be effective these need to be accessible and timely.

Proportion of children and adults who have a common mental disorder by age and sex, England, 2004 and 2007



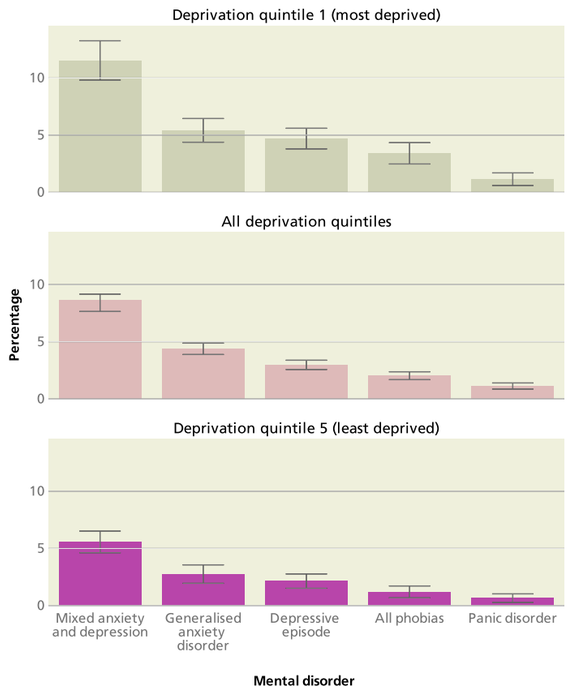
Source: Mental Health of Children and Young People, 2004; Adult Psychiatric Morbidity Survey, 2007. (Provided by Professor Brugha, University of Leicester)

Trend in common mental disorders in persons aged 16 years and over, England, 1993, 2000 and 2007



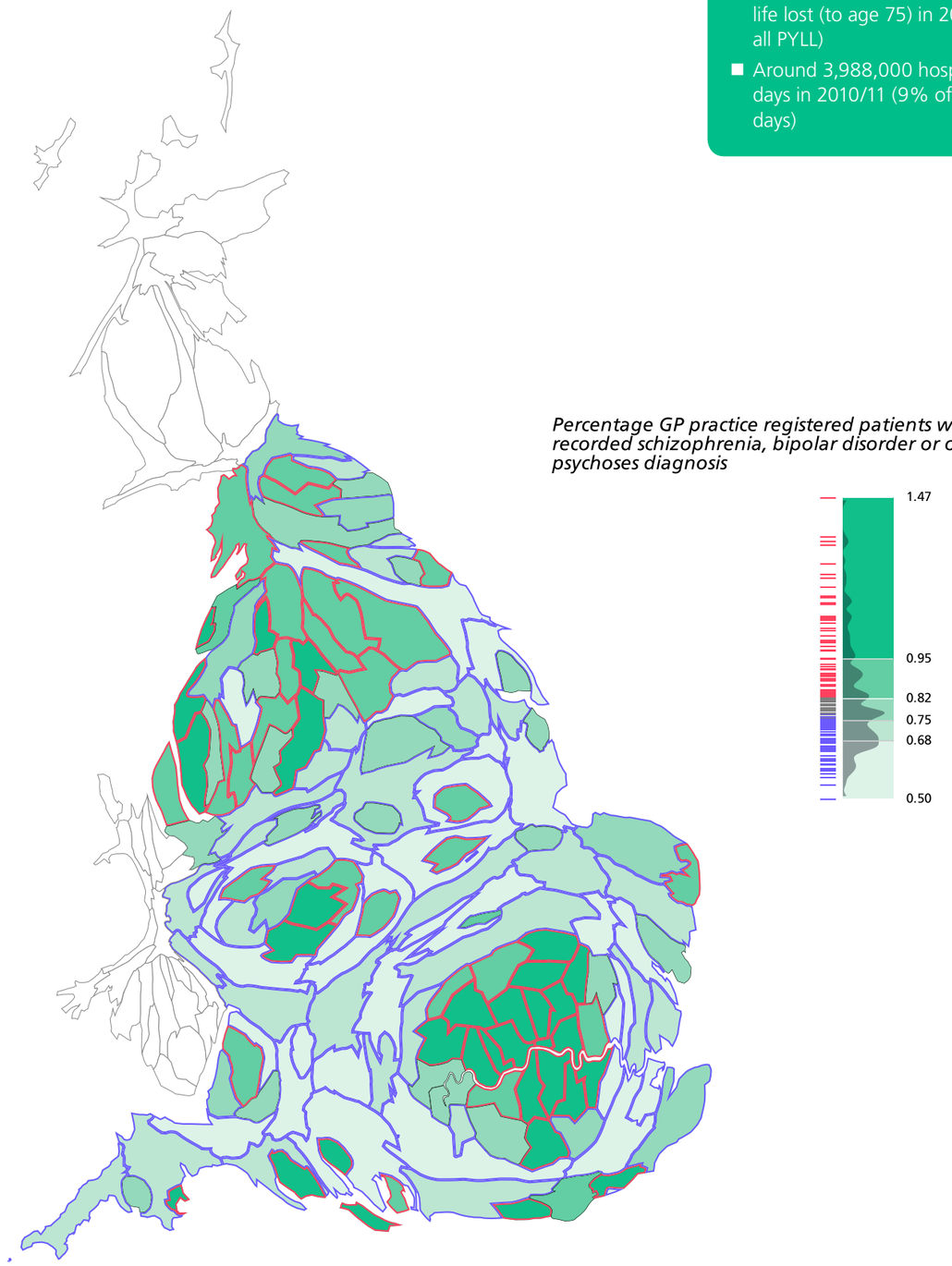
Source: Adult Psychiatric Morbidity Surveys, 1993, 2000, 2007. (Provided by Professor Brugha, University of Leicester)

Prevalence of specific common mental disorders in persons aged 16 years and over by deprivation, England, 2007



Source: Adult Psychiatric Morbidity Survey, 2007. (Provided by Professor Brugha, University of Leicester)

Prevalence of severe mental health problems by primary care trust, England, 2010/11



Source: Quality and Outcomes Framework (QOF), Health and Social Care Information Centre. Crown Copyright © 2012. (Provided by NEPHO)

Key facts

- Around 35,800 potential years of life lost (to age 75) in 2010 (2% of all PYLL)
- Around 3,988,000 hospital bed days in 2010/11 (9% of all bed days)

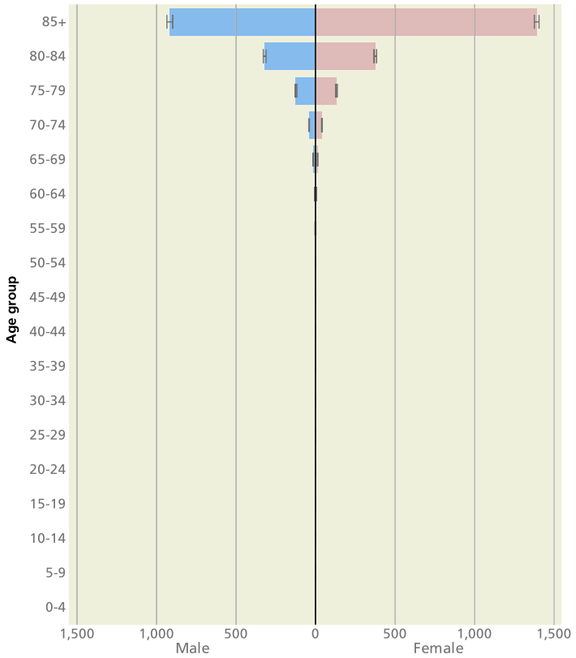
Dementia is a clinical syndrome describing progressive loss of abilities including memory, language, reasoning and activities of daily living. The main causes are Alzheimer's disease and cerebrovascular dementia (which may be experienced in combination). Less common disorders are Lewy body dementia and fronto temporal dementia. Younger adults can be affected by dementia but the major risk factor is age. To understand local burden, crude rates may be more useful than age standardised rates.

Rates (GP registered) vary by Primary Care Trust, with the highest rate being around four times that of the lowest rate. This reflects different rates of diagnosis and variation in the distribution of elderly populations.

Dementia is a terminal disorder, with people living for 7 to 12 years after diagnosis. However, many die with, rather than of, dementia. Crude mortality rates have been increasing substantially faster than age standardised rates, reflecting the aging population and higher numbers of older people with dementia.

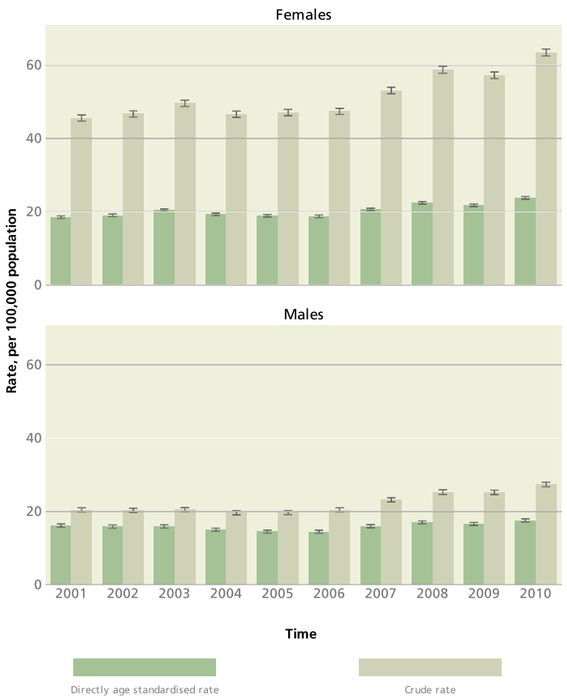
To improve the quality of life of people with dementia, there is a need for timely diagnosis and appropriate access to services across health and social care. Integral to this is support for carers.

Average annual mortality due to dementia by age and sex, England, 2008-10



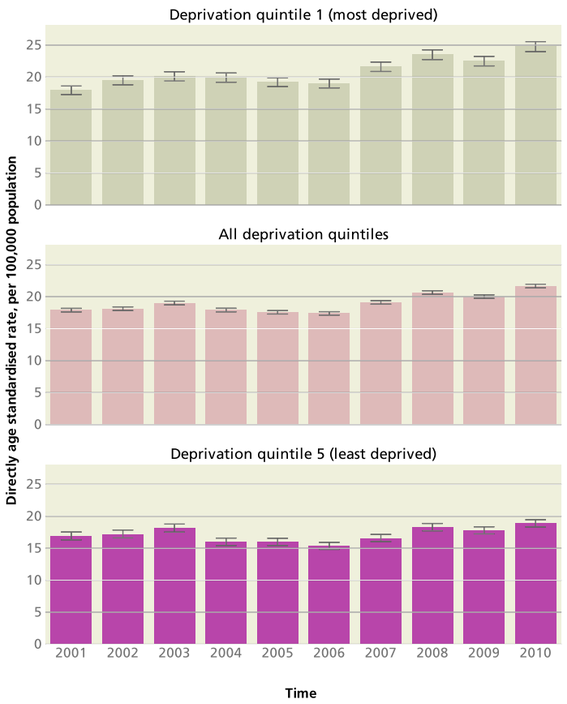
Source: Death registrations and 2001 to 2010 population estimates, ONS. (Analysis by DH)

Trend in mortality due to dementia by sex, England, 2001 to 2010



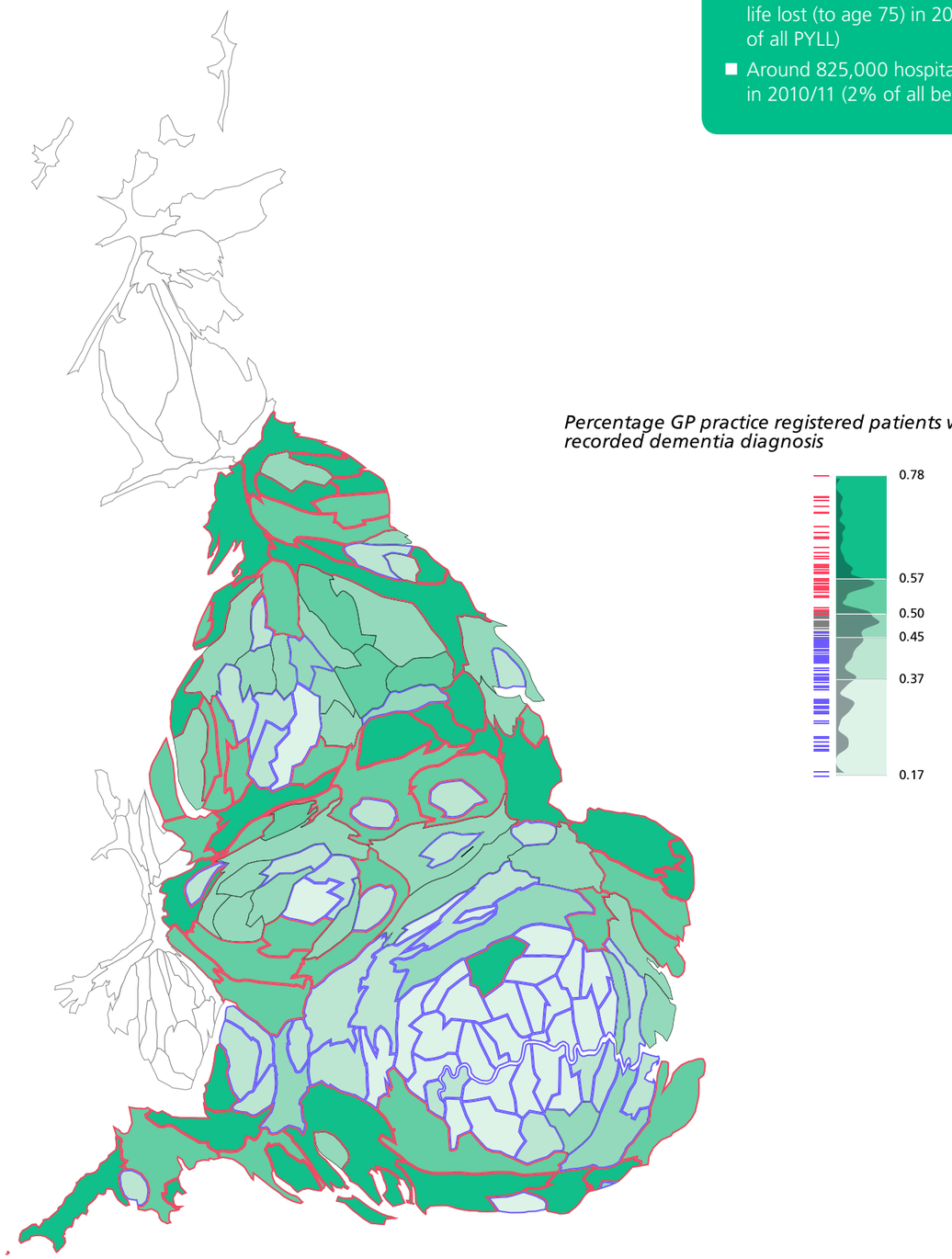
Source: Death registrations and 2001 to 2010 population estimates, ONS. (Analysis by DH)

Trend in mortality due to dementia by deprivation, England, 2001 to 2010



Source: Death registrations and 2001 to 2010 population estimates, ONS. (Analysis by DH)

Prevalence of dementia by primary care trust, England, 2010/11



Source: Quality and Outcomes Framework (QOF), Health and Social Care Information Centre. Crown Copyright © 2012. (Provided by NEPHO)

Key facts

- Around 11,400 potential years of life lost (to age 75) in 2010 (<1% of all PYLL)
- Around 825,000 hospital bed days in 2010/11 (2% of all bed days)

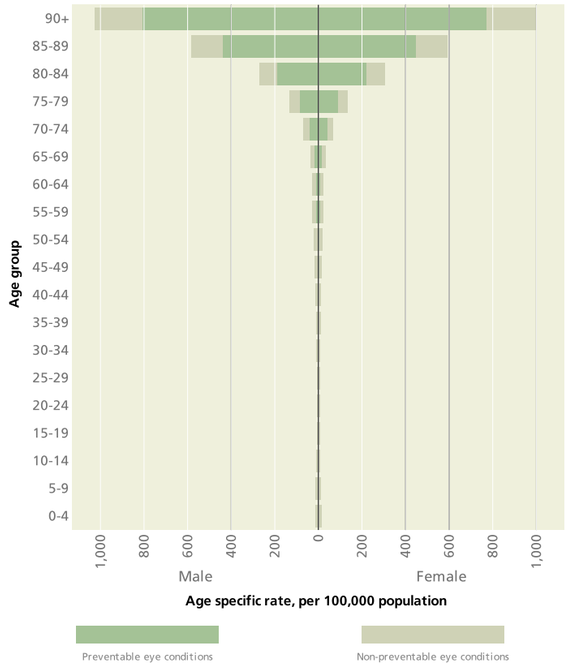
Sensory organ diseases, such as sight impairment and loss of hearing, are often preventable. National, systematically collected data for sensory organ diseases is currently difficult to obtain.

Individuals with vision below a certain threshold can be offered registration with Social Services. This involves completion of a certificate of vision impairment (CVI) by a consultant ophthalmologist, which includes the cause of sight loss. CVIs are collected centrally but participation in this scheme, and certification, is voluntary,

CVI rates in England increase with age in both sexes, and there is wide geographical variation. Potentially preventable causes include age related macular degeneration (wet and dry), glaucoma and diabetic eye disease. These accounted for 59% of all CVIs in 2010/11.

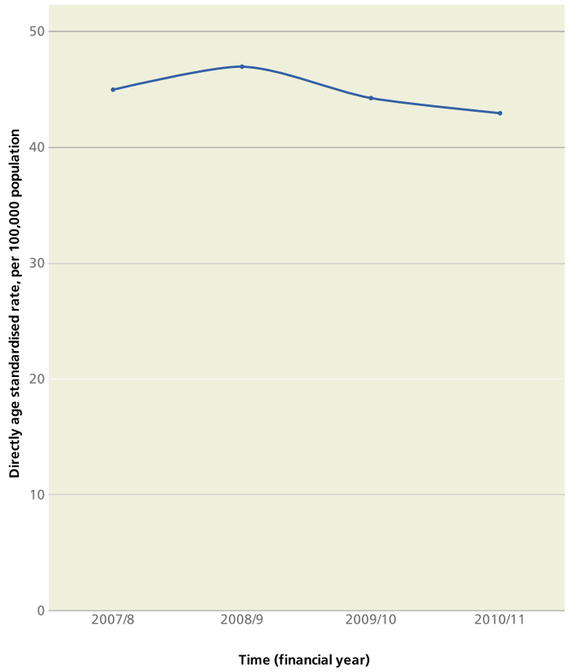
The National Survey of Hearing and Communication 2011 examined hearing in the over 60s. It showed that 45% of men and 39% of women had some sort of hearing impairment in their 'better hearing' ear. Over 50% of those with severe hearing impairment in their 'better hearing' ear reported not having any hearing aid.

Certification of visual impairment (due to preventable and non-preventable eye diseases) by age and sex, England, 2010/11



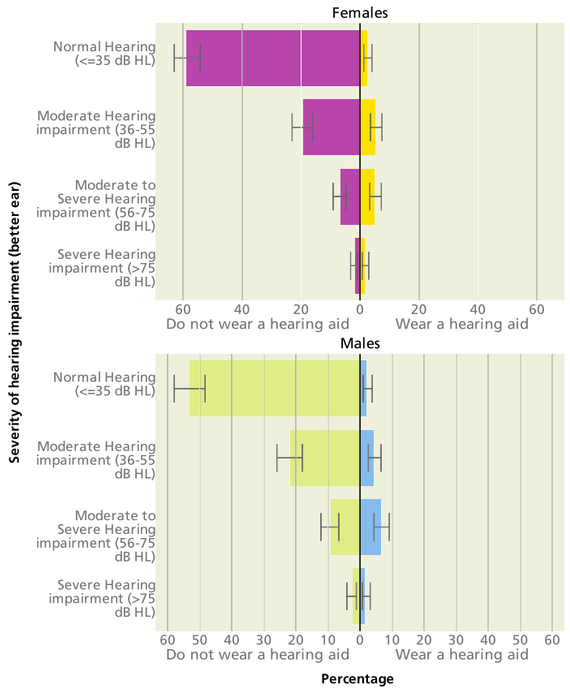
Source: Certificates of Vision Impairment (CVI) - Certifications office (RNIB, Guide Dogs, RCOpth), NIHR Moorfields Biomedical Research Centre.

Trend in certification of visual impairment rates, England, 2007/08 to 2010/11



Source: Certificates of Vision Impairment (CVI) - Certifications office (RNIB, Guide Dogs, RCOpth), NIHR Moorfields Biomedical Research Centre.

Over 60s hearing impairment (by severity) with or without hearing aids by sex, 2011

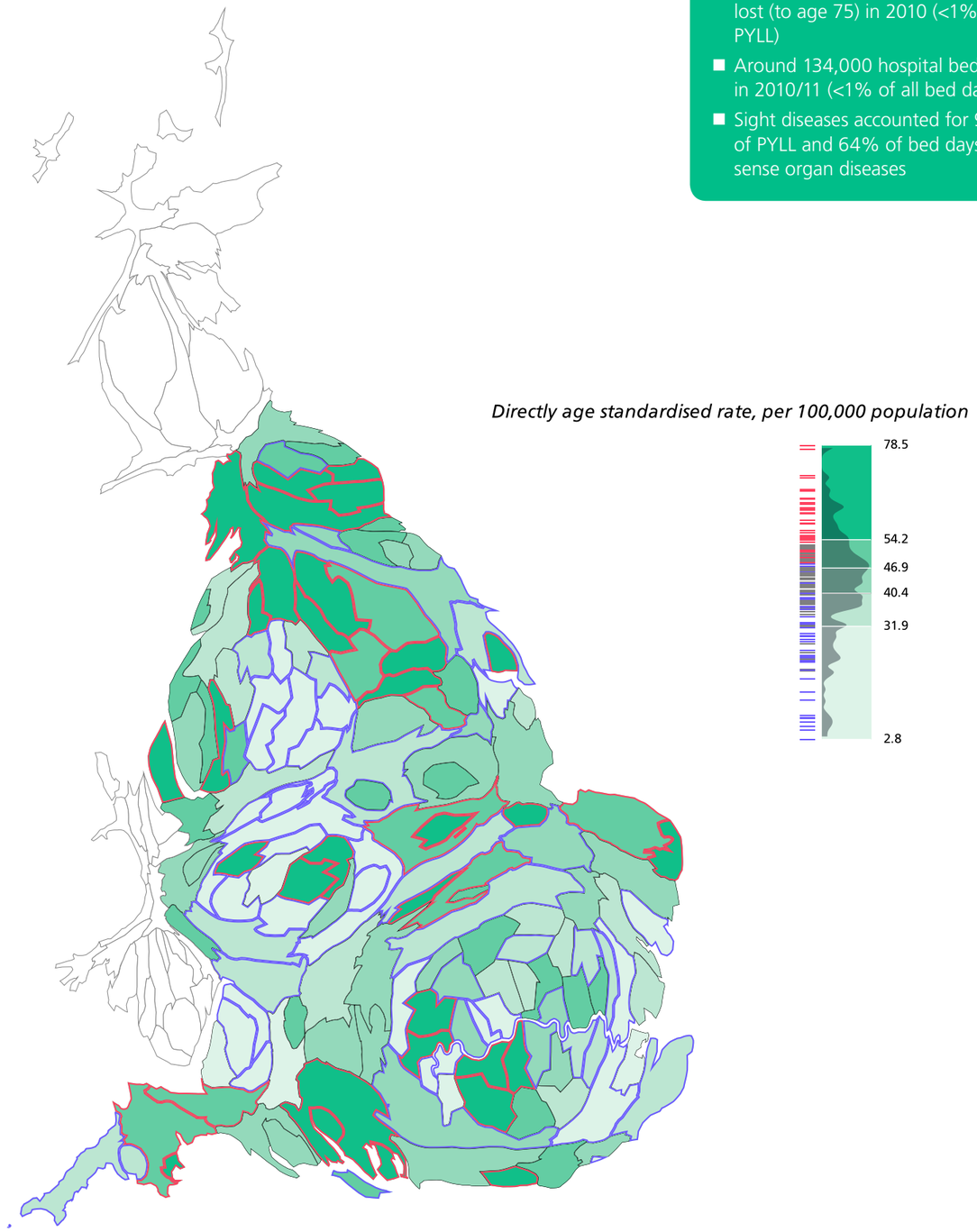


Source: National Survey of Hearing and Communication, 2011. (unpublished, funded by the CSO office and the NHS).

Key facts

- Less than 300 potential years of life lost (to age 75) in 2010 (<1% of all PYLL)
- Around 134,000 hospital bed days in 2010/11 (<1% of all bed days)
- Sight diseases accounted for 97% of PYLL and 64% of bed days for sense organ diseases

Certification of visual impairment rates by primary care trust, England, 2010/11



Source: Certificates of Vision Impairment (CVI) - Certifications office (RNIB, Guide Dogs, RCOpth), NIHR Moorfields Biomedical Research Centre.

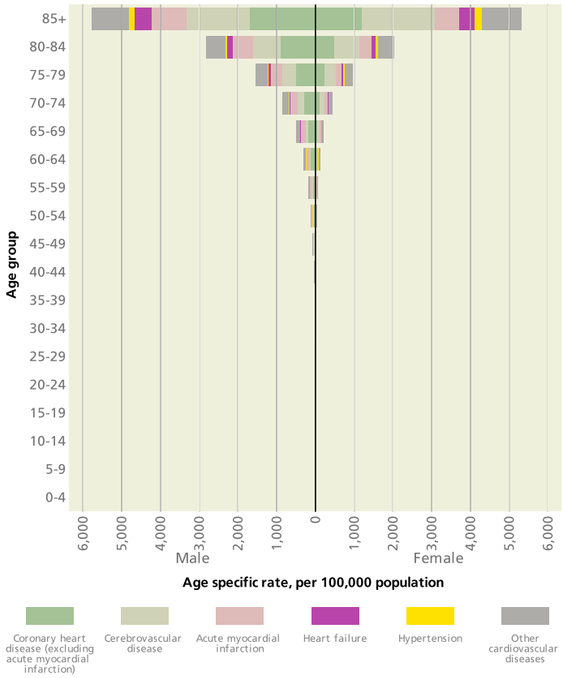
Cardiovascular disease (CVD) is a general term for a disease of the heart or blood vessels. In 2010, CVD was responsible for around one in three premature deaths (under 75) in men and one in five premature deaths in women. Coronary heart disease (CHD) and stroke are the main causes of CVD mortality.

In 2010, 35% of deaths in men, and 16% in women, from CVD occurred in under 75s, though the premature mortality rate from CVD fell by 36% between 2001 and 2010. CVD mortality varies geographically by local authority, with the highest rate 2.5 times that of the lowest. There is a clear North/South divide, and rates are 1.4 times higher in the most deprived areas than the least deprived.

The majority of people affected by CVD are from a white ethnic background, with crude rates higher than in other ethnic groups. However, CVD risk is higher for Pakistani and Irish males.

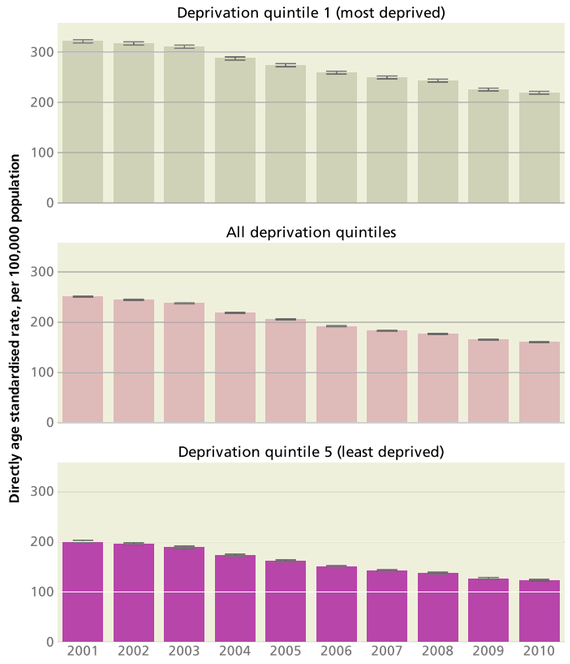
Most deaths due to CVD could be prevented through lifestyle changes. Identifying people with medical risks (e.g. diabetes, high blood pressure, high cholesterol, familial hypercholesterolemia, previous CVD event) and ensuring they receive effective treatment will help to reduce mortality due to CVD.

Average annual mortality due to cardiovascular diseases (and sub-categories) by age and sex, England, 2008-10



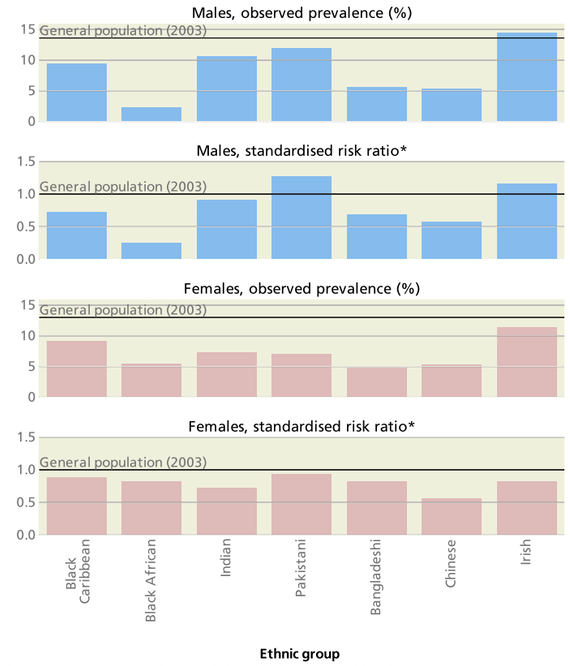
Source: Death registrations and 2008 to 2010 population estimates, ONS. (Analysis by DH)

Trend in mortality due to cardiovascular diseases by deprivation, England, 2001 to 2010



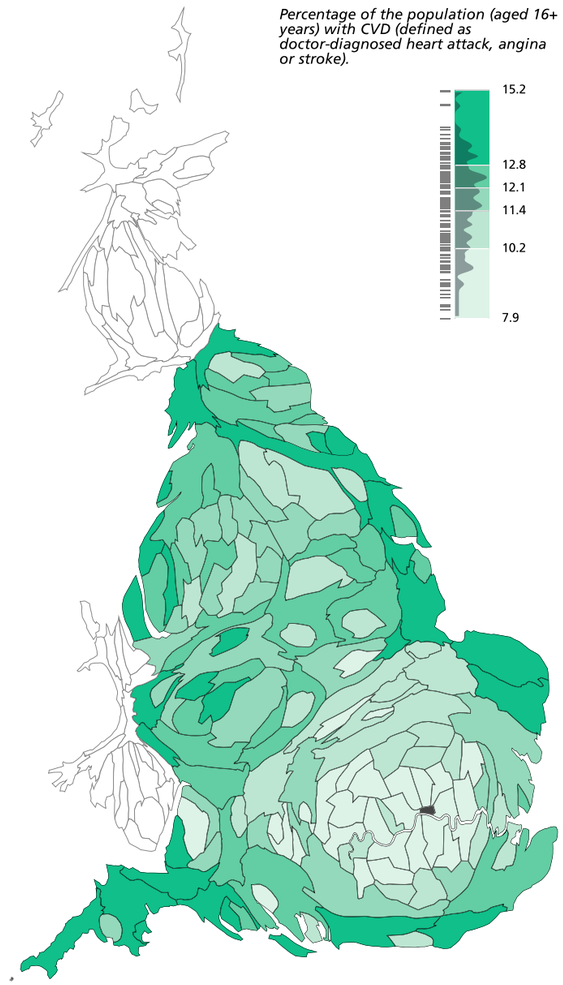
Source: Death registrations and 2001 to 2010 population estimates, ONS. (Analysis by DH)

Prevalence of cardiovascular disease in persons aged 16 years and over by sex and selected ethnic groups, England, 2004



Source: Health Survey for England 2003, 2004 Copyright © 2012, Re-used with the permission of The Health and Social Care Information Centre. All rights reserved. (Provided by ERPHO).
**Standardised risk ratios are based on ethnic group age standardised prevalence compared with general population*

Estimated prevalence of cardiovascular diseases in persons aged 16 years and over by upper tier local authority, England, 2009

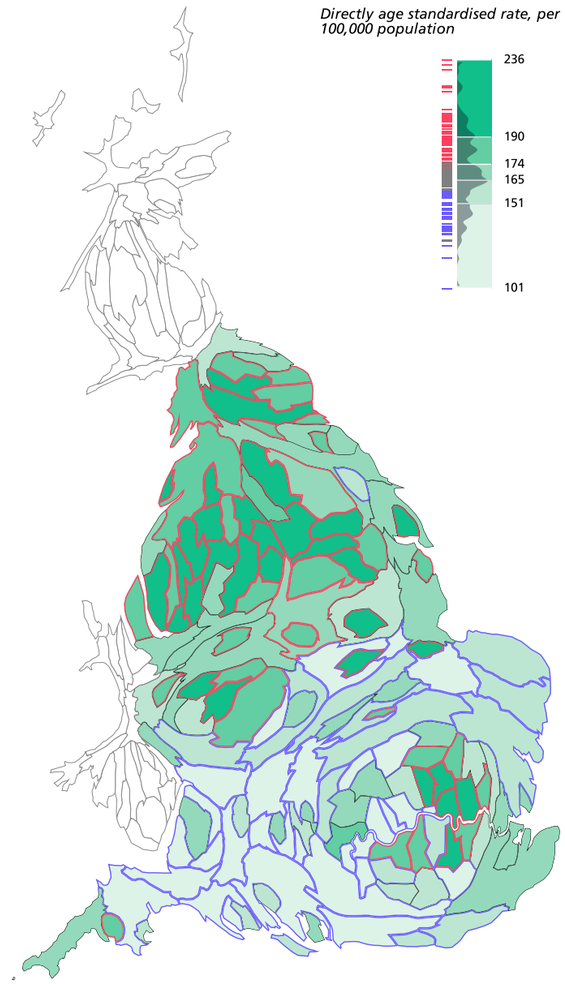


Source: APHO CVD prevalence model. (Provided by ERPHO)

Key facts

- Around 429,800 potential years of life lost (to age 75) in 2010 (19% of all PYLL)
- Around 5,663,000 hospital bed days in 2010/11 (13% of all bed days)
- Main causes – PYLL: coronary heart disease including AMI (52%); stroke (17%)
- Main causes – bed days: stroke (30%); coronary heart disease including AMI (21%)

Average annual mortality due to cardiovascular diseases by upper tier local authority, 2008-10



Source: Death registrations and 2008 to 2010 population estimates, ONS. (Analysis by DH)

Coronary heart disease (CHD) occurs when the coronary arteries are interrupted by a build-up of fatty substances (aheroma). This can cause a heart attack. CHD was the biggest single cause of death in 2010, responsible for around 65,000 deaths.

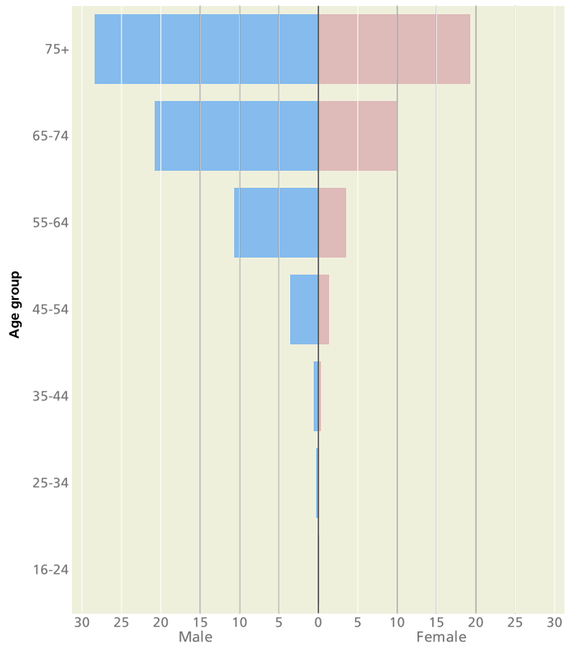
In 2010, CHD accounted for 44% of all mortality from cardiovascular disease (CVD), and 54% of under 75 deaths. 31% of all CHD mortality was in under 75s.

Estimated prevalence rates of CHD generally reflect the North/South divide seen for all cardiovascular diseases. People of South Asian origin are at higher age adjusted risk of CHD than the general population.

Effective identification and treatment of CHD (particularly in primary care) should continue the reduction in CHD mortality. Early identification and treatment of associated risk factors such as high blood cholesterol will support this.

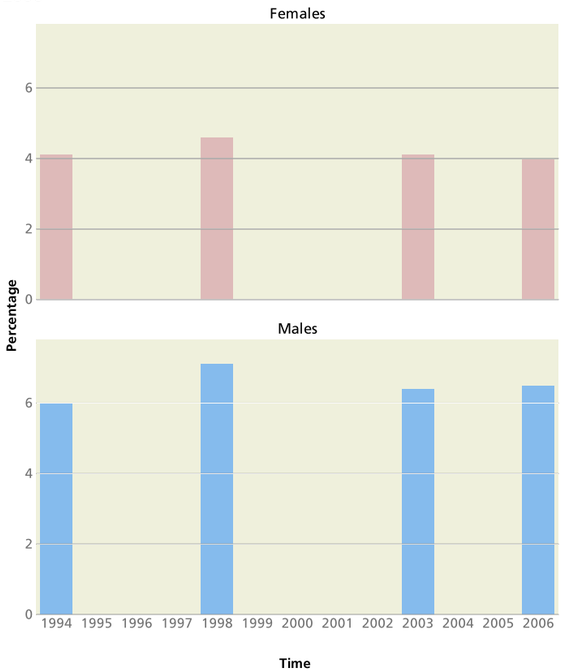
The incidence of CHD could substantially reduce with wider adoption of preventative behaviours such as eating a healthy diet, maintaining a healthy weight, exercising regularly, not smoking and avoiding harmful drinking.

Prevalence of coronary heart disease (angina or heart attack) by age and sex, England, 2006



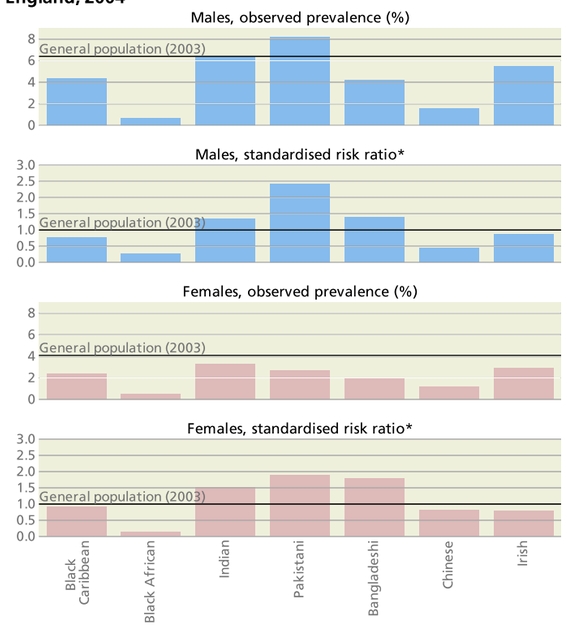
Source: Health Survey for England 2006 Copyright © 2012, Re-used with the permission of The Health and Social Care Information Centre. All rights reserved. (Provided by ERPHO)

Trend in prevalence of coronary heart disease ((angina or heart attack) in persons aged 16 years and over by sex, England, 1994 to 2006



Source: Health Survey for England 1994, 1998, 2003, 2006 Copyright © 2012, Re-used with the permission of The Health and Social Care Information Centre. All rights reserved. (Provided by ERPHO)

Prevalence of coronary heart disease (angina or heart attack) in persons aged 16 years and over by sex and selected ethnic groups, England, 2004

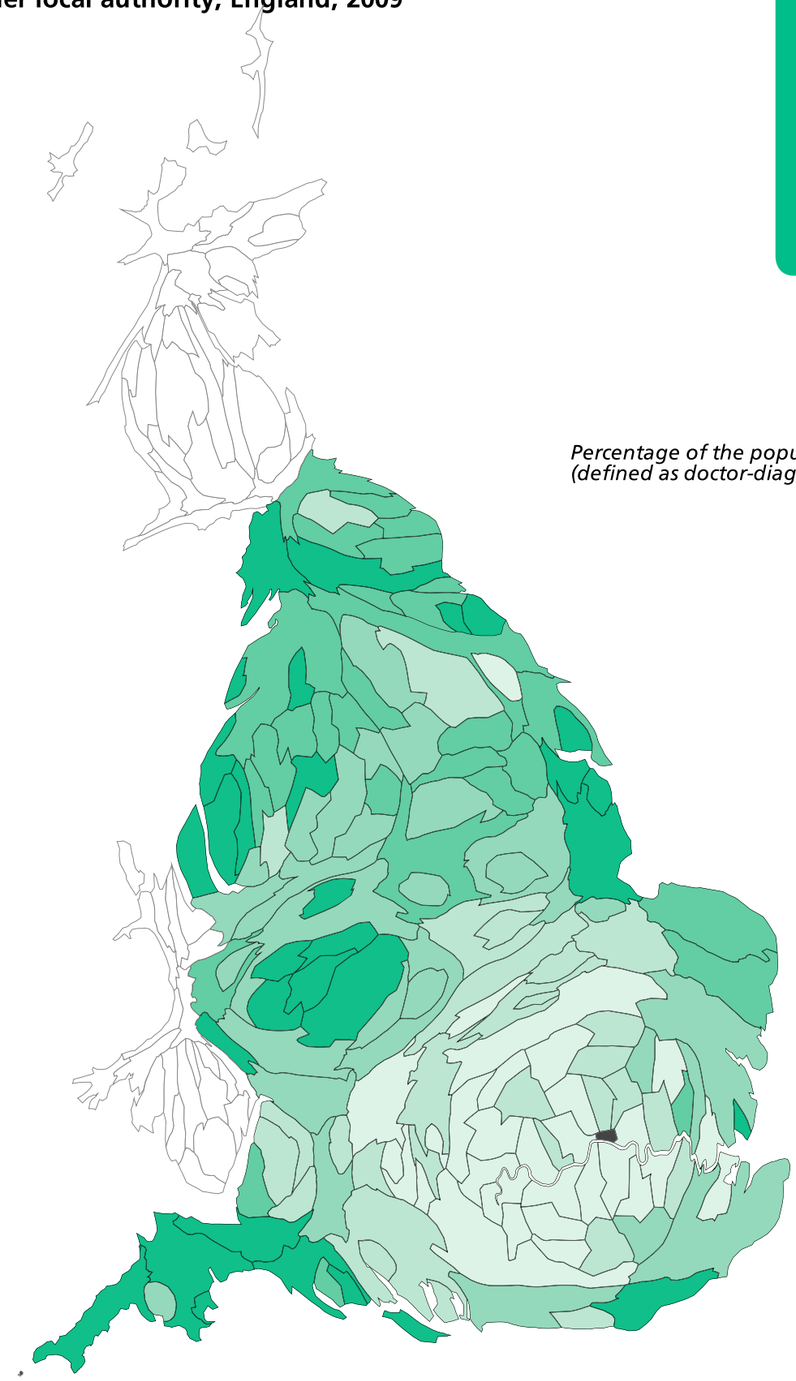


Source: Health Survey for England 2003, 2004 Copyright © 2012, Re-used with the permission of The Health and Social Care Information Centre. All rights reserved. (Provided by ERPHO).
**Standardised risk ratios are based on ethnic group age standardised prevalence compared with general population*

Key facts

- Around 222,900 potential years of life lost (to age 75) in 2010 (10% of all PYLL)
- Around 1,166,000 hospital bed days in 2010/11 (3% of all bed days)
- Acute myocardial infarction accounted for 41% of PYLL and 33% of bed days for coronary heart disease

Estimated prevalence of coronary heart disease (angina or heart attack) in persons aged 16 years and over by upper tier local authority, England, 2009



Source: APHO CHD prevalence model. (Provided by ERPHO)

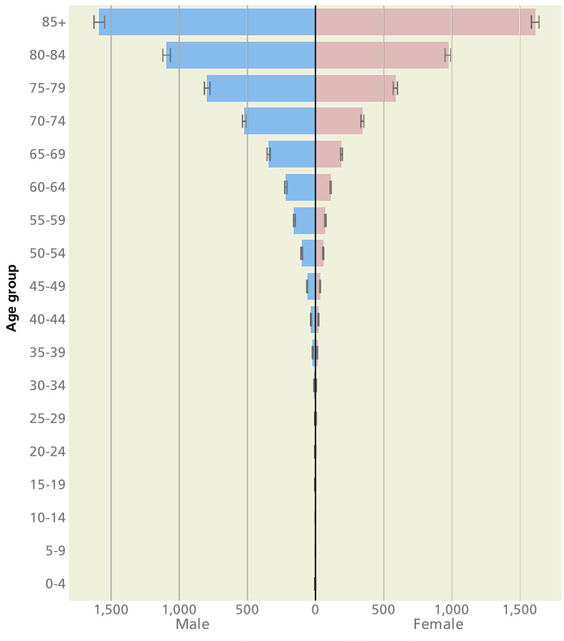
Cardiovascular disease (CVD) includes cerebrovascular diseases (CBVD). Stroke is the most common CBVD. The two main types are ischaemic stroke (85%) where a clot blocks an artery carrying blood to the brain and haemorrhagic stroke (15%) caused by bleeding into the brain. The risk of ischaemic stroke increases with age. Haemorrhagic strokes tend to occur in younger people and are more often fatal or severely disabling than ischaemic stroke.

There were 74,000 emergency admissions for stroke in 2010/11, 89% of all CBVD emergency admissions. Most people with severe strokes survive to admission. Rates of emergency admissions were lower in 2010/11 than in 2001/02, but have shown an increase since 2007/08. This is likely to be due to raised public awareness of symptoms and better coding for admissions.

Hospital emergency admission rates for stroke vary geographically by PCT with the highest rate almost 3 times that of the lowest. The geographical distribution of stroke reflects that of risk factors, particularly high blood pressure.

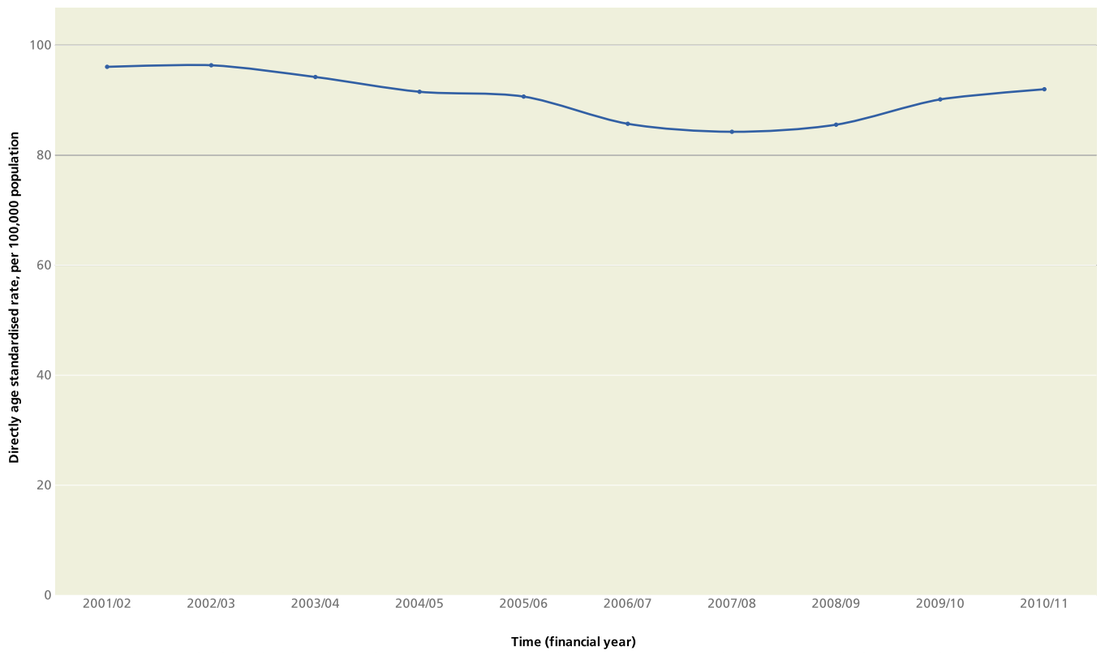
Wider adoption of preventative behaviours will help to reduce the population risk of stroke. Effective secondary prevention for high risk groups e.g. people with high blood pressure, cholesterol levels and/or a history of CVD will also reduce levels of illness and mortality.

Emergency hospital admissions due to stroke by age and sex, England, 2010/11



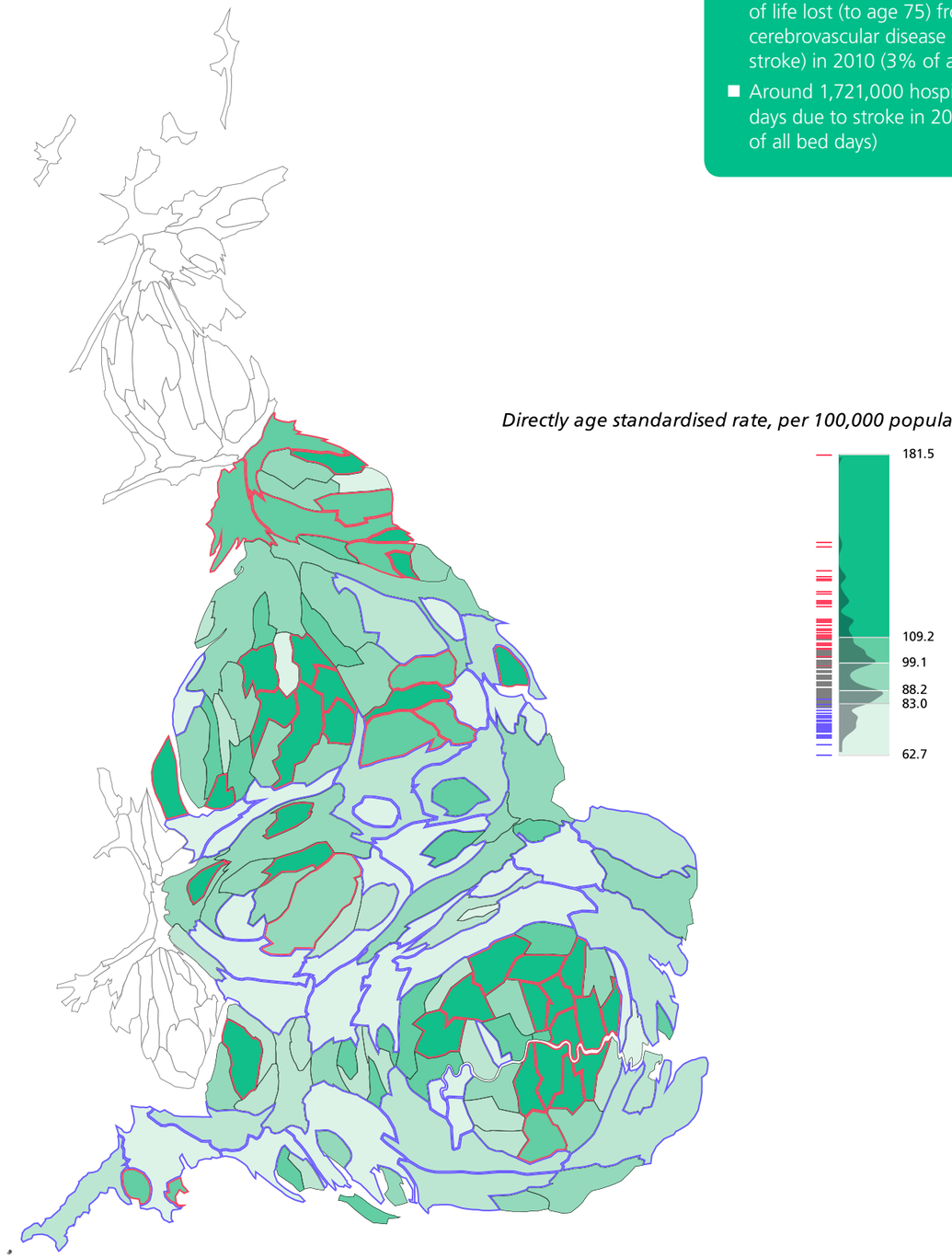
Source: Hospital Episode Statistics (HES), Health and Social Care Information Centre. Crown Copyright © 2012. 2010 population estimates supplied by ONS. (Analysis by PHOs, led by EMPHO)

Trend in rate of emergency hospital admissions due to stroke, England, 2001/02 to 2010/11



Source: Hospital Episode Statistics (HES), Health and Social Care Information Centre.Crown Copyright © 2012. 2001 to 2010 population estimates supplied by ONS. (Analysis by PHOs, led by EMPHO)

Rate of emergency hospital admissions due to stroke by upper tier local authority, England, 2010/11



Source: Hospital Episode Statistics (HES), Health and Social Care Information Centre. Crown Copyright © 2012. 2010 population estimates supplied by ONS. (Analysis by PHOs, led by EMPHO)

Key facts

- Around 74,400 potential years of life lost (to age 75) from cerebrovascular disease (mainly stroke) in 2010 (3% of all PYLL)
- Around 1,721,000 hospital bed days due to stroke in 2010/11 (4% of all bed days)

Respiratory diseases – all

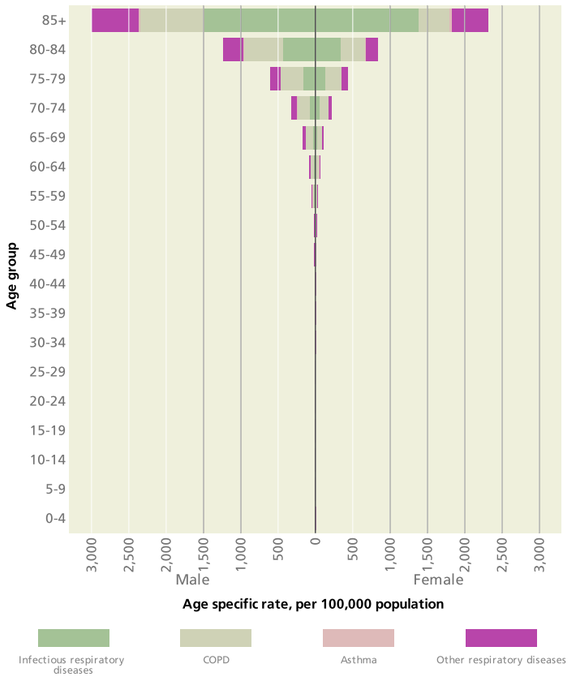
Respiratory diseases affect the airways, lungs and respiratory muscles that are involved in gas exchange. They include both infectious diseases and chronic respiratory diseases such as Chronic Obstructive Pulmonary Disorder (COPD) and asthma. They are among the most common causes of death in young infants and the very old.

Exposure to occupational hazards, urban air pollution, smoking and second-hand smoke (which increases risk of acute bronchiolitis in infants) all increase the risk of respiratory disease.

Mortality due to respiratory diseases varies geographically, reflecting the urban/rural split and smoking patterns. An overall reduction over time is likely to be influenced by reductions in smoking. In 2010, infectious respiratory diseases accounted for over 40% of all mortality due to respiratory diseases.

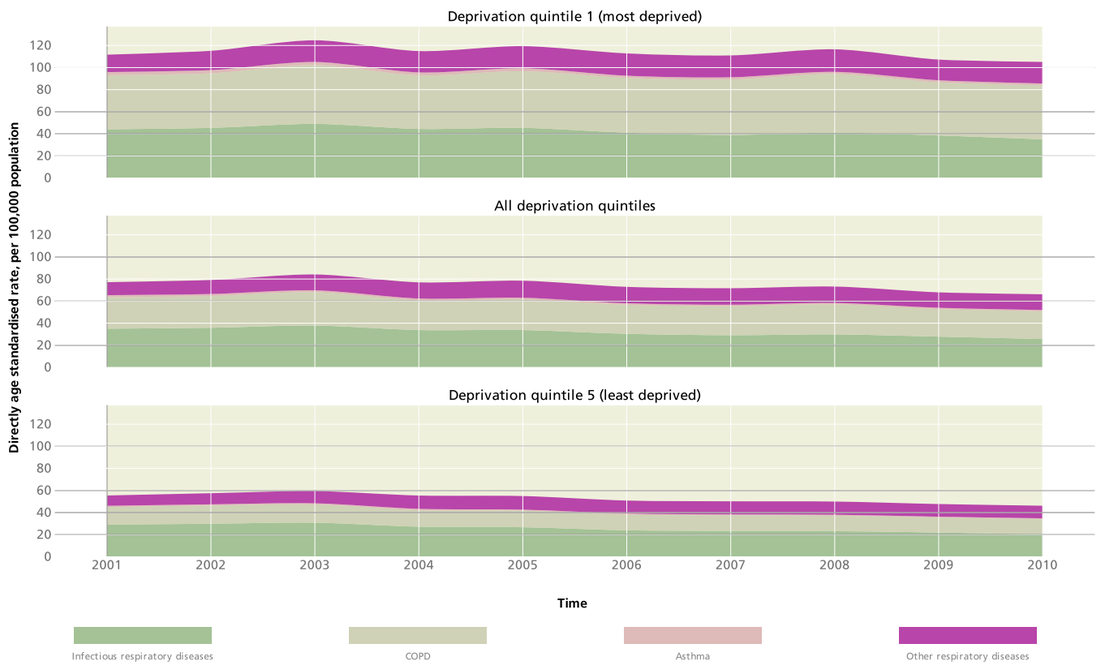
Respiratory health can be protected by ensuring appropriate standards for air pollution and occupational hazards are monitored and enforced. This is conducted through the Health and Safety Executive (HSE) and local environmental health. Respiratory health is also supported by promoting smoking cessation and ensuring high uptake rates for pneumococcal and annual influenza vaccinations.

Annual average mortality due to respiratory diseases (and sub-categories) by age and sex, England, 2008-10



Source: Death registrations and 2008 to 2010 population estimates, ONS. (Analysis by DH)

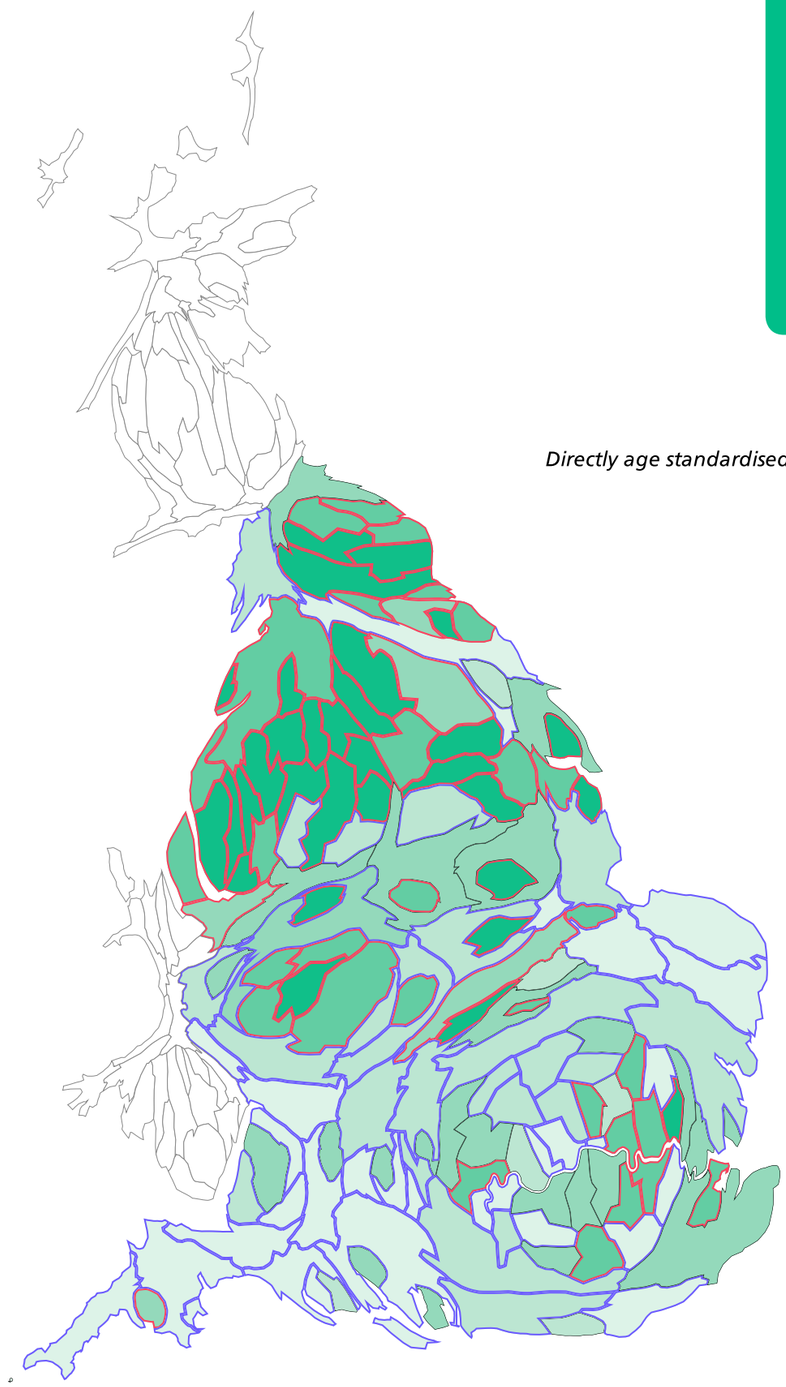
Trend in mortality due to respiratory diseases (and sub-categories) by deprivation, England, 2001 to 2010



Source: Death registrations and 2001 to 2010 population estimates, ONS. (Analysis by DH)

Chief Medical Officer's Report 2011

Average annual mortality due to respiratory diseases by upper tier local authority, England, 2008-10



Source: Death registrations and 2008 to 2010 population estimates, ONS. (Analysis by DH)

Key facts

- Around 144,300 potential years of life lost (to age 75) in 2010 (6% of all PYLL)
- Around 4,297,000 hospital bed days in 2010/11 (10% of all bed days)
- Main causes – PYLL: COPD (38%); infectious respiratory diseases (35%)
- Main causes – bed days: infectious respiratory diseases (58%); COPD (18%)

Chronic Obstructive Pulmonary Disease (COPD) is a group term for some chronic lung diseases such as chronic bronchitis and emphysema. Asthma also affects breathing due to inflammation of the airways, and triggers can cause acute attacks.

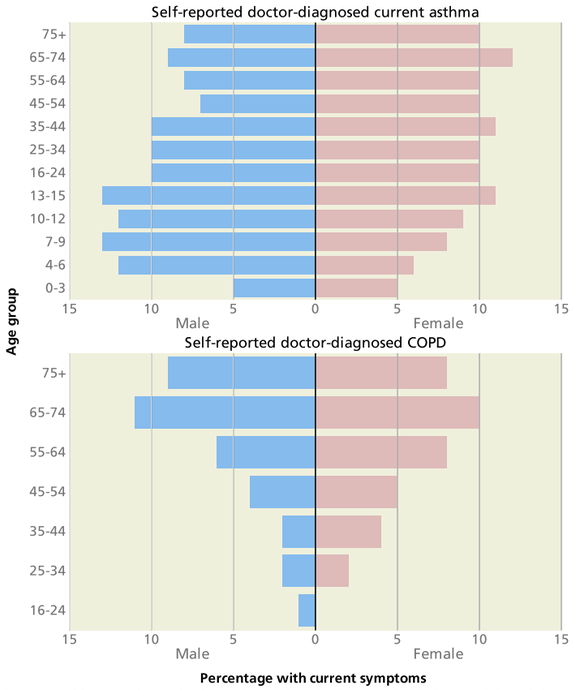
Geographical patterns of COPD reflect smoking patterns and exposure to some occupational hazards. Both COPD and asthma (in children and adults) exhibit a clear relationship with deprivation, with higher rates of both in the most deprived areas.

The most common cause of COPD is smoking. Smoking cessation leads to a gradual reduction in risk. The most effective preventative approach for smokers is to encourage smoking cessation.

For those with COPD, secondary prevention, such as quitting smoking and receiving influenza vaccinations, is advisable. Onset of asthma can occur at any age. Around one third of childhood-onset asthmatics remain symptomatic into adulthood. Neither COPD nor asthma can be cured, but symptoms (particularly for asthma) can be treated.

For asthma, controlling exposure to triggers, particularly second-hand smoke and air pollution, will help prevent acute events. Given effective symptom control exists, early identification and provision of integrated care models is key to managing asthma.

Prevalence of asthma and COPD by age and sex, England, 2010



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Prevalence of asthma and COPD by sex and equivalised household income, England, 2010

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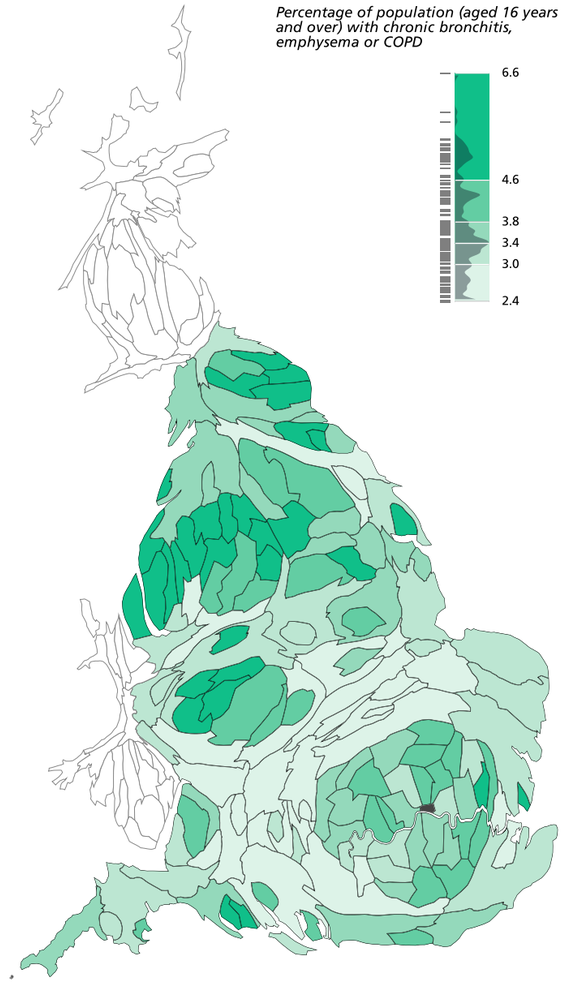
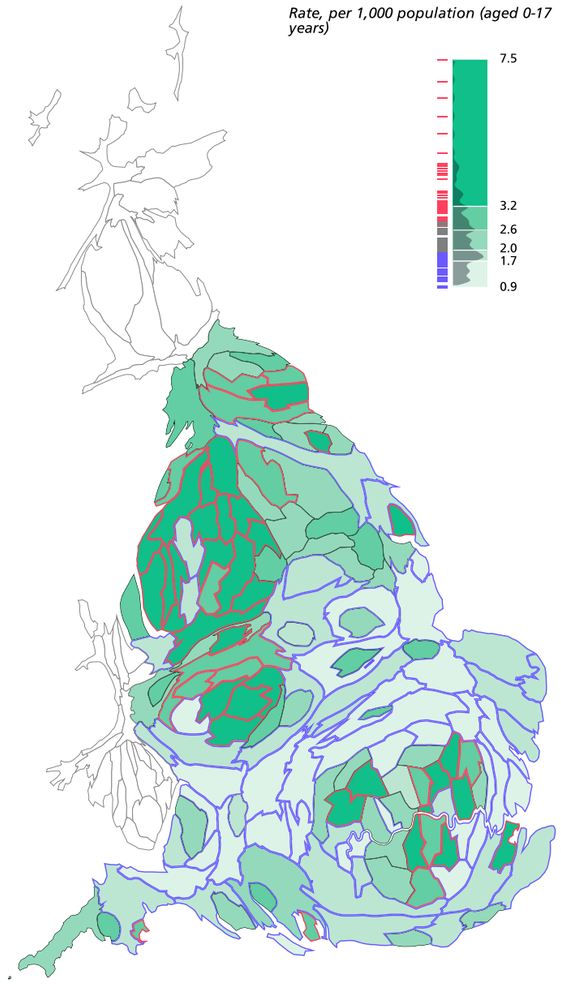
Estimated prevalence of COPD in persons aged 16 years and over by upper tier local authority, England, 2009



Source: APHO COPD prevalence model. (Provided by ERPHO)

Rate of emergency hospital admissions for asthma in 0 to 17 years olds by primary care trust, England, 2010/11



Source: Hospital Episode Statistics (HES), Health and Social Care Information Centre.Crown Copyright © 2012. 2010 population estimates supplied by ONS. (Provided by Chimat)

Key facts

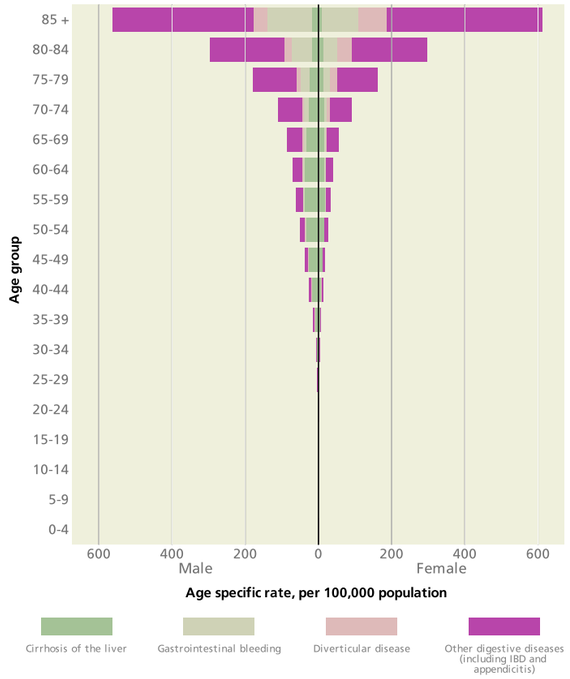
- Around 54,800 potential years of life lost (to age 75) in 2010 and 777,000 hospital bed days in 2010/11 due to COPD (2% of all PYLL / bed days)
- Around 6,600 potential years of life lost (to age 75) in 2010 and 163,000 hospital bed days in 2010/11 due to asthma (<1% of all PYLL / bed days)

This section refers to all disorders in the ICD10 chapter 'Diseases of the digestive system', excluding diseases of the oral cavity, salivary glands and jaws, plus 'oesophageal varices' as part of the Gastrointestinal (GI) bleeding category.

There has been a slight downward trend in mortality from most digestive diseases in recent years. The notable exception is mortality from cirrhosis of the liver, which showed a generally upward trend, with rates in 2010 significantly higher than those of 2001. In 2010, the rate of digestive diseases in the most deprived areas was 2.6 times that of the least deprived. Making an equivalent comparison, mortality from cirrhosis was nearly four times higher in the most deprived areas.

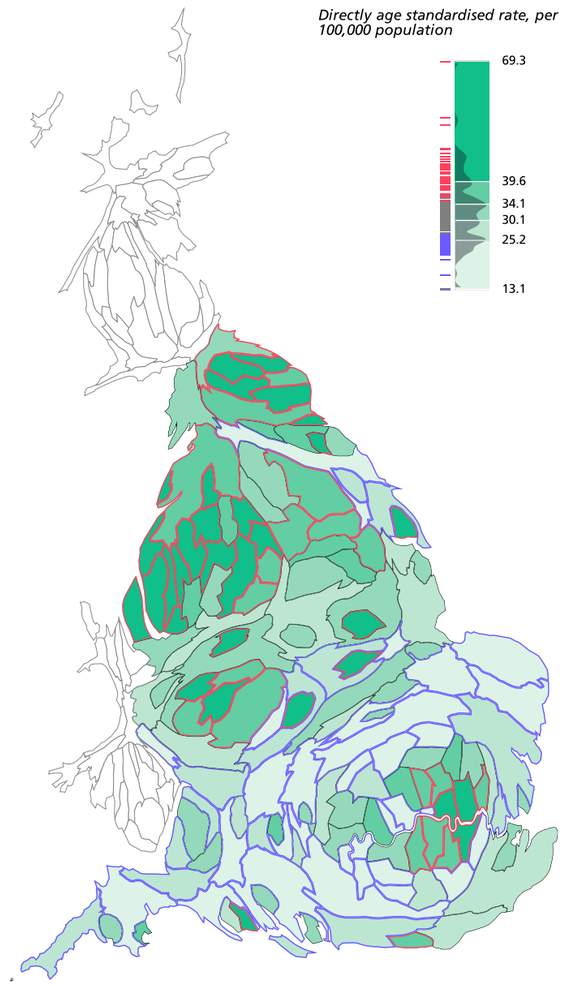
Between 2001/02 and 2010/11, rates of hospital admissions for digestive diseases increased by nearly a third. It is unclear whether this reflects increasing prevalence of digestive disorders or a change in clinical treatment or coding of admissions. Of the 1.5 million hospital admissions in 2010/11, GI bleeding, diverticular disease and inflammatory bowel disease each accounted for 6%, appendicitis 3% and cirrhosis 1%.

Average annual mortality due to digestive diseases (and sub-categories) by age and sex, England, 2008-10



Source: Death registrations and 2008 to 2010 population estimates, ONS. (Analysis by DH)

Average annual mortality due to digestive diseases by upper tier local authority, England, 2008-10

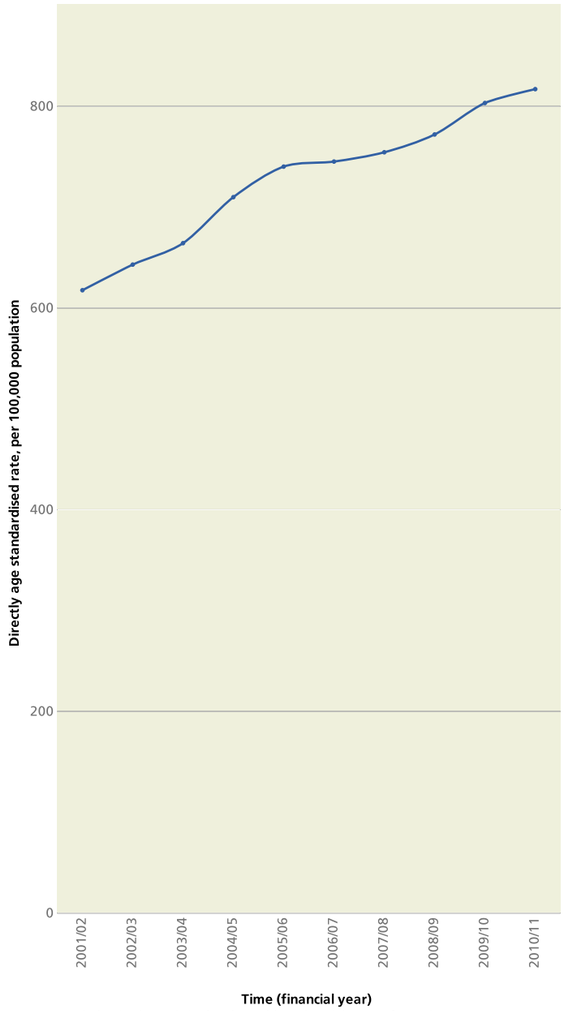


Source: Death registrations and 2008 to 2010 population estimates, ONS. (Analysis by DH)

Key facts

- Around 173,800 potential years of life lost (to age 75) in 2010 (8% of all PYLL)
- Around 3,370,000 hospital bed days in 2010/11 (8% of all bed days)
- Main cause – PYLL: cirrhosis of the liver (59%)

Trend in rate of emergency hospital admissions due to digestive diseases, England, 2001/02 to 2010/11



Source: Hospital Episode Statistics (HES), Health and Social Care Information Centre. Crown Copyright © 2012. 2001 to 2010 population estimates supplied by ONS. (Analysis by PHOs, led by EMPHO)

Trend in mortality due to digestive diseases (and sub-categories) by deprivation, England, 2001 to 2010

Source: Death registrations and 2001 to 2010 population estimates, ONS. (Analysis by DH)

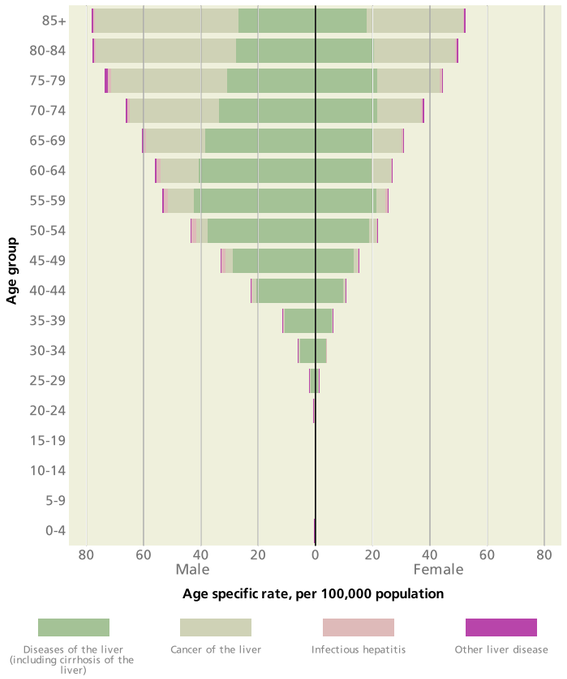
Liver disease is one of the few major causes of premature mortality that is increasing.

Liver disease refers to damage likely to interfere with vital liver functions and results in progressive scarring (fibrosis). Cirrhosis (an advanced stage of fibrosis) confers additional risk of liver failure, variceal haemorrhage or liver cancer. It accounts for 83% of deaths from 'diseases of the liver'. Mortality rates for liver disease vary widely by local authority, though even the lowest rates remain higher than UK rates in the 1980s.

Where a local authority age standardised liver disease mortality rate is higher than 20 per 100,000 population, this is likely to be due to local alcohol culture or undiagnosed hepatitis infection. This is the case in 50 local authorities. Between 2001 and 2010, there was a general upward trend in mortality from liver disease from 13.9 to 16.6 per 100,000 population.

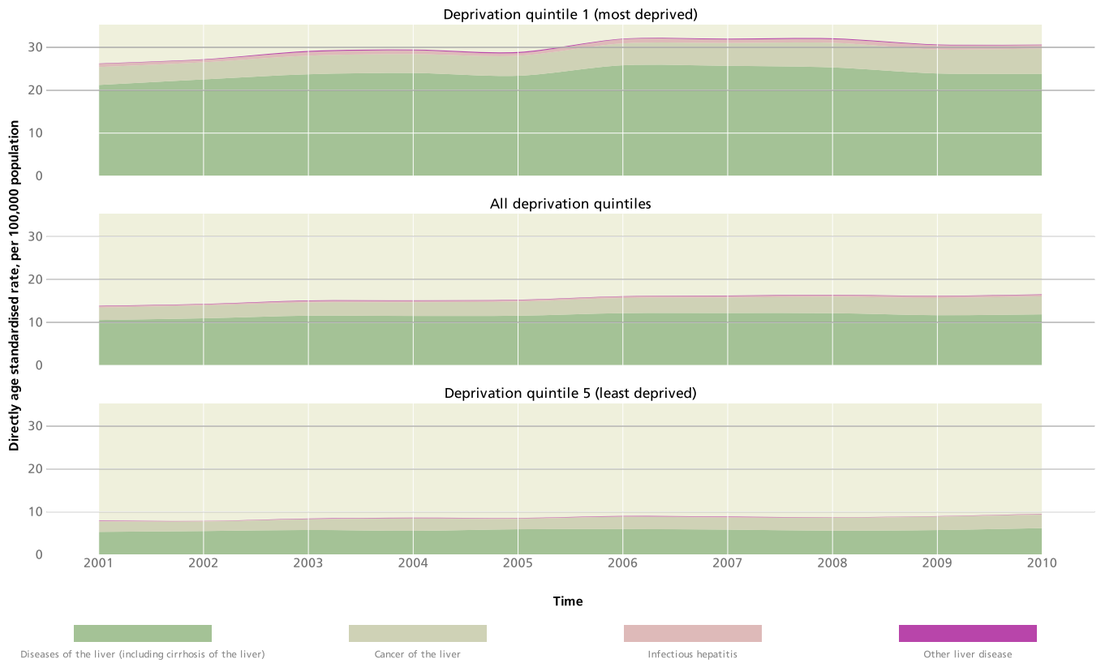
The four main drivers of increasing liver disease (alcohol, obesity and chronic hepatitis B and C infection) are preventable. Long-term reduction of mortality due to liver disease requires concerted public health action on these drivers, better awareness amongst the public of their liver health, and greater effort by service providers to proactively detect early signs of liver disease.

Average annual mortality due to liver disease (and sub-categories) by age and sex, England, 2008-10



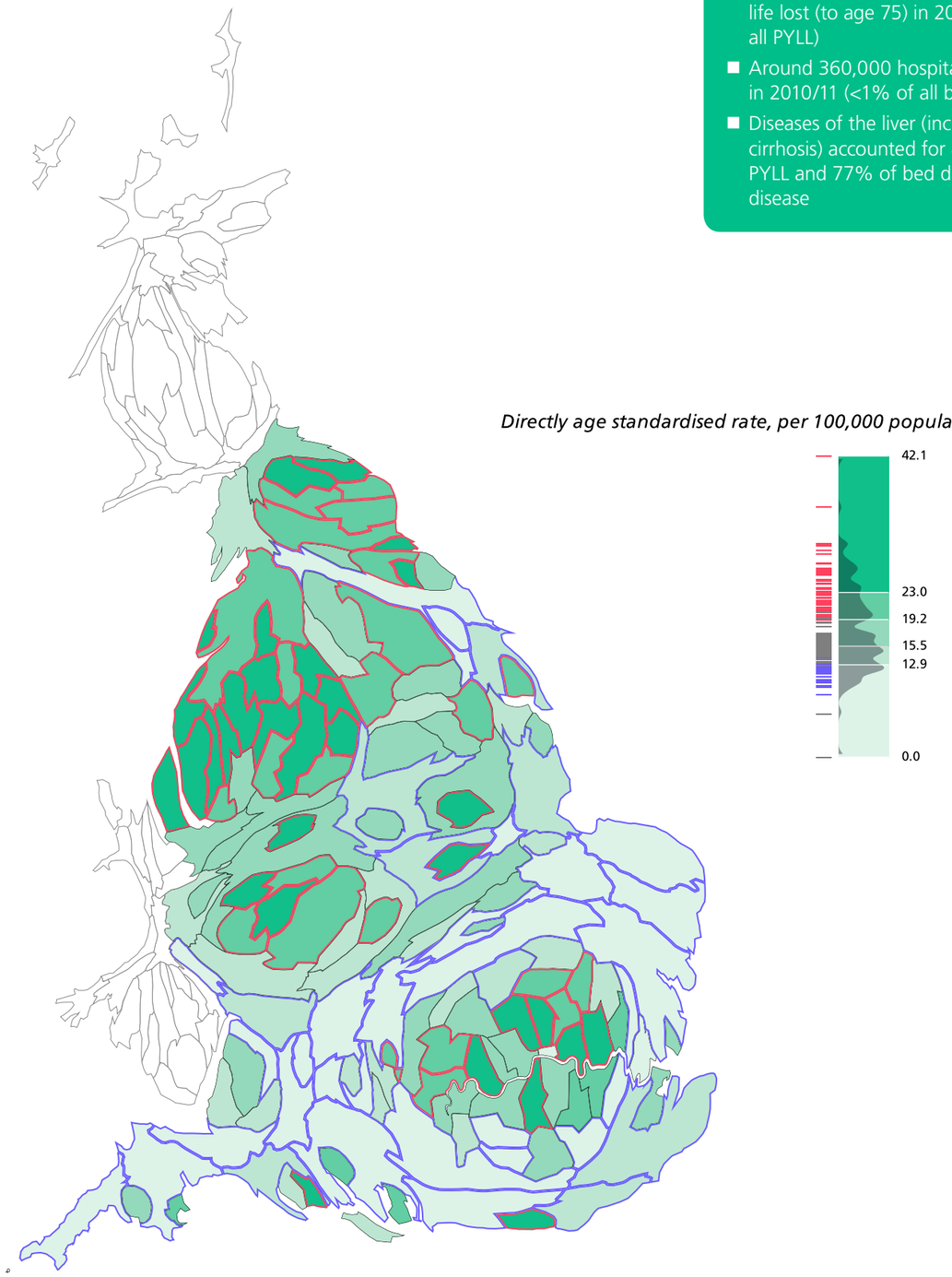
Source: Death registrations and 2008 to 2010 population estimates, ONS. (Analysis by DH)

Trend in mortality due to liver disease (and sub-categories) by deprivation, England, 2001 to 2010



Source: Death registrations and 2001 to 2010 population estimates, ONS. (Analysis by DH)

Average annual mortality due to liver disease by upper tier local authority, England, 2008-10



Source: Death registrations and 2008 to 2010 population estimates, ONS. (Analysis by DH)

Key facts

- Around 141,600 potential years of life lost (to age 75) in 2010 (6% of all PYLL)
- Around 360,000 hospital bed days in 2010/11 (<1% of all bed days)
- Diseases of the liver (including cirrhosis) accounted for 83% of PYLL and 77% of bed days for liver disease

Chronic kidney disease (CKD) is a common genitourinary disease. CKD is defined as reduced kidney excretory function or the presence of kidney damage (proteinuria) for more than 3 months. The 2009-10 Health Survey for England estimates prevalence of 'CKD 3-5' (about 50% loss of function) as 6% of men and 7% of women. CKD rates increase with age, and to a much lesser extent with deprivation.

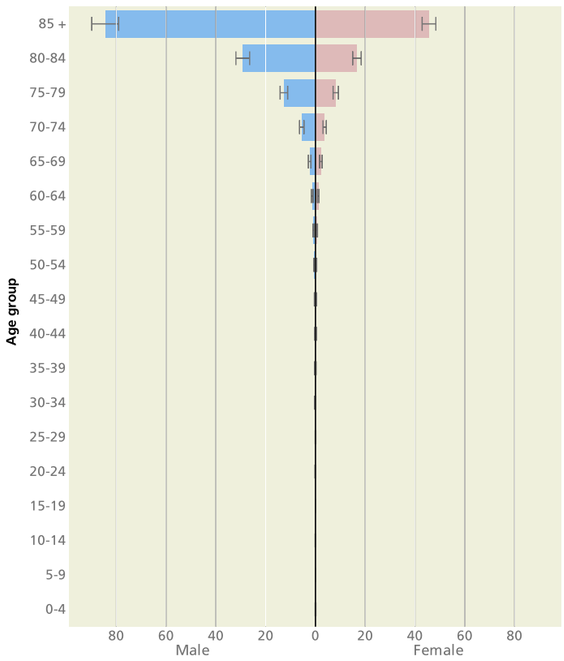
CKD may progress to end stage kidney failure, potentially requiring renal replacement therapy (RRT), i.e. dialysis or transplantation, but the most common outcome is cardiovascular mortality. Other risks of CKD include anaemia, infection, fractures and reduced quality of life as kidney function fails.

2008-10 mortality rates for all genitourinary diseases (including CKD) show geographical variation, appearing to mirror socioeconomic demographic patterns.

The downward trend in mortality rates since 2007 coincides with the introduction of a national primary care prevention strategy and stabilisation of the RRT acceptance rate. Reduced mortality could be due to falling incidence rates of CKD or reduced mortality in those developing CKD, or both.

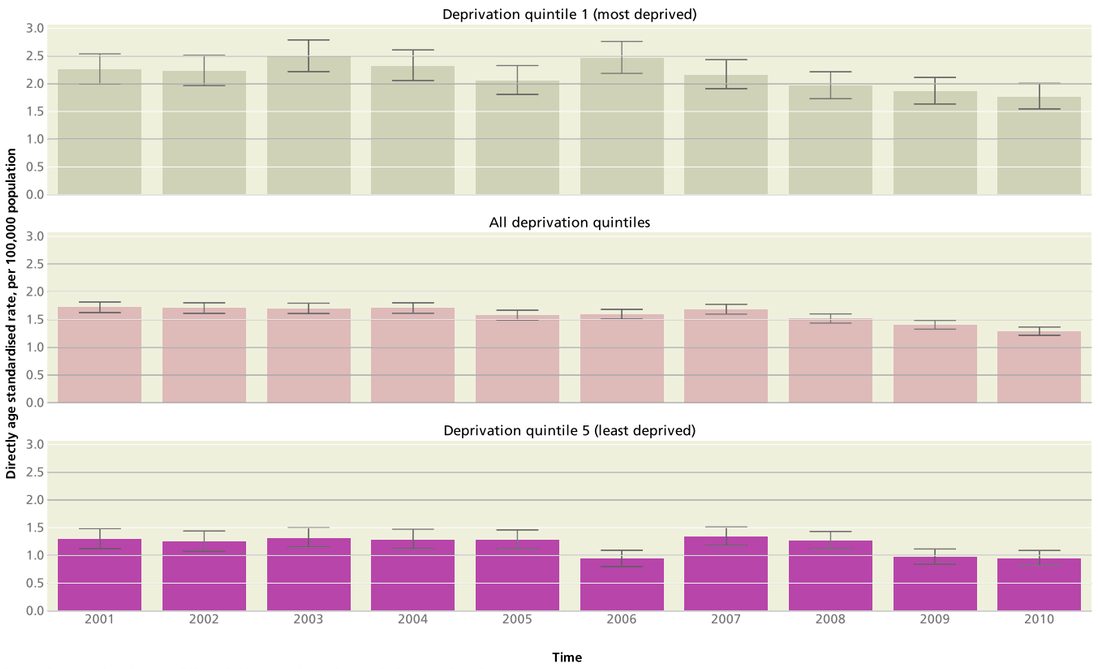
The downward mortality trend can be supported by ensuring access to services for those with CKD, particularly those requiring RRT.

Average annual mortality due to chronic kidney disease by age and sex, England, 2008-10



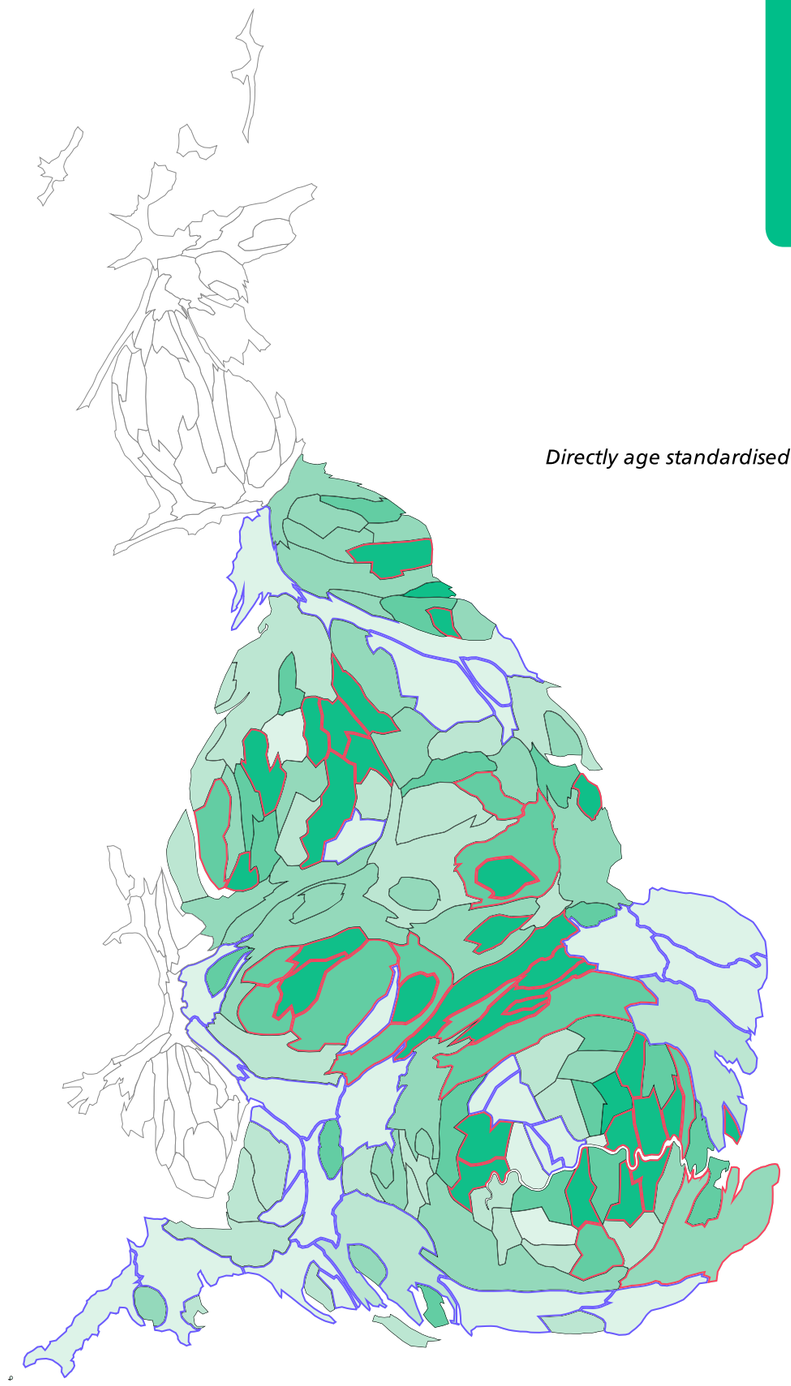
Source: Death registrations and 2008 to 2010 population estimates, ONS. (Analysis by DH)

Trend in mortality due to chronic kidney disease by deprivation, England, 2001 to 2010



Source: Death registrations and 2001 to 2010 population estimates, ONS. (Analysis by DH)

Average annual mortality due to genitourinary diseases by upper tier local authority, England, 2008-10



Source: Death registrations and 2008 to 2010 population estimates, ONS. (Analysis by DH)

Key facts

- Around 16,100 potential years of life lost (to age 75) in 2010 (<1% of all PYLL)
- Around 2,526,000 hospital bed days in 2010/11 (6% of all bed days)
- Chronic Kidney Disease accounted for 18% of PYLL for genitourinary diseases

The ICD 10 chapter definitions of 'diseases of the skin and subcutaneous tissues' (L00-L99) is used to calculate the key facts presented here. 'Skin conditions' additionally include benign and malignant skin lesions and skin infections. Whilst rarely fatal, skin conditions cause substantial loss of quality of life.

In 2010 an estimated 24% of the population of England and Wales presented to their GP with a skin condition. Skin conditions were the most common reason for a new GP consultation[1]. Most GP consultations regarding the skin are due to ten categories of common conditions.

The most common skin conditions presenting to GPs are skin infections and eczema; 20% of children under one year old present with eczema[1]. Primary care data suggests that skin disease is neither increasing nor decreasing.

GPs refer around 6% of patients with skin conditions for specialist advice.

National, systematically collected data from specialist dermatology centres is not available. However, it is likely that skin lesions/cancer are the most common reason for referral to specialist care[2].

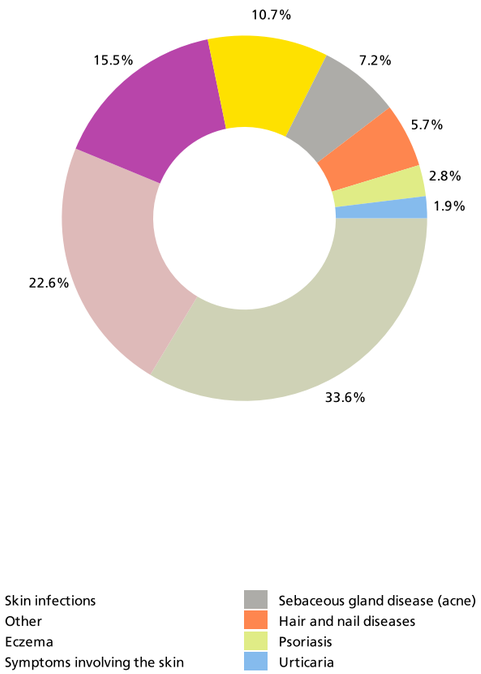
1 RCGP Research and Surveillance Unit, personal communication.

2 Schofield et al (2009) Skin conditions in the UK: a Health Care Needs Assessment, University of Nottingham.

Key facts

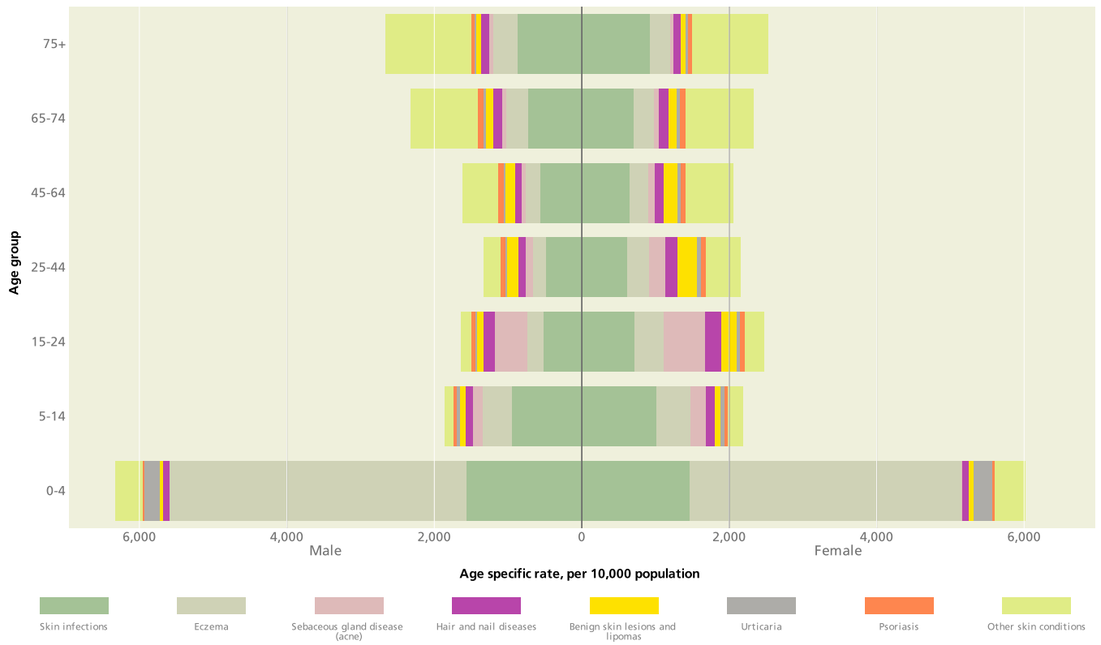
- Around 4,300 potential years of life lost (to age 75) in 2010 (<1% of all PYLL)
- Around 868,000 hospital bed days in 2010/11 (2% of all bed days)

Common skin conditions in persons presenting in primary care, England, 2010



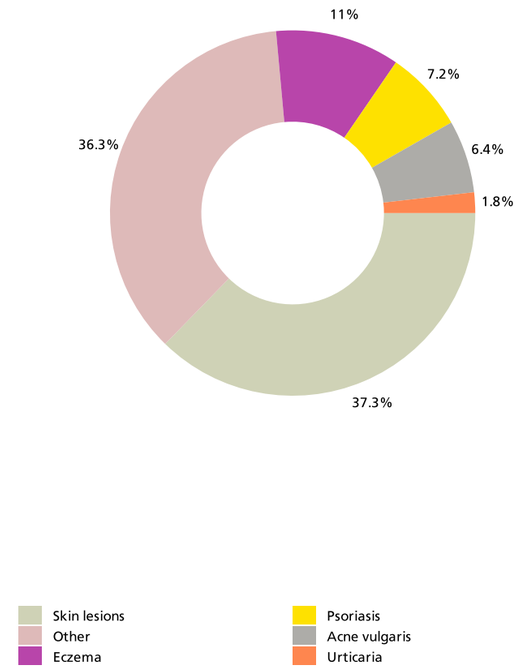
Source: Dr D Fleming, RCGP Research and Surveillance Unit. (Provided by Dr J Schofield & Professor H Williams, University of Nottingham)

Prevalence of common skin conditions in persons presenting in primary care by age and sex, England, 2010



Source: Dr D Fleming, RCGP Research and Surveillance Unit. (Provided by Dr J Schofield & Professor H Williams, University of Nottingham)

Skin conditions seen by specialists, England, 2009



Source: Schofield JK, Grindlay D, Williams HC. Skin conditions in the UK: a Health Care Needs Assessment. Centre of Evidence Based Dermatology, University of Nottingham, 2009

Disorders of joints, muscles and bones are major causes of pain and disability. National data on the full extent and impact of some musculoskeletal diseases are often difficult to obtain. Two key conditions are osteoporosis and rheumatoid arthritis (RA).

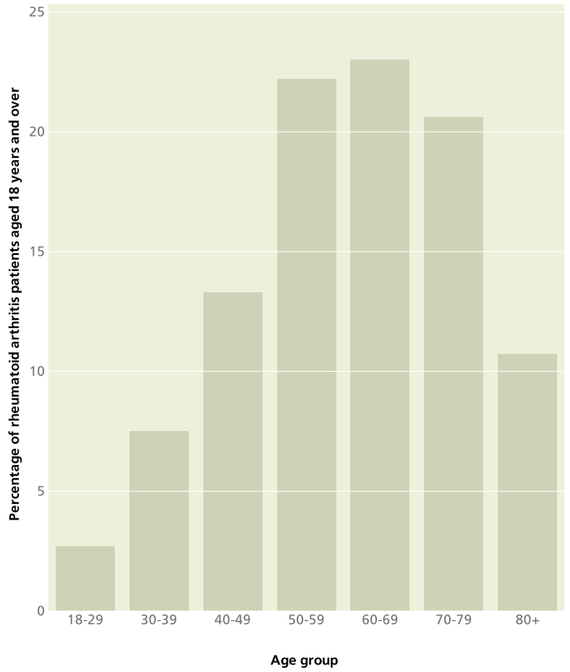
Osteoporosis is a progressive, preventable condition of bone fragility, particularly prevalent in post-menopausal women. In the over 65s, hip fracture is mostly due to falls in those with osteoporosis. Differing geographical rates for hip fractures probably reflect the underlying prevalence of osteoporosis.

There were 50,000 emergency admissions for hip fracture in 2010/11 and an estimated 60,000 hip fractures[1]. Bone strength can be increased through physical activity, good nutrition, avoiding smoking and avoiding harmful drinking.

RA, an auto-immune disease, is a severe form of arthritis. Just under 0.5% of GP registered patients have a recorded diagnosis. This probably underestimates the prevalence. It can manifest at any age, but usually manifests in 50-80 year olds. Rates are highest in the South West, possibly reflecting underdiagnosis in other regions. Early identification and treatment prevents pain, disability and lasting skeletal damage.

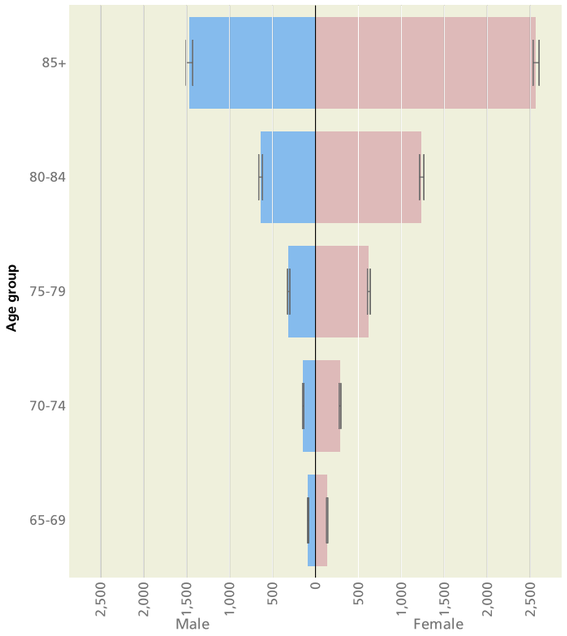
1 Personal communication, 2012, National Hip Fracture Database

Age at first rheumatoid arthritis diagnosis, United Kingdom, 1995-2010



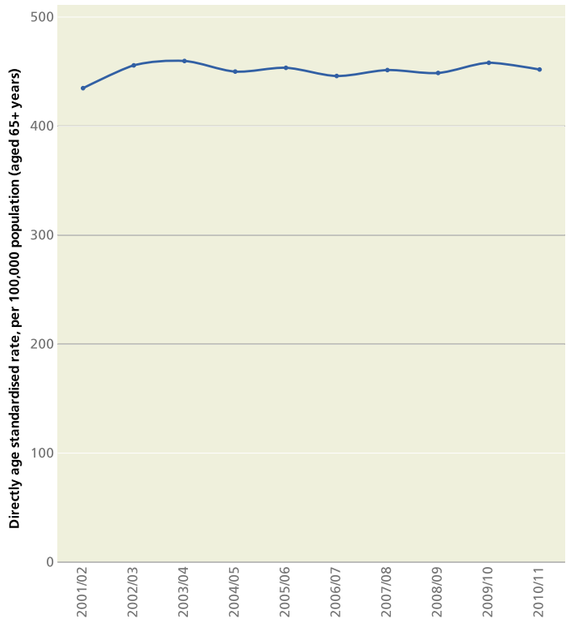
Source: General Practice Research Database. (Provided by Ms G Round & Professor N Arden, University of Oxford)

Rate of emergency hospital admissions due to hip fractures in persons aged 65 years and over by age and sex, England, 2010/11



Source: Hospital Episode Statistics (HES), Health and Social Care Information Centre.Crown Copyright © 2012. 2010 population estimates supplied by ONS. (Analysis by PHOs, led by EMPHO)

Trend in rate of emergency hospital admissions due to hip fractures in persons aged 65 years and over, England, 2001/02 to 2010/11

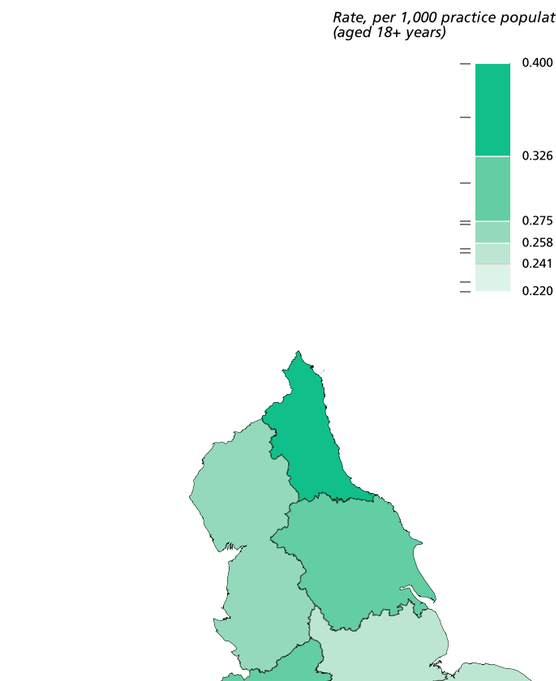


Source: Hospital Episode Statistics (HES), Health and Social Care Information Centre. Crown Copyright © 2012. 2001 to 2010 population estimates supplied by ONS. (Analysis by PHOs, led by EMPHO)

Key facts

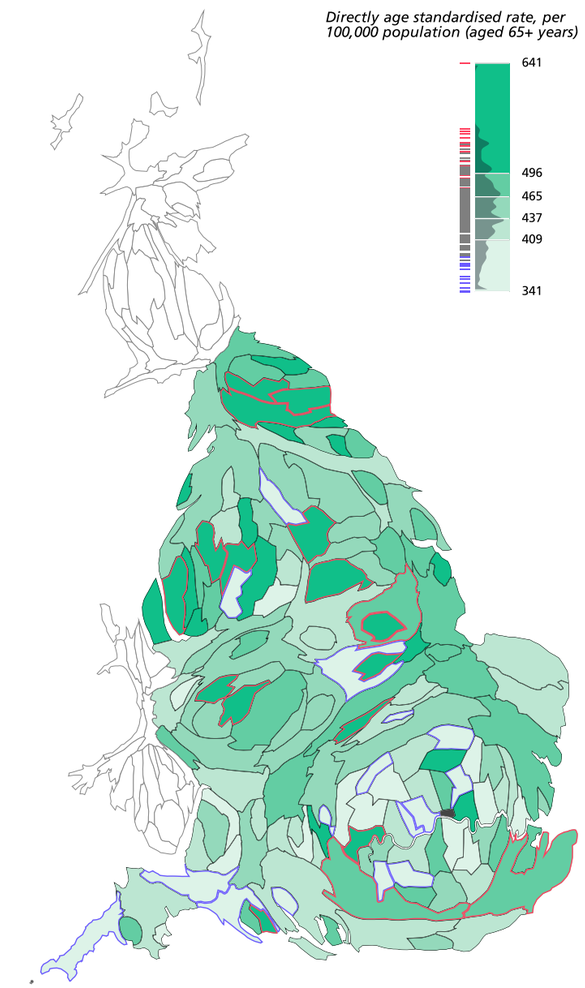
- Around 11,800 potential years of life lost (to age 75) in 2010 (<1% of all PYLL)
- Around 2,212,000 hospital bed days in 2010/11 (5% of all bed days)
- Osteoarthritis accounted for 38% of bed days for musculoskeletal diseases

Incidence of rheumatoid arthritis diagnosis in persons aged 18 years and over by region, England, 2009



Source: General Practice Research Database. (Provided by Ms G Round & Professor N Arden, University of Oxford)

Rate of emergency hospital admissions due to hip fractures in persons aged 65 years and over by upper tier local authority, England, 2010/11



Source: Hospital Episode Statistics (HES), Health and Social Care Information Centre. Crown Copyright © 2012. 2010 population estimates supplied by ONS. (Analysis by PHOs, led by EMPHO)

There are more children who are free from obvious dental decay than those who have at least one decayed, missing or filled tooth (dmft in deciduous teeth/DMFT in permanent teeth), 69% of 5 years olds and 67% of 12 year olds.

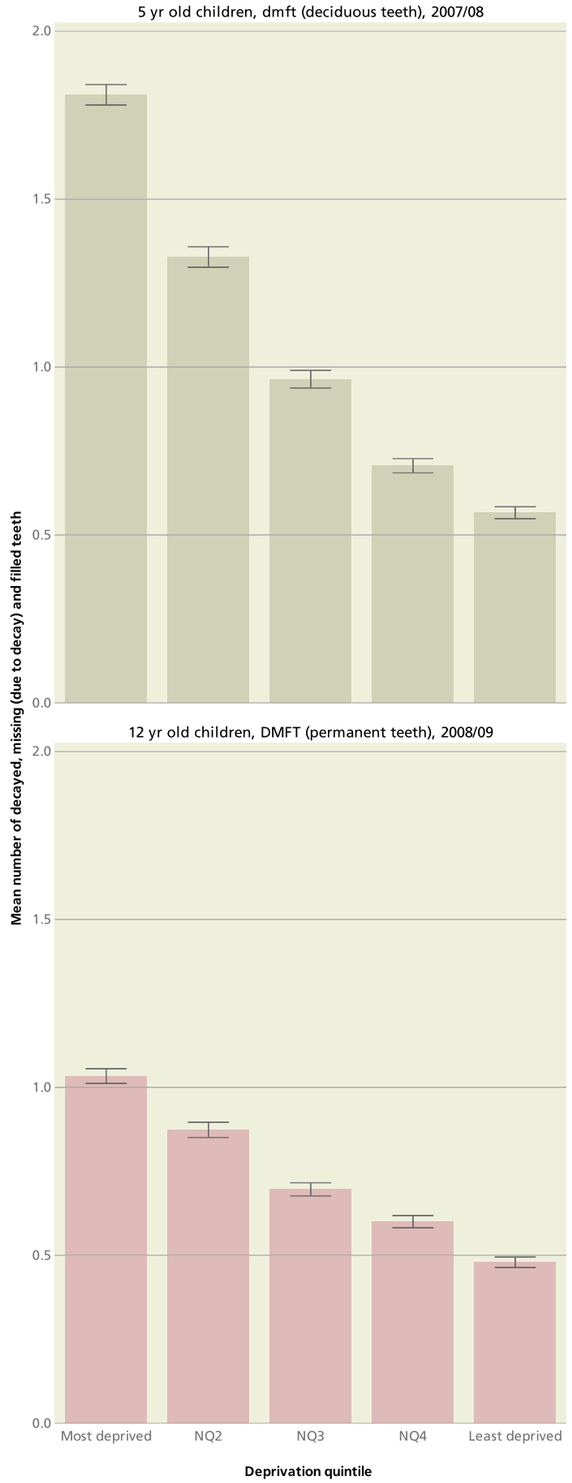
However, around a third of all children display some degree of poor dental health. On average, five year olds with experience of dental caries have had 3.5 teeth affected. There is wide variation between PCTs, with 18% to 53% of five year olds having had dental caries experience.

Variation is also seen across PCTs in 12 year olds, with 13% to 56% having had dental caries experience. Overall, 33% of children have had dental caries experience, and for those affected the average number of decayed, missing or filled teeth is 2.2[1].

Good dental health starts in childhood. To address geographic and socioeconomic differences in child dental health, further action is needed to promote dental hygiene and improve children's diets, particularly limiting the quantity of, and frequency of, consumption of sugary foods and acidic foods. The use of toothpaste with the most effective fluoride content should be encouraged. At a community level, there is evidence for the effectiveness of water fluoridation.

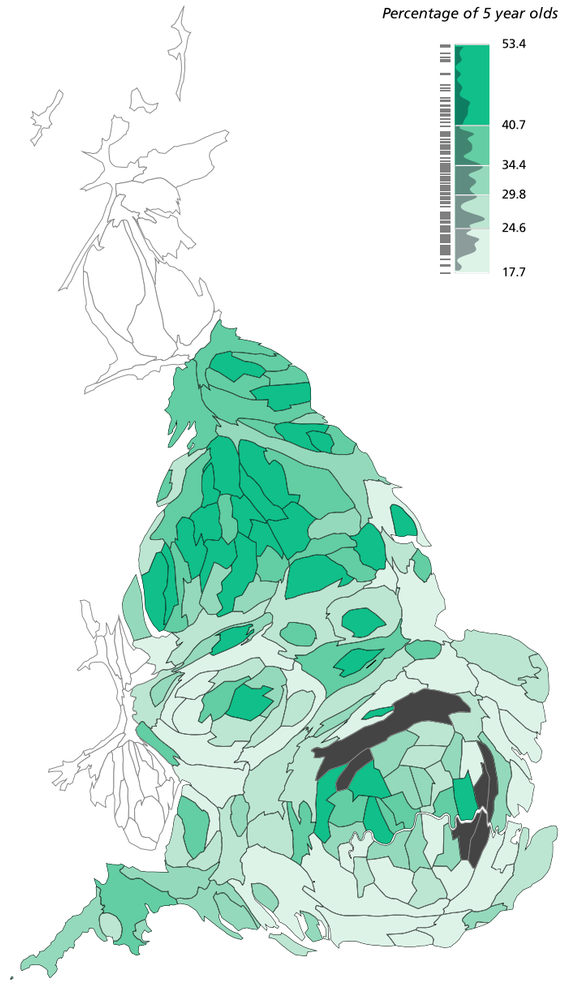
1 NHS DEP for England: Oral Health Survey 5-year olds, 2007/08; Oral Health Survey of 12 year old children 2008/09

Dental caries experience in 5 and 12 year olds by deprivation, England, 2007/08 and 2008/09 respectively



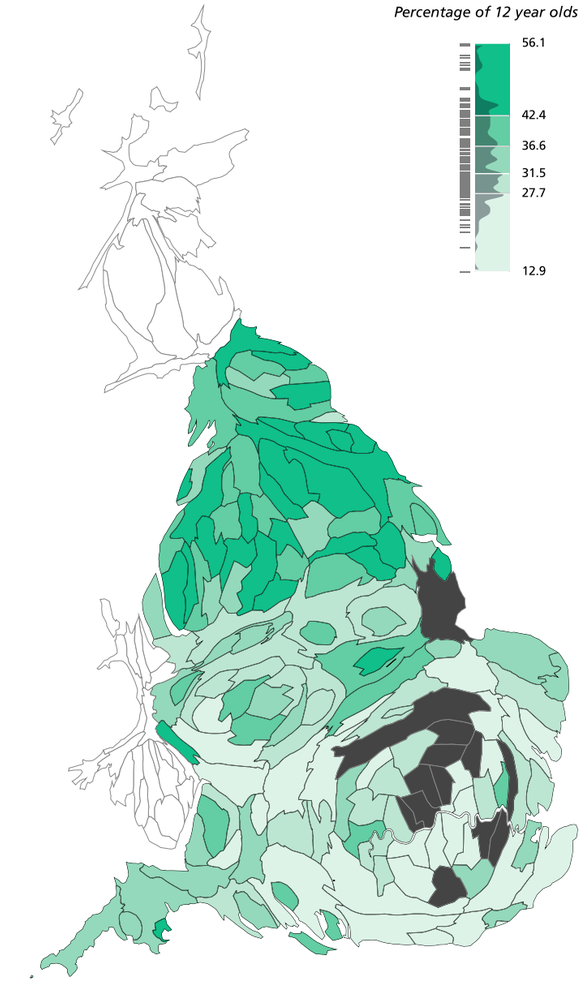
Source: Oral Health Survey of five-year-old children 2007/08, and Oral Health Survey of twelve-year-old children 2008/09. NHS Dental Epidemiology Programme for England. (Provided by NWPHO & TDO)

Proportion of 5 year olds with dental caries experience by primary care trust, England, 2007/08



Source: Oral Health Survey of five-year-old children 2007/08. NHS Dental Epidemiology Programme for England. (Provided by NWPHO & TDO)

Proportion of 12 year olds with dental caries experience by primary care trust, England, 2008/09



Source: Oral Health Survey of twelve-year-old children 2008/09. NHS Dental Epidemiology Programme for England. (Provided by NWPHO & TDO)

Poor dental health can lead to considerable pain, infection and psychological distress. The retention of 21 or more natural teeth is regarded as the minimum number of teeth consistent with a functional dentition, enabling most individuals to eat in comfort without the need for a partial denture.

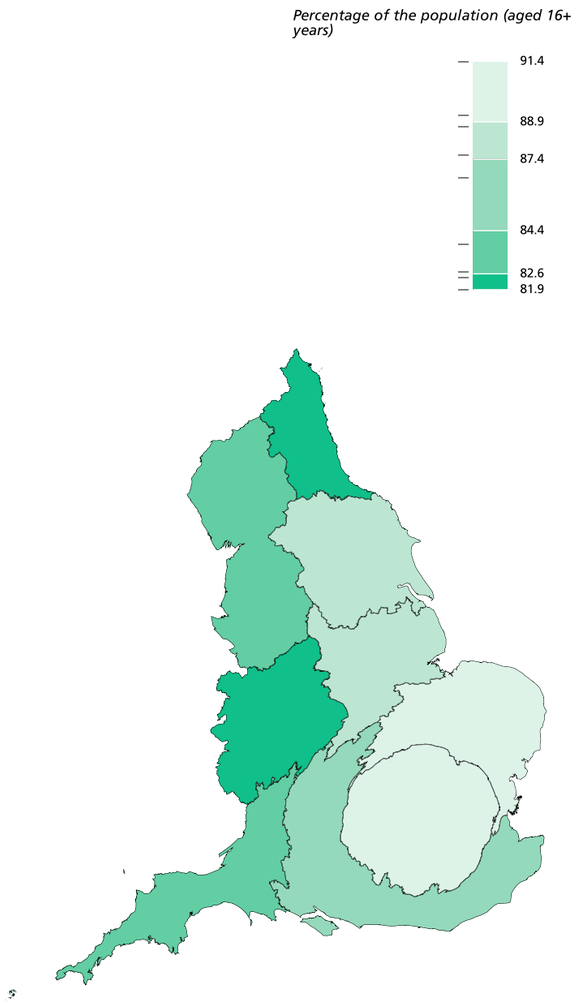
In 2009, 71% of adults reported good/very good dental health[1]. This response was more common in younger adults, aged 16-24 (79%), than in older adults aged 75-84 (71%)[1]. Over three quarters of adults from managerial and professional households reported good/very good dental health compared to two thirds from routine and manual occupational households[1].

Around 86% of dentate adults had 21 or more natural teeth. The proportion fell significantly with age, reflecting loss of teeth throughout life. 100% aged 16-24 had 21 or more natural teeth, compared with 91% of 45-54 year olds and 40% of adults aged 75 and over[1].

Further improvements in dental health can be achieved through promoting good oral hygiene, and regular dental checks, while encouraging a reduction in the quantity of, and frequency of, consumption of sugary foods. As smoking causes gum disease, encouraging smoking cessation will improve dental health.

1 Adult Dental Health Survey, 2009, Health and Social Care Information Centre

Proportion of persons aged 16 years and over with 21 or more natural teeth (or implants) by region, England, 2009

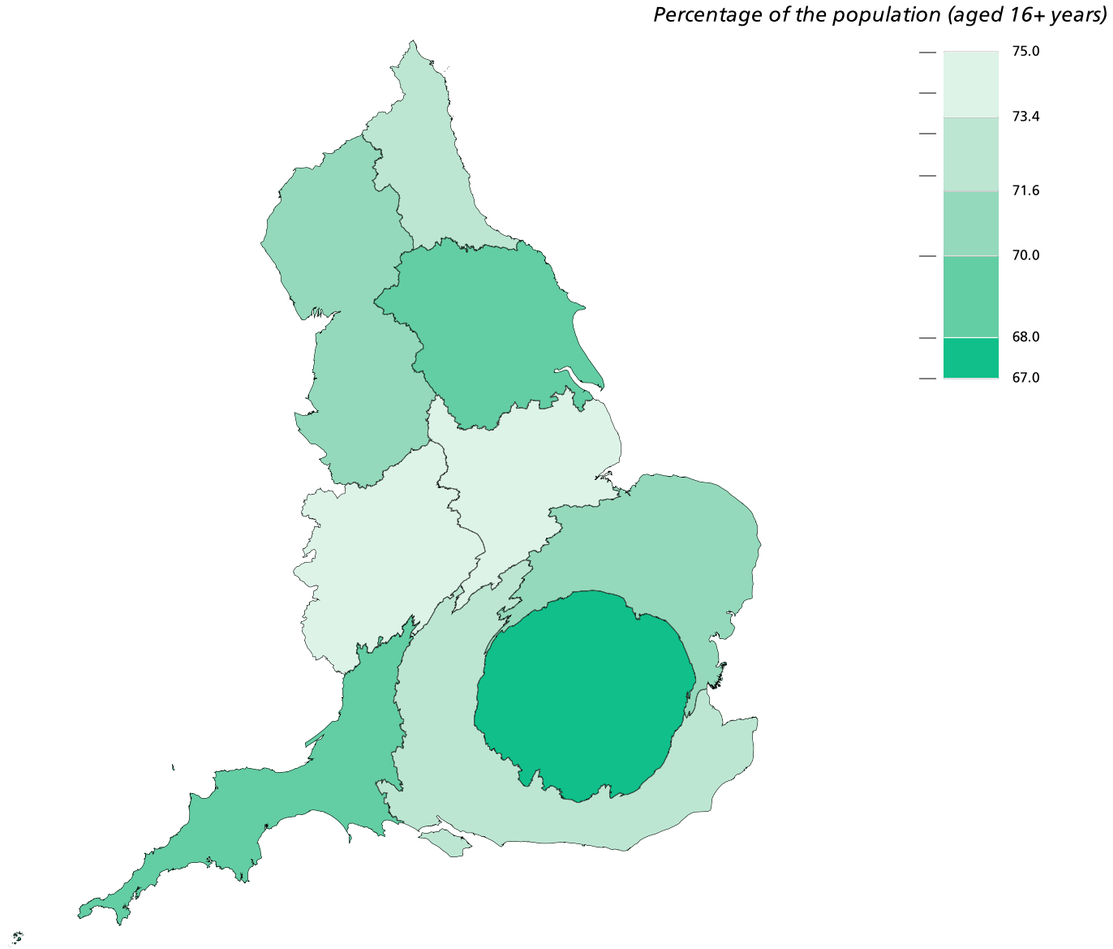


Source: Adult Dental Health Survey, 2009, Health and Social Care Information Centre.Crown Copyright © 2012. (Provided by NWPHO & TDO)

Key facts

- Child and adult - Less than 300 potential years of life lost (to age 75) in 2010 (<1% of all PYLL)
- Child and adult - Around 53,000 hospital bed days in 2010/11 (<1% of all bed days)

Proportion of population aged 16 years and over with self-reported good or very good dental health by region, England, 2009



Source: Adult Dental Health Survey, 2009. Health and Social Care Information Centre. Crown Copyright © 2012. (Provided by NWPHO & TDO)

Injuries contribute considerably to mortality, to temporary and permanent disability and are financially costly to society. In 2010, there were 15,915 deaths due to injury. In 2010/11, there were 798,024 emergency hospital admissions due to injury.

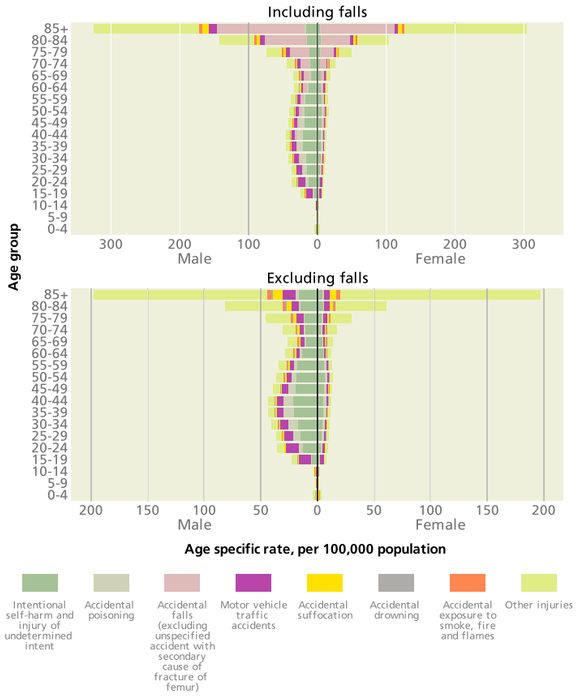
Injuries are a leading cause of death in children. Suffocation is the main cause of death from injury in children under five, whereas motor vehicle traffic accidents lead to most deaths in children over five and teenagers. Self-inflicted injury and injury of undetermined intent are also considerable causes of death in young people.

People aged over 75 experience the highest rates of death and hospital admission due to injury, with falls being the leading cause. Injuries from motor vehicle traffic accidents, self-inflicted injury and suffocation are also of particular concern in this age group.

There is a relationship between injury and deprivation. In 2010, those living in the most deprived areas had nearly twice the rate of mortality due to injury compared to the least deprived.

Injuries are a key public health concern, as they are often preventable. Strategies and policies relating to children, young people and older people need to incorporate injury prevention.

Average annual mortality due to injuries (and sub-categories) by age and sex, England, 2008-10

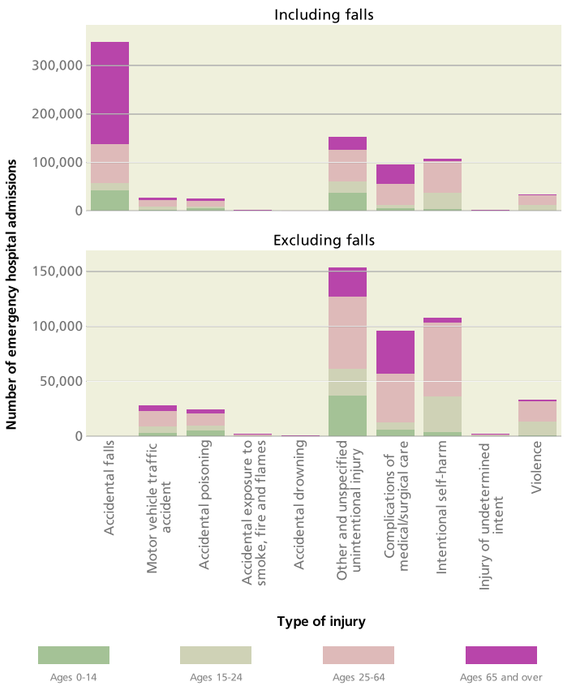


Source: Death registrations and 2008 to 2010 population estimates, ONS. (Analysis by DH)

Trend in mortality due to all injuries (and sub-categories) by deprivation, England, 2001 to 2010

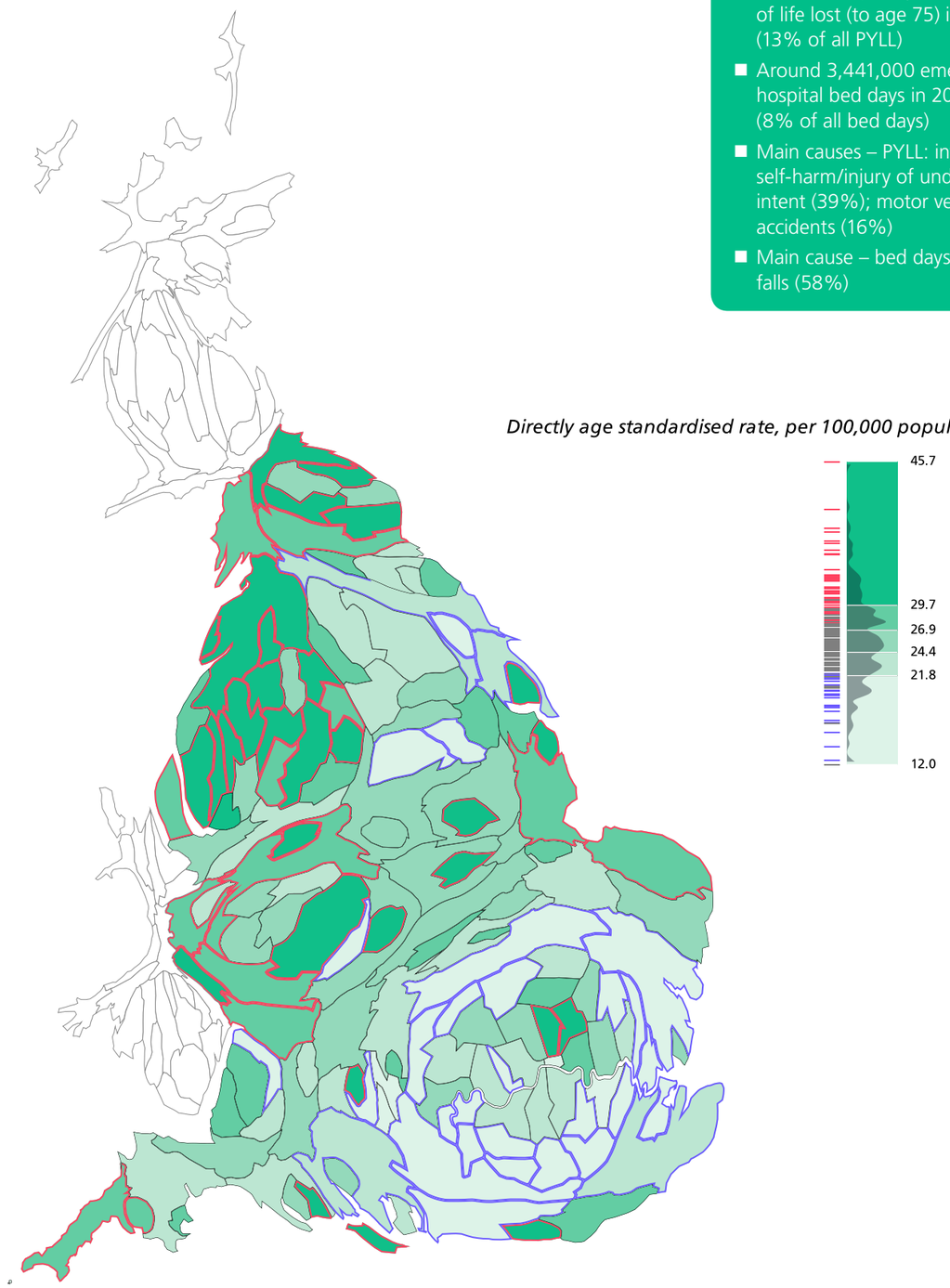
Source: Death registrations and 2001 to 2010 population estimates, ONS. (Analysis by DH)

Emergency hospital admissions due to injuries by type and age, England, 2010/11



Source: Hospital Episode Statistics (HES), Health and Social Care Information Centre. Crown Copyright © 2012. (Analysis by PHOs, led by EMPHO)

Average annual mortality from all injuries by upper tier local authority, England, 2008-10



Source: Death registrations and 2008 to 2010 population estimates, ONS. (Analysis by DH)

Key facts

- Around 304,200 potential years of life lost (to age 75) in 2010 (13% of all PYLL)
- Around 3,441,000 emergency hospital bed days in 2010/11 (8% of all bed days)
- Main causes – PYLL: intentional self-harm/injury of undetermined intent (39%); motor vehicle traffic accidents (16%)
- Main cause – bed days: accidental falls (58%)

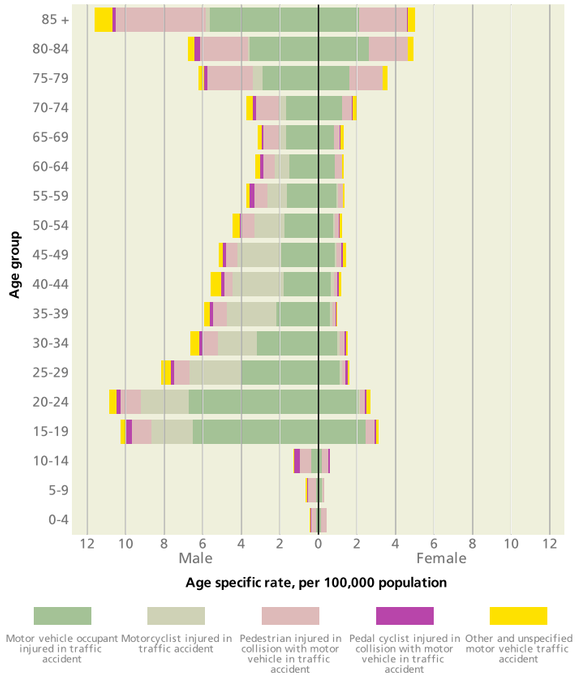
In 2010, there were 1,461 deaths due to motor vehicle traffic accidents. In 2010/11 there were 27,779 emergency hospital admissions and motor vehicle traffic accidents were the leading cause of death from injury in children aged over five and teenagers. Mortality and injury are a particular issue for young people in more deprived areas.

Deaths in 2010 (where the role of the victim was specified) involved 789 (54%) occupants of motor vehicles, 325 (22%) motor cyclists, 232 (16%) pedestrians and 49 (3%) pedal cyclists.

Males accounted for 75% of all motor vehicle traffic deaths in 2008-10, and 96% of motor cyclist deaths. The highest rates of death occurred in those aged 15-24 and 85+. Two thirds of deaths in the younger group were vehicle occupants and only 10% were pedestrians, whereas 46% of the older group were motor vehicle occupants and 45% were pedestrians.

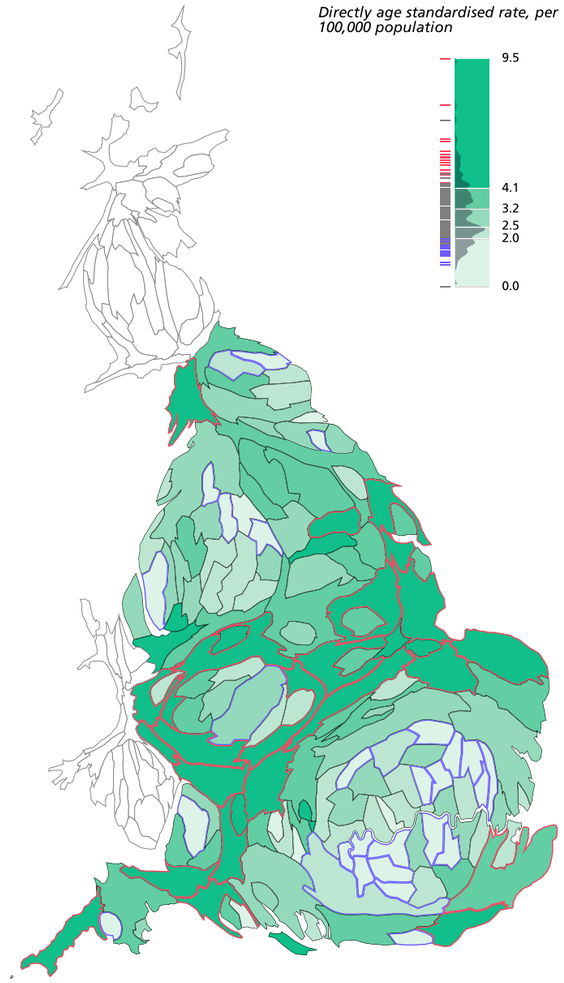
Mortality and serious injury due to motor vehicle traffic accidents have significantly reduced over the last decade. Various road safety campaigns and regulations, including car safety improvements, are likely to have contributed to this. Mortality could be further reduced by continuing to improve road safety for all users, including pedestrians and cyclists.

Average annual mortality due to all motor vehicle traffic accidents (and sub-categories) by age and sex, England, 2008-10



Source: Death registrations and 2008 to 2010 population estimates, ONS. (Analysis by DH)

Average annual mortality due to all motor vehicle traffic accidents by upper tier local authority, England, 2008-10

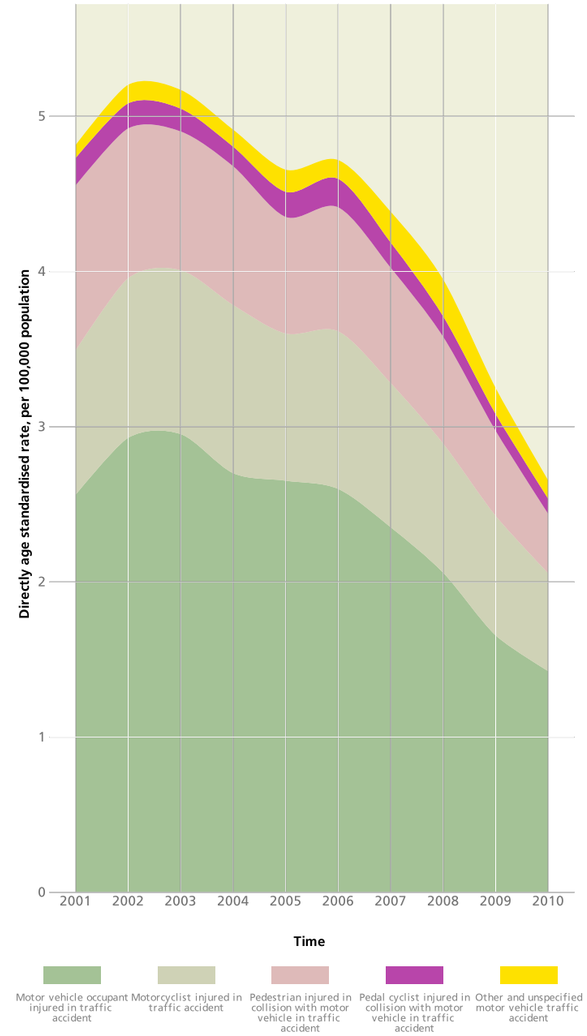


Source: Death registrations and 2008 to 2010 population estimates, ONS. (Analysis by DH)

Key facts

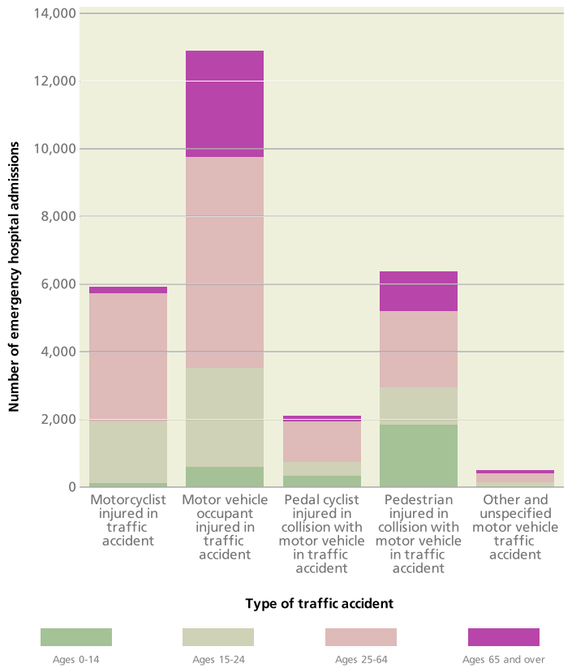
- Around 48,500 potential years of life lost (to age 75) in 2010 (2% of all PYLL)
- Around 105,000 emergency hospital bed days in 2010/11 (<1% of all bed days)
- Injured motor vehicle occupants accounted for 55% of PYLL and 42% of bed days for motor vehicle traffic accidents. Injured motorcyclists accounted for 24% of PYLL.

Trend in mortality due to all motor vehicle traffic accidents (and sub-categories), England, 2001 to 2010



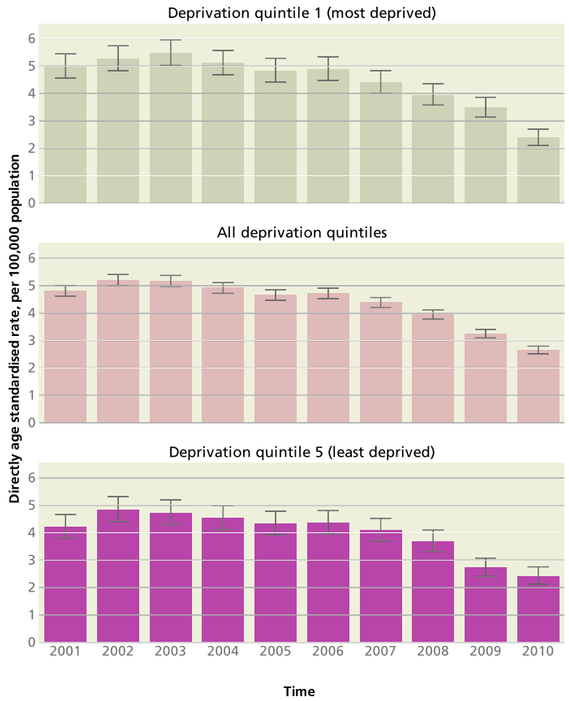
Source: Death registrations and 2001 to 2010 population estimates, ONS. (Analysis by DH)

Emergency hospital admissions due to motor vehicle traffic accidents by type and age, England, 2010/11



Source: Hospital Episode Statistics (HES), Health and Social Care Information Centre. Crown Copyright © 2012. (Analysis by PHOs, led by EMPHO)

Trend in mortality due to all motor vehicle traffic accidents by deprivation, England, 2001 to 2010



Source: Death registrations and 2001 to 2010 population estimates, ONS. (Analysis by DH)

In 2010, there were 1,395 deaths recorded as due to accidental poisoning, with 583 (42%) of deaths due to narcotics and hallucinogens, 580 (42%) to other drugs, medicaments and biological substances and 173 (12%) to alcohol. However, alcohol may have played a role in other deaths.

While the reasons are unclear, the recent trend in drug-related deaths recorded as due to mental and behavioural disorders (drug abuse and drug dependence) is downwards and deaths due to accidental poisoning are increasing[1].

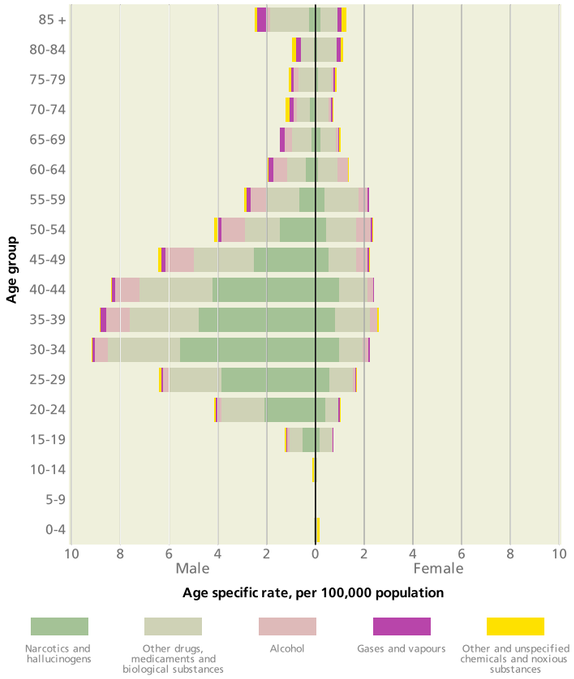
Nearly three quarters (73%) of deaths due to accidental poisoning in 2008-10 were in males. The majority of deaths were in 20-59 year olds. The mortality rate for those living in the most deprived area was more than four times higher than the least deprived area in 2010.

In 2010/11 there were 24,226 emergency hospital admissions due to accidental poisoning.

Interventions to prevent accidental poisoning need to be tailored to the type of poisoning. For example, supporting people to avoid or stop illegal drug use and supporting safe use of substances could reduce mortality due to narcotics and hallucinogens.

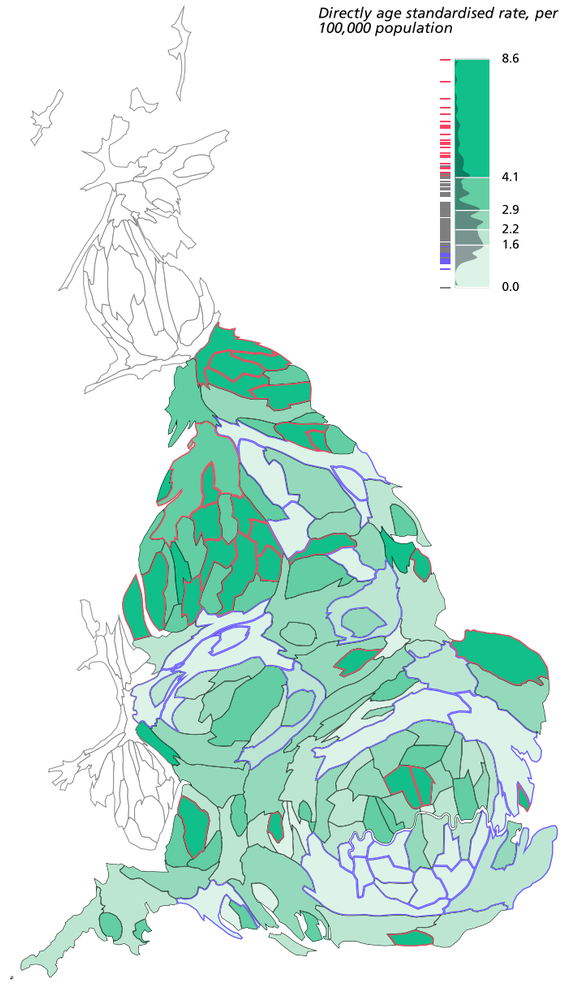
1 ONS (2011). Statistical Bulletin - Deaths related to drug poisoning in England and Wales, 2010.

Average annual mortality due to accidental poisoning (and sub-categories) by age and sex, England, 2008-10



Source: Death registrations and 2008 to 2010 population estimates, ONS. (Analysis by DH)

Average annual mortality due to accidental poisoning by upper tier local authority, England, 2008-10

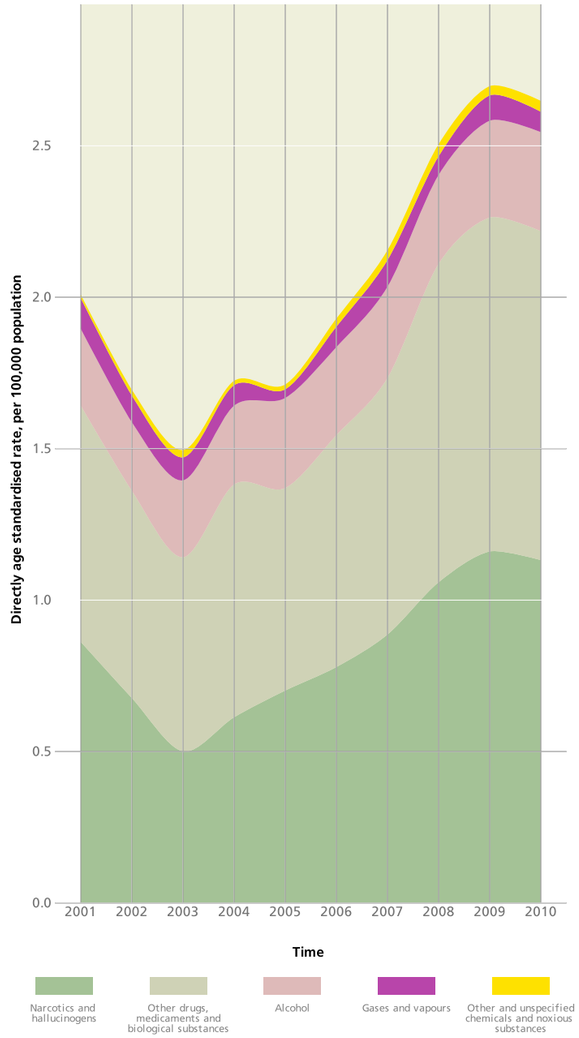


Source: Death registrations and 2008 to 2010 population estimates, ONS. (Analysis by DH)

Key facts

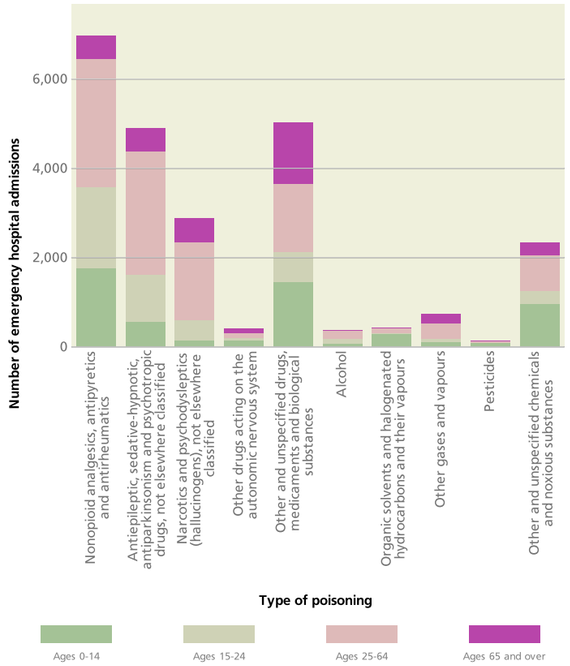
- Around 46,100 potential years of life lost (to age 75) in 2010 (2% of all PYLL)
- Around 34,000 emergency hospital bed days in 2010/11 (<1% of all bed days)
- Main cause – PYLL: narcotics and hallucinogens (47%)
- Main cause – bed days: other drugs, medicaments and biological substances (67%)

Trend in mortality due to accidental poisoning (and sub-categories), England, 2001 to 2010



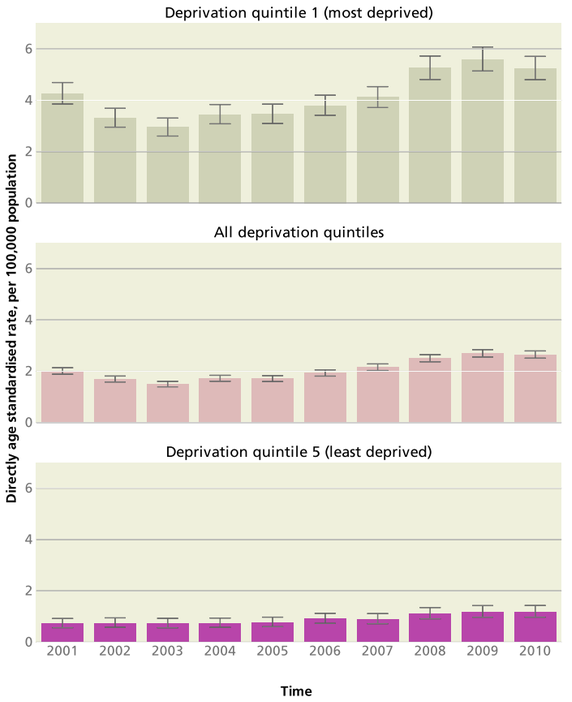
Source: Death registrations and 2008 to 2010 population estimates, ONS. (Analysis by DH)

Emergency hospital admissions due to accidental poisoning by type and age, England, 2010/11



Source: Hospital Episode Statistics (HES), Health and Social Care Information Centre. Crown Copyright © 2012. (Analysis by PHOs, led by EMPHO)

Trend in mortality due to accidental poisoning by deprivation, England, 2001 to 2010



Source: Death registrations and 2001 to 2010 population estimates, ONS. (Analysis by DH)

In 2010 there were 3,353 deaths due to falls (plus 1,817 deaths from fractured femur in unspecified accident, which are mostly due to falls) and in 2010/11 there were 348,115 emergency hospital admissions.

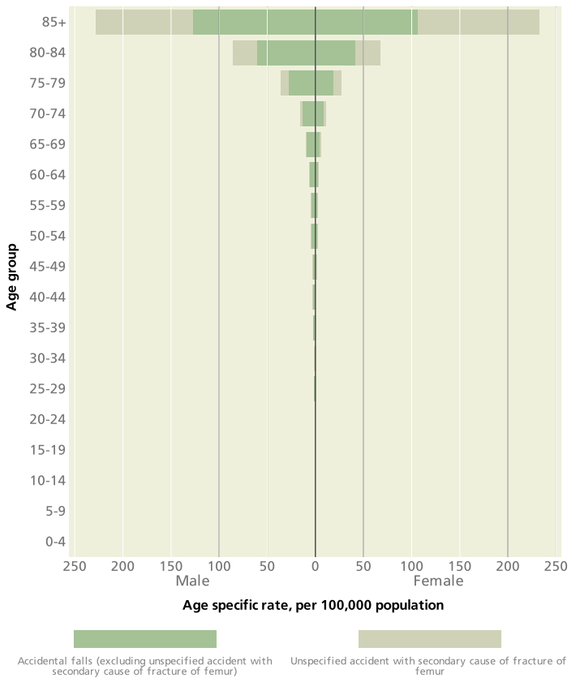
Falls are a leading cause of emergency admissions in older people and of admissions due to injuries in children, but the causes differ between age groups. In children injury is often due to misjudgement of risk during play and can also raise issues of safeguarding. In older people it often reflects greater risk and vulnerability to falls, often due to osteoporosis.

Fall injuries in older people, e.g. hip fracture, can lead to loss of mobility and independence, requiring a subsequent move into a care home for many. Older people have the highest rate of deaths due to falls.

The mortality rate due to falls in the most deprived areas is nearly double that of the least deprived areas.

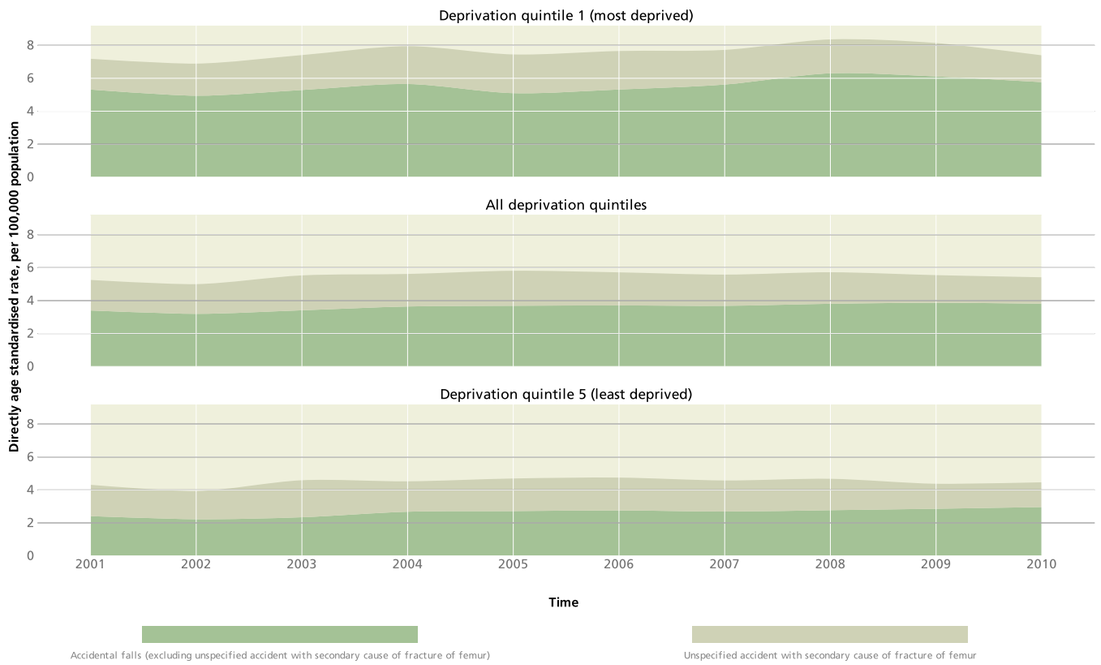
Fall prevention interventions in older people include exercise programmes, use of stair rails and mobility aids and review of diet and medication. For children, they include use of stair gates, window locks and improving play equipment and sports safety.

Average annual mortality due to accidental falls by age and sex, England, 2008-10



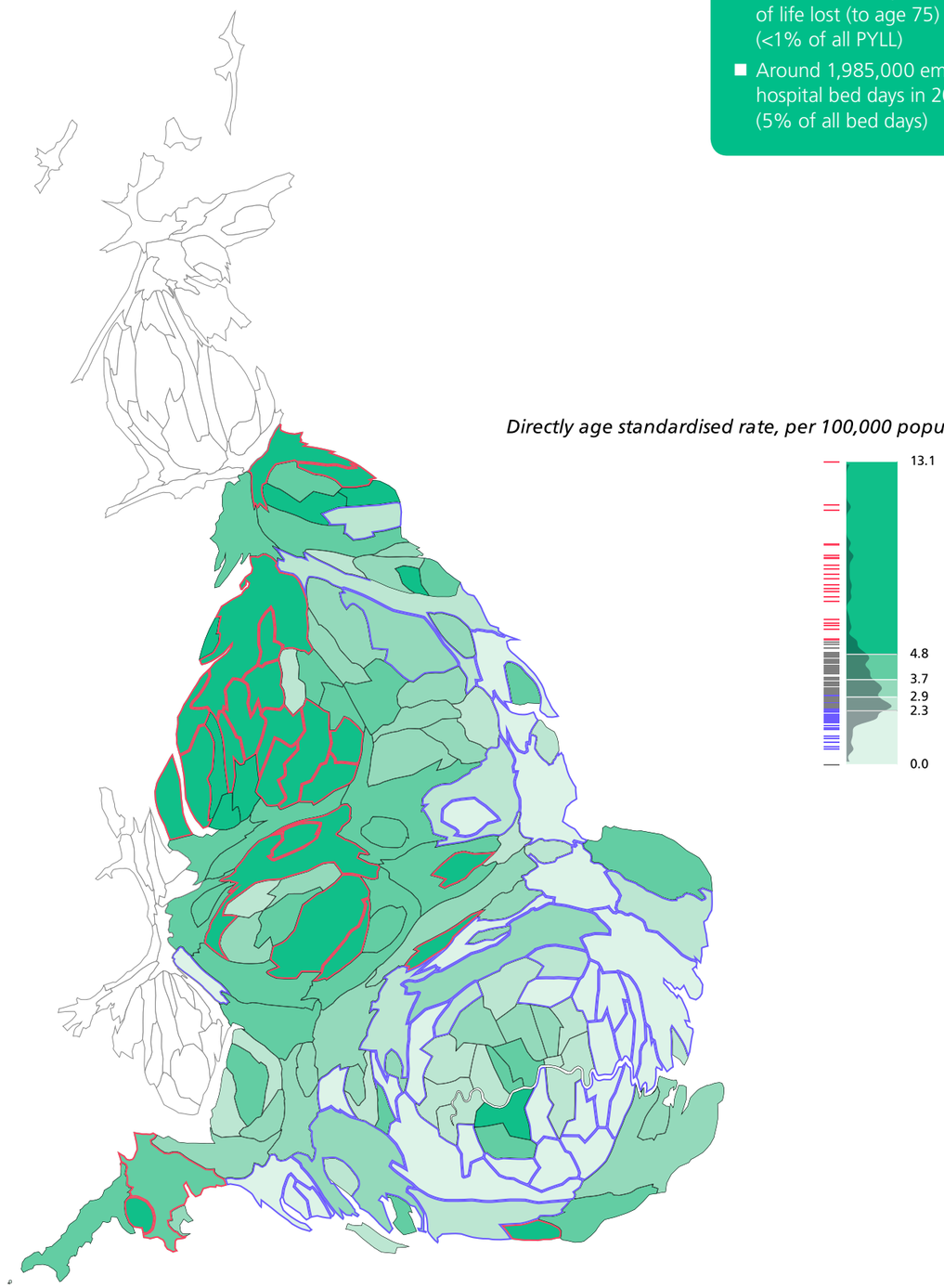
Source: Death registrations and 2008 to 2010 population estimates, ONS. (Analysis by DH)

Trend in mortality due to accidental falls by deprivation, England, 2001 to 2010



Source: Death registrations and 2001 to 2010 population estimates, ONS. (Analysis by DH)

Average annual mortality due to accidental falls by upper tier local authority, England, 2008-10



Source: Death registrations and 2008 to 2010 population estimates, ONS. (Analysis by DH)

Key facts

- Around 17,000 potential years of life lost (to age 75) in 2010 (<1% of all PYLL)
- Around 1,985,000 emergency hospital bed days in 2010/11 (5% of all bed days)

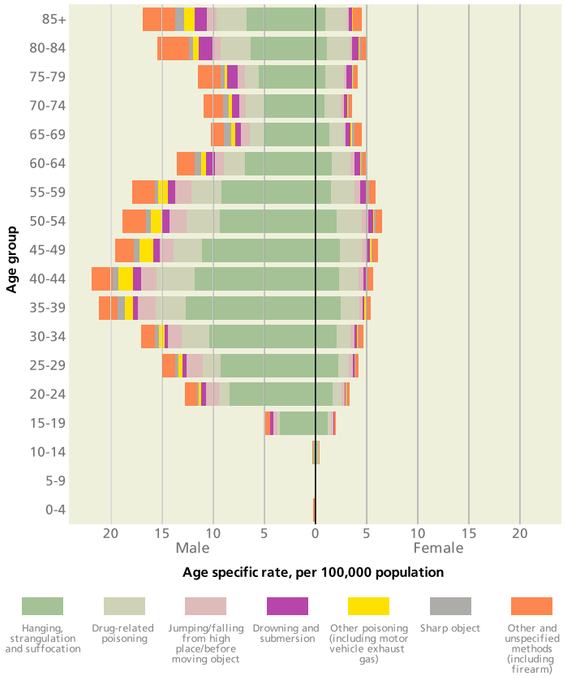
Suicide estimates include deaths of undetermined intent as most are likely to be suicides. While death rates are generally low in adolescents and young adults, suicide is a major cause of premature mortality. Self-harm is especially common in young people; it is a clear sign of distress and a risk factor for suicide.

While the long term trend in suicide rates has been declining, the most common method of suicide (hanging, strangulation and suffocation) has been increasing in prevalence (52% of suicides in 2010 compared to 40% in 2001).

Defined by hospital attendance (as opposed to admission), self-harm has been falling for several years; however actual prevalence is difficult to estimate as many self harmers are reluctant to seek medical help. Despite this, deliberate self-harm, particularly drug related poisoning and cutting, is in the top five causes of acute medical admission.

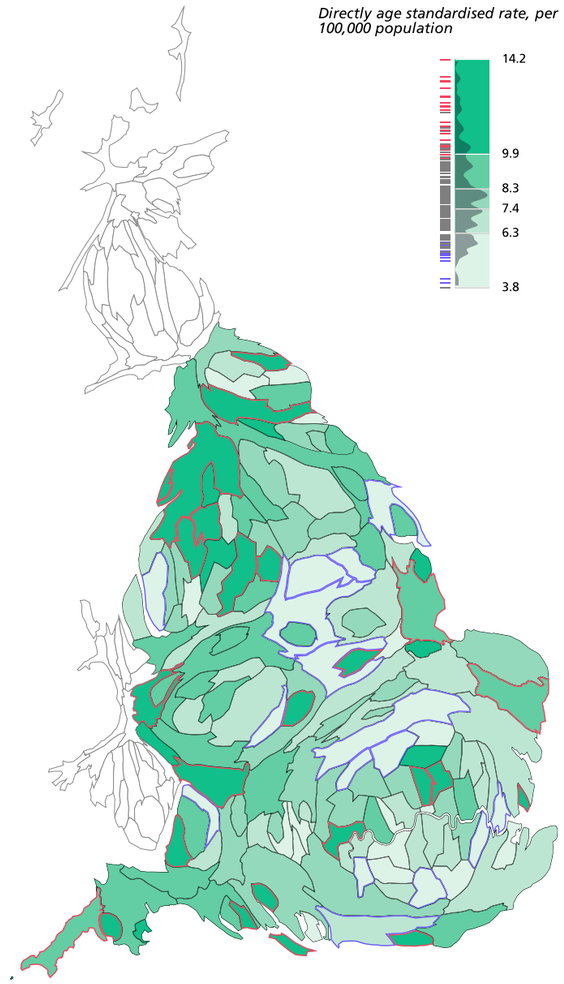
To further reduce suicide mortality rates, local and national action should be joined up. This would encourage a stronger focus on wellbeing for the whole population, and strengthen services for high risk groups such as mental health patients and offenders. Other effective interventions include reducing access to means and tackling local hotspots.

Average annual mortality due to intentional self-harm and injuries of undetermined intent (and sub-categories) by age and sex, England, 2008-10



Source: Death registrations and 2008 to 2010 population estimates, ONS. (Analysis by DH)

Average annual mortality due to intentional self-harm and injuries of undetermined intent by upper tier local authority, England, 2008-10

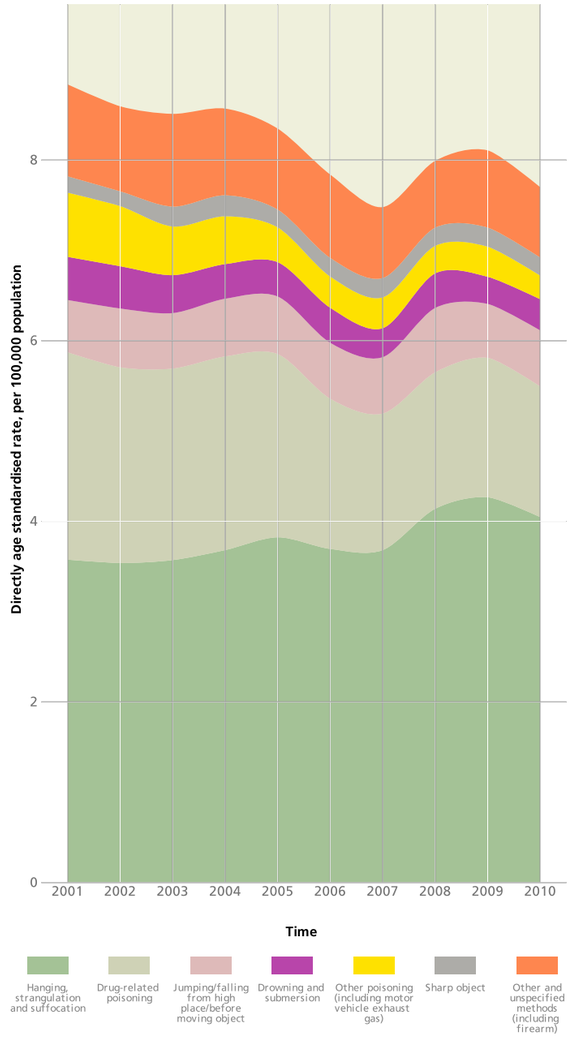


Source: Death registrations and 2008 to 2010 population estimates, ONS. (Analysis by DH)

Key facts

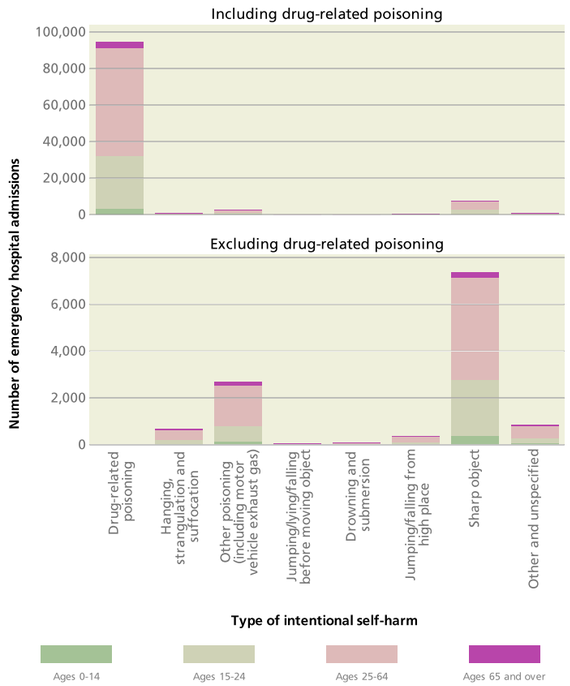
- Around 118,600 potential years of life lost (to age 75) from intentional self-harm/injury of undetermined intent in 2010 (5% of all PYLL)
- Around 124,000 emergency hospital bed days due to intentional self-harm in 2010/11 (<1% of all bed days)
- Main cause – PYLL: suicides by hanging, strangulation/ suffocation (56%)
- Main cause – bed days: drug-related poisoning (75%)

Trend in mortality due to intentional self-harm and injuries of undetermined intent (and sub-categories), England, 2001 to 2010



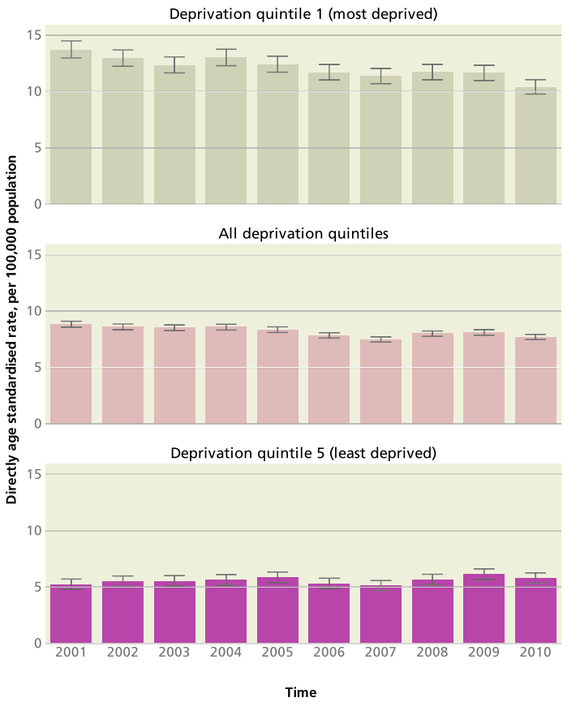
Source: Death registrations and 2001 to 2010 population estimates, ONS. (Analysis by DH)

Emergency hospital admissions due to intentional self-harm by type and age, England, 2010/11



Source: Hospital Episode Statistics (HES), Health and Social Care Information Centre. Crown Copyright © 2012. (Analysis by PHOs, led by EMPHO)

Trend in mortality due to intentional self-harm and injuries of undetermined intent by deprivation, England, 2001 to 2010



Source: Death registrations and 2001 to 2010 population estimates, ONS. (Analysis by DH)

Victims of violence often suffer ongoing health, emotional and social problems. Childhood exposure to violence increases the risk of health damaging behaviour later and conditions such as mental illness, obesity, cancer and heart disease. It also increases risks of further violence, as either victim, perpetrator, or both.

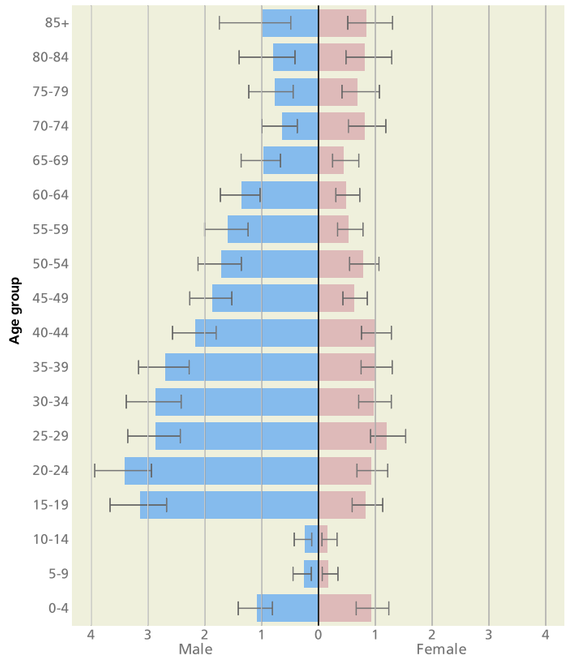
In 2010/11, violence resulted in 33,000 emergency hospital admissions and around ten times as many emergency department attendances. Mortality due to violence was significantly lower in 2010 than in 2001, but this has not been a linear decrease.

Mortality rates are highest in young males. Higher rates of hospital admissions and mortality due to violence are associated with deprivation.

Some forms of violence are largely hidden e.g. child abuse, elder maltreatment and intimate partner (domestic) and sexual violence.

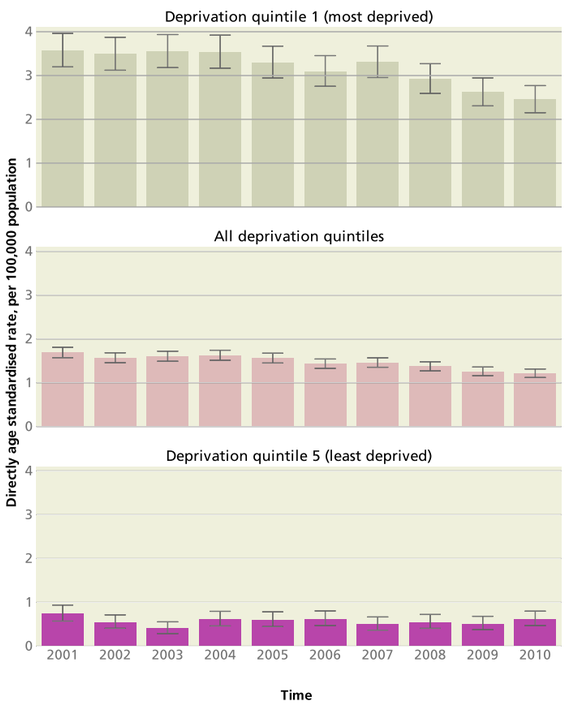
Health professionals (particularly midwifery and health visitor services) are well placed to identify and support victims, and to implement primary violence prevention. There is strong evidence that early life interventions, such as nurse home visiting and parenting programmes, can have sustained benefits in preventing violence.

Average annual mortality due to violence by age and sex, England, 2008-10



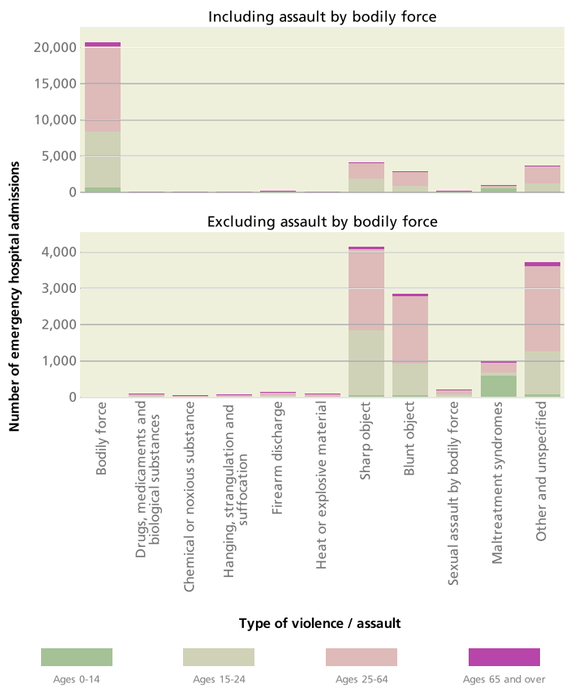
Source: Death registrations and 2008 to 2010 population estimates, ONS. (Analysis by DH)

Trend in mortality due to violence by deprivation, England, 2001 to 2010



Source: Death registrations and 2001 to 2010 population estimates, ONS. (Analysis by DH)

Emergency hospital admissions due to violence by type and age, England, 2010/11

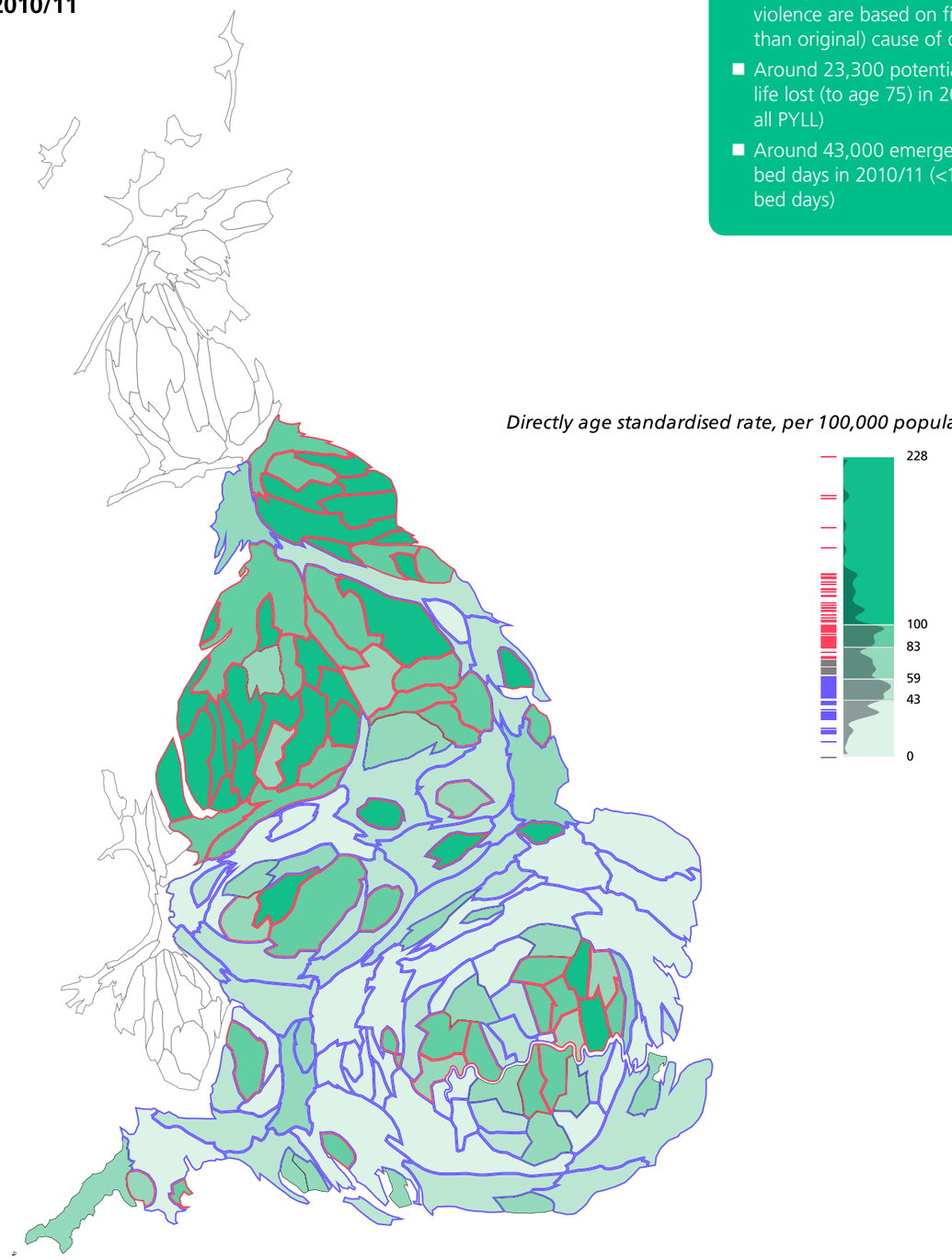


Source: Hospital Episode Statistics (HES), Health and Social Care Information Centre. Crown Copyright © 2012. (Analysis by PHOs, led by EMPHO)

Key facts

- The figures on mortality from violence are based on final (rather than original) cause of death
- Around 23,300 potential years of life lost (to age 75) in 2010 (1% of all PYLL)
- Around 43,000 emergency hospital bed days in 2010/11 (<1% of all bed days)

Average annual emergency hospital admission rates due to violence by upper tier local authority, England, 2008/09 -2010/11



Source: Hospital Episode Statistics (HES), Health and Social Care Information Centre.Crown Copyright © 2012. 2008 to 2010 population estimates supplied by ONS. (Extracted from Injury Profiles produced by PHOs)

ICD10 codes for disease/condition categories in Chapter 2

- This list covers categories defined using ICD codes, i.e. relating to deaths (mortality rates, years of life lost), hospital activity (admissions, bed days), and cancer incidence data.
- Chapter 2 topics are listed here in the same sequence in which they appear in the chapter (some adjacent page titles have been grouped).
- Categories shown with an **asterisk** are used for the years of life lost / bed days overall total in 'Key facts'.
- Deaths data are based on 'original' cause of death recorded using the specified ICD codes, except for data on deaths from violence which is based on 'final' cause or if otherwise specified. Data for specific causes excludes neonatal deaths.
- Hospital activity data is based on primary diagnosis in Hospital Episode Statistics (HES), except for injury categories (see injury categories for details).

CHAPTER 2 TOPIC	CATEGORY	ICD 10 CODE
All cause mortality*	All causes	Deaths data: All deaths (including neonatal) Hospital activity data: A00-T98
Sub-categories:	*Infectious and parasitic diseases (including otitis media)*	*A00-B99, G00, G03-G04, N70-N73, J00-J22, H65-H66*
	Malignant neoplasms	*C00-C97*
	Neuropsychiatric conditions	*F01-F99, G06-G98*
	Cardiovascular diseases	*I00-I99*
	Respiratory diseases (excluding infectious respiratory diseases)	*J30-J99*
	Injuries	*V01-Y89 (for deaths: plus U50.9)*
	Other causes	*All causes minus sub-categories above (for deaths: includes all neonatal deaths)*
Communicable diseases*	Infectious and parasitic diseases; for deaths and hospital bed days data: including otitis media	A00-B99, G00, G03-G04, N70-N73, J00-J22, H65-H66
	Infectious and parasitic diseases; for hospital admissions data: excluding otitis media	A00-B99, G00, G03-G04, N70-N73, J00-J22
Sub-categories:	*Infectious respiratory diseases (including otitis media)*	*J00-J22, H65-H66*
	Intestinal infectious diseases	*A00-A09 excluding A05*
	HIV	*B20-B24*
	Tuberculosis	*A15-A19, B90*
	Viral hepatitis	*B16-B19*
	Other (including STIs and vaccine preventable diseases)	*Infectious and parasitic diseases not included in sub-categories above*
Tuberculosis*	Tuberculosis	A15-A19, B90
HIV/AIDS*	HIV	B20-B24
Salmonella and VTEC infections*	Salmonella and VTEC infections	A02, A04.3
Campylobacter, cryptosporidiosis, and other GI infections*	Campylobacter, cryptosporidiosis and other GI infections	A04.5, A07.2, A03, A08.0, A08.1, A32, A07.1, A05.1
Meningitis*	Meningitis	A39, G00, G03
Hepatitis – hepatitis B and hepatitis C*	Hepatitis B and C	B16-B19
Sub-categories:	*Hepatitis B*	*B16-B19 excluding B17.1, B18.2*
	Hepatitis C	*B17.1, B18.2*
Respiratory infections*	Respiratory infections (excluding influenza)	J00-J06, J12-J18, J20-J22, H65-H66
Sub-categories:	*Upper respiratory tract infections*	*J00-J06*
	Lower respiratory tract infections	*J12-J18, J20-J22*
Influenza*	Influenza	J09-J11
Maternal, infant and perinatal conditions	*Maternal haemorrhage*	*O44-O46, O67, O72*
	Maternal sepsis	*O85-O86*
	Hypertensive disorders of pregnancy	*O10-O16*
	Obstructed labour	*O64-O66*
	Abortion	*O00-O07*
	Conditions arising during the perinatal period	*P00-P96*
Sub-categories:	*Prematurity and low birthweight*	*P05, P07, P22, P27-P28*
	Birth asphyxia and birth trauma	*P03, P10-P15, P20-P21, P24-P26, P29*
	Other perinatal conditions	*Conditions arising during the perinatal period not included in sub-categories above*
All cancers*	Malignant neoplasms (for incidence: excluding non-melanoma skin cancer)	C00-C97 (for incidence: excluding C44)
Sub-categories	*Mouth, pharynx and salivary glands*	*C00-C14*
	Oesophagus	*C15*
	Stomach	*C16*
	Colon, rectosigmoid junction and recturm	*C18-C20*
	Liver	*C22*
	Pancreas	*C25*
	Larynx	*C32*
	Trachea, bronchus and lung	*C33-C34*
	Malignant melanoma of skin	*C43*
	Breast	*C50*
	Cervical	*C53*
	Uterine	*C54-55*
	Ovarian	*C56*
	Prostate	*C61*
	Testis	*C62*
	Kidney	*C64*
	Bladder	*C67*
	Brain	*C71*
	Cancer of unknown primary	*C77-C80*
	Hodgkin disease	*C81*
	Non-Hodgkin lymphoma	*C82-C85*
	Multiple myeloma	*C90*
	Chronic lymphocytic leukaemia	*C91.1*
	Acute Myeloid Leukaemia	*C92.0, C92.4, C92.5, C93.0, C94.0, C94.2*
Cancers of the mouth, pharynx and salivary glands*	Cancers of the mouth, pharynx and salivary glands	C00-C14
Oesophageal cancer*	Oesophageal cancer	C15
Sub-categories:	*Upper and middle oesophagus*	*C15.0-C15.1, C15.3-C15.4, plus C15.8-C15.9 with a morphology code 8050-8083*
	Lower oesophagus	*C15.2, C15.5, plus C15.8-C15.9 with a morphology code 8140-8576*
	Oesophagus Not Otherwise Specified (NOS)	*Oesophageal cancer not included in sub-categories above*
Stomach cancer*	Stomach cancer	C16
Colon and rectal cancers*	Colon, rectosigmoid junction and rectum cancers	C18-C20
Liver cancer*	Liver cancer	C22
Pancreatic cancer*	Pancreatic cancer	C25
Trachea, bronchus and lung cancers*	Trachea, bronchus and lung cancers	C33-C34
Melanoma and other skin cancers*	Melanoma and other skin cancers	C43-C44
	Malignant melanoma of skin	C43
Breast cancer*	Breast cancer	C50
Cervical cancer*	Cervical cancer	C53
	Vulva and vagina cancers	C51-C52
Uterine and ovarian cancer*	Uterine cancer	C54-55
	Ovarian cancer	C56
Prostate cancer*	Prostate cancer	C61
Bladder cancer*	Bladder cancer	C67
Acute Myeloid Leukaemia*	Acute Myeloid Leukaemia	C92.0, C92.4, C92.5, C93.0, C94.0, C94.2
Non-Hodgkin lymphoma*	Non-Hodgkin lymphoma	C82-C85
Diabetes mellitus*	Note: PYLL and hospital bed days not calculated due to data concerns. Mortality data taken for the National Diabetes Audit	
	All diabetes	E10-E14
Sub-categories:	*Insulin-dependent diabetes*	*E10*
	Non-insulin dependent diabetes	*E11*
Mental health problems*	Psychiatric disorder	F04-F69, F80-F99
Dementia*	Dementia	F01-F03, G30-G31
Sense organ diseases*	All sense organ diseases	H00-H61, H68-H93
Sub-categories:	*Sight*[1]	*H00-H59*
	Ear	*H60-H61, H68-H93*
Cardiovascular disease - all*	Cardiovascular diseases[2]	I00-I99
Sub-categories:	*Coronary heart disease (including acute myocardial infarction)*	*I20-I25*
	Coronary heart disease (excluding acute myocardial infarction)	*I20, I22-I25*
	Acute myocardial infarction	*I21*
	Cerebrovascular disease [Used for deaths data]	*I60-I69*
	Stroke [Used for hospital activity data]	*I61-I64*
	Heart failure	*I50*
	Hypertension	*I10-I15*
	Other cardiovascular diseases	*Cardiovascular diseases not included in sub-categories above*
Cardiovascular disease - coronary heart disease*	Coronary heart disease (including acute myocardial infarction)	I20-I25
Sub-categories:	*Acute myocardial infarction*	*I21*
Cardiovascular disease - stroke*	Cerebrovascular disease [Used for deaths data]	I60-I69
	Stroke [Used for hospital activity data]	I61-I64
Respiratory diseases - all*	Respiratory diseases	J00-J99
Sub-categories:	*Infectious respiratory diseases*	*J00-J22*
	COPD	*J40-J44*
	Asthma	*J45-J46*

1 For data on preventable and non preventable sight loss, ICD-9 codes were used to categorize the cause of sight loss. For glaucoma: 365 (and all nested under this) and a bespoke code to identify secondary glaucoma. For diabetes: 362.0, 362.01, 362.02 and a bespoke code to identify diabetic maculopathy. For Age-Related Macular Degeneration (AMD) : 362.5, 362.50, 362.51 and 362.52. The preventable sight loss category is all glaucoma and diabetic maculopathy and AMD cases. Please note that a number of the cases falling into this group may not be preventable.

2 For data from the Health Survey for England informants are classified as having any CVD condition if they reported having any of the following conditions confirmed by a doctor: angina, heart attack, stroke, heart murmur, irregular heart rhythm, 'other heart trouble'. High blood pressure and diabetes are not included in this definition. Informants are classified as having CHD if they reported having angina or a heart attack confirmed by a doctor.

CHAPTER 2 TOPIC	CATEGORY	ICD 10 CODE
	Other respiratory diseases	*Respiratory diseases not included in sub-categories above*
Respiratory diseases - COPD and asthma*	COPD	J40-J44
	Asthma	J45-J46
Digestive diseases (including cirrhosis of the liver)*	Digestive diseases	K20-K92, I85
Sub-categories:	*Cirrhosis of the liver*	*K70, K74*
	Gastrointestinal bleeding	*I85.0, K22.6, K22.8, K25.0, K25.2, K25.4, K25.6, K26.0, K26.2, K26.4, K26.6, K27.0, K27.2, K27.4, K27.6, K28.0, K28.2, K28.4, K28.6, K92.0, K92.1, K92.2*
	Diverticular disease	*K57.2-K57.9*
	Other digestive diseases (including IBD and appendicitis)	*Digestive diseases not included in sub-categories above*
Liver diseases*	Liver disease	B15-B19, K70-K77, I81, I85, C22, T86.4
Sub-categories:	*Diseases of the liver (including cirrhosis of the liver)*	*K70-K77*
	Cancer of the liver	*C22*
	Infectious hepatitis	*B15-B19*
	Other liver disease	*Liver diseases not included in sub-categories above*
Genitourinary diseases*	Genitourinary diseases	N00-N64, N75-N98
Sub-categories:	*Chronic Kidney Disease*	*N18*
Skin diseases*	All skin diseases	L00-L99
Musculoskeletal diseases*	All musculoskeletal diseases	M00-M99
Sub-categories:	*Osteoarthritis*	*M15-M19*
	Hip fractures	*S72.0, S72.1, S72.2*
Dental disease - child *and* **Dental disease - adult***	Dental disease - child and adult	K00-K14
Injuries - all†*	Injuries	V01-Y89 (for deaths: plus U50.9)
Sub-categories presented in mortality chart:	*Motor vehicle traffic accidents*	*V02–V04 (4th digit .1,.9 only), V09.2, V12–V14 (4th digit .3–.9 only), V19 (4th digit .4–.6 only),V20–V28 (4th digit .3–.9 only), V29 (4th digit .4–.9 only), V30–V79 (4th digit .4–.9 only), V80 (4th digit .3–.5 only), V81.1, V82.1, V83–V86 (4th digit .0–.3 only), V87(4th digit .0–.8 only), V89.2*
	Accidental falls (excluding unspecified accident with secondary cause of fracture of femur)	*W00-W19*
	Accidental poisoning	*X40-X49*
	Accidental suffocation	*W75-W84*
	Accidental drowning	*W65-W74*
	Accidental exposure to smoke, fire and flames	*X00-X09*
	Intentional self-harm and injuries of undetermined intent	*X60-X84, Y10-Y34 (excluding Y33.9 to 2006)*
	Other injuries	*All injuries not included in sub-categories above*
Sub-categories presented in hospital admissions charts:	*Motor vehicle traffic accidents*	*as listed above*
	Accidental falls (excluding unspecified accident with secondary cause of fracture of femur)	*W00-W19*
	Accidental poisoning	*X40-X49*
	Accidental drowning	*W65-W74*
	Accidental exposure to smoke, fire and flames	*X00-X09*
	Other and unspecified unintentional injury	*V01-V99 minus motor vehicle traffic accidents, W20-W64, W75-W99, X10-X39, X50-X59*
	Complications of medical/surgical care	*Y40-Y84*
	Intentional self-harm	*X60-X84*
	Injury of undetermined intent	*Y10-Y34*
	Violence	*X85-Y09*
Injuries - road traffic accidents†*	Motor vehicle traffic accidents	V02–V04 (4th digit .1,.9 only), V09.2, V12–V14 (4th digit .3–.9 only), V19 (4th digit .4–.6 only), V20–V28 (4th digit .3–.9 only), V29 (4th digit .4–.9 only), V30–V79 (4th digit .4–.9 only), V80 (4th digit .3–.5 only), V81.1, V82.1, V83–V86 (4th digit .0–.3 only), V87(4th digit .0–.8 only), V89.2
Sub-categories:	*Motor vehicle occupant injured in traffic accident*	*V30–V79 (4th digit .4–.9 only), V83–V86 (4th digit .0–.3 only)*
	Motorcyclist injured in traffic accident	*V20–V28 (4th digit .3–.9 only), V29 (4th digit .4–.9 only)*
	Pedestrian injured in collision with motor vehicle in traffic accident	*V02–V04 (4th digit .1,.9 only), V09.2*
	Pedal cyclist injured in collision with motor vehicle in traffic accident	*V12–V14 (4th digit .3–.9 only), V19 (4th digit .4–.6 only)*
	Other and unspecified motor vehicle traffic accident	*Motor vehicle traffic accidents not included in sub-categories above*
Injuries – poisonings†*	Accidental poisoning	X40-X49
Sub-categories:	*Narcotics and hallucinogens*	*X42*
	Other drugs, medicaments and biological substances	*X40-X41, X43-X44*
	Nonopioid analgesics, antipyretics and antirheumatics	*X40*
	Antiepiletic, sedative-hypnotic, antiparkinsonism and psychotropic drugs, not elsewhere classified	*X41*
	Other drugs acting on the autonomic nervous system	*X43*
	Other and unspecified drugs, medicaments and biological substances	*X44*
	Alcohol	*X45*
	Gases and vapours	*X46-X47*
	Organic solvents and halogenated hydrocarbons and their vapours	*X46*
	Other gases and vapours	*X47*
	Other and unspecified chemicals and noxious substances	*X48-X49*
	Pesticides	*X48*
	Other and unspecified chemicals and noxious substances	*X49*
Injuries - falls*	Note: hospital activity (admissions, bed days) data are based on diagnosis (any position) S00-T98 plus cause code as specified	
	Accidental falls (excluding unspecified accident with secondary cause of fracture of femur)	W00-W19
	Unspecified accident with secondary cause of fracture of femur [Used for hostial activity data]	X59 (underlying cause) with S72 (secondary cause)
Injuries - suicide and self-harm†*	Intentional self-harm and injuries of undetermined intent [Used for deaths data]	X60-X84, Y10-Y34 (excluding Y33.9 to 2006)
	Intentional self-harm [Used for hospital activity data]	X60-X84
Sub-categories:	*Hanging, strangulation and suffocation*	*X70 (for deaths: plus Y20)*
	Drug-related poisoning	*X60-X64 (for deaths: plus Y10-Y14)*
	Jumping/falling from high place/before moving object	*X80-X81 (for deaths: plusY30-Y31)*
	Jumping/falling from high place	*X80 (for deaths: plus Y30)*
	Jumping/lying/falling before moving object	*X81 (for deaths: plus Y31)*
	Drowning and submersion	*X71 (for deaths: plus Y21)*
	Other poisoning (including motor vehicle exhaust gas)	*X65-X69 (for deaths: plus Y15-Y19)*
	Sharp object	*X78 (for deaths: plus Y28)*
	Other and unspecified method	*For deaths data: Intentional self-harm and injuries of undetermined intent not included in sub-categories above For hospital activity data: Intentional self-harm not included in sub-categories above*
Injuries – violence*	Notes: 1) Data on deaths from violence is based on 'final' cause of death 2) Hospital activity (admissions, bed days) data is based on diagnosis (any position) S00-T98 plus cause code as specified EXCEPT for map of hospital admissions due to violence by upper tier local authority, which is based on cause code only	
	Violence	X85-Y09 (for deaths: plus U50.9)
Sub-categories:	*Drugs, medicaments and biological substances*	*X85*
	Chemical or noxious substance	*X86-X90*
	Hanging, strangulation and suffocation	*X91*
	Firearm discharge	*X93-X95*
	Heat or explosive material	*X96-X98*
	Sharp object	*X99*
	Blunt object	*Y00*
	Bodily force	*Y04*
	Sexual assault by bodily force	*Y05*
	Maltreatment syndromes	*Y06-Y07*
	Other and unspecified	*Violence not included in sub-categories above*

† Note: hospital activity (admissions, bed days) data is based on diagnosis (any position)
S00-T98 plus cause code as specified

Chapter 3

Risk factors

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An understanding of the causal factors underlying patterns of health and well-being in the population is key to the commissioning and delivery of effective public health services.

Early death and disability do not occur in isolation: they are mediated through a complex interplay of social, economic and environmental factors, as well as by individual specific determinants of health. This chapter focuses on the risks to health presented by the lifestyles that people lead: factors such as smoking, poor diet and high risk alcohol consumption collectively constitute some of the most important direct causes of early death and disability in England, and are primary drivers of health inequalities.

The World Health Organisation (WHO) report on Global Health Risks[1] and the associated burden of disease toolkit set the context for this chapter. Clearly, there are variations across the world in the relative importance of different behavioural risks, but the WHO toolkit estimates that the top ten risk factors for early death and disability in the UK are, in order of impact:

- tobacco use
- harmful alcohol use
- high blood pressure
- high cholesterol
- overweight and obesity
- physical inactivity
- illicit drug use
- low fruit and vegetable intake
- occupational risks
- poor sexual health

Chapter 3 considers each of these in turn, with the exception of occupational risks (addressed in Chapter 4). Replacing this is urban outdoor air pollution, which is identified by WHO as a risk factor in high income countries.

Finally, this chapter also considers the multiple interactions between several of these risk factors and their cumulative impact on health and wellbeing outcomes.

The strategic review of health inequalities in England, *Fair Society, Healthy Lives*[2], led by Sir Michael Marmot, provides the second context for this chapter. This report highlights the contribution that behavioural risks make to health inequalities, and makes it clear that effective action requires an understanding that these factors occur in a social and cultural context and are not simply a product of individual choice alone.

Tobacco use, for example, is the primary cause of early death and ill health in England. Public health policies have contributed to a progressive reduction in smoking rates in recent decades through a combination of measures to regulate the promotion and supply of tobacco, and to help smokers quit. Nevertheless, many young people, particularly those from more deprived backgrounds and from some ethnic groups, continue to be exposed to second-hand smoke at home; many go on to become smokers themselves because they perceive it to be a normal part of adult life[3]. Combined with evidence that not all smokers who want to quit make equal use of the sources of support available to them, these social and cultural influences mean that the burden of disease associated with smoking falls disproportionately on specific groups in the population.

In recognition of this complex causal chain, *Fair Society, Healthy Lives* recommends action across a range of policy areas, including prioritising the prevention and early detection of those risk factors that contribute most to the conditions that drive health inequalities.

The data sources available to quantify the prevalence of the different behavioural risks provide a strong basis for understanding the varying health burden these factors place on different groups in the population and across the life course. For example, alongside the age, sex, socioeconomic and ethnic group differences in smoking rates, there are similar variations in alcohol consumption patterns and the distribution of alcohol related harms.

It is not the case, however, that the health burden associated with the risk factors falls exclusively on the same groups. In the case of alcohol, for example, the highest hospital admission rates are found in some of the more deprived parts of England, but the areas with the worst increasing and higher risk drinking rates are among the most affluent.

Much of this understanding is based on estimates derived from sample surveys and the secondary use of data collected for other purposes, such as hospital admissions. As a consequence, there remain many gaps and uncertainties in our understanding of the distribution of risk factors, and their associated health burden, across the population. There is a pressing need for these gaps in our knowledge to be addressed, in particular so that local areas have robust information on the health needs of their population on which to base their service commissioning decisions.

The majority of the data sources used to illustrate the behavioural risks focus on these factors separately and individually. This approach has supported the development of a wide range of public health policies and programmes, which have been effective in reducing the prevalence of, and health burden attributable to, many of the risk factors. It is clear, however, that these factors often cluster together: more than a third of adults in England have two risk factors and a further third have three or more.

There is evidence that these proportions are falling, albeit at a different rate across the socioeconomic gradient. But to effectively support people to make the change towards more healthy lives, those commissioning and delivering health services need to recognise not only the varying prevalence of individual risk factors across groups in the population and the life course, but also that the majority of people have multiple risks to their health.

Fair Society, Healthy Lives notes that only 4% of NHS funding is currently spent on prevention. Given the health burden attributable to risk factors, there is a clear case for arguing for this proportion to be increased. This is not new: the final report of the review led by Sir Derek Wanless[4] looking at the resources required to provide high quality health services in the future, projected that a substantial reduction in costs could be achieved by an increased emphasis on prevention, coupled with higher levels of public engagement in relation to their health.

The changes resulting from the Health and Social Care Act 2012 also present an opportunity for local authorities (who already have responsibility for 'the causes of the causes' of poor health such as education, housing and the environment, as well as for social care) to work in close partnership with the NHS and the third sector to commission and deliver services that help people lead more healthy lives and reduce the health burden associated with behavioural risk factors.

1 Global Health Risks. World Health Organisation, 2009.

2 Marmot Review Team (2010) Fair Society, Healthy Lives: Strategic review of health inequalities in England post-2010 (The Marmot Review). London: Marmot Review Team.

3 Healthy Lives, Healthy People: A Tobacco Control Plan for England. Department of Health, 2011.

4 Wanless D. Securing our future health: taking a long-term view. Final report. London: HM Treasury, 2002.

Smoking is the single greatest cause of preventable illness and early death in England, and a major contributor to health inequalities. Tobacco use and second-hand exposure to tobacco smoke substantially increase the risk of death from lung and other cancers, heart disease, stroke, chronic respiratory disease and other conditions.

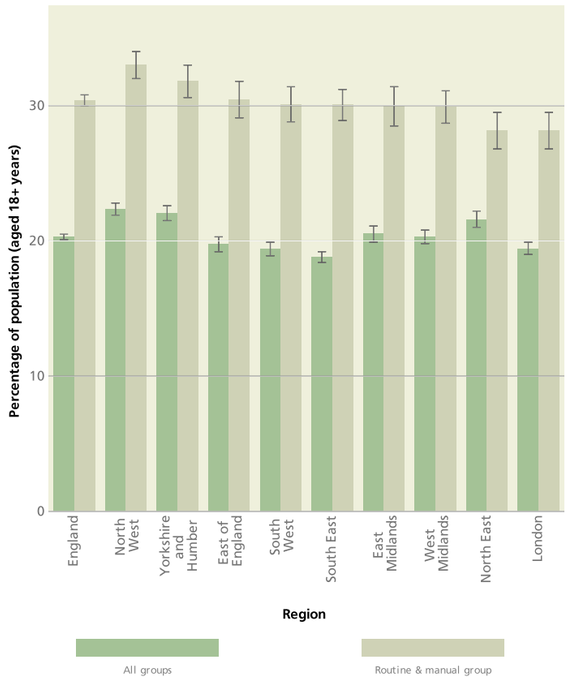
While the proportion of adults who smoke has fallen from 39% in 1980 to 20% currently, there remain marked differences between groups in the population. Rates are highest among men, younger age groups and those working in routine and manual occupations. There are also marked geographical variations in smoking rates, with a substantial number of areas with high rates found in the north of England.

Among those aged 35 and over, more than 79,000 deaths a year (or 18% of deaths) are attributable to smoking, with the highest rates again found in the north of England. A similar geographic pattern is apparent for smoking related admissions to hospital and among mothers smoking during pregnancy.

The cost to the NHS of treating smoking related illness is estimated to be £5.2 billion per year in 2005/06[1]. There is clear evidence that a range of interventions in primary care, pharmacy, local authority and workplace settings are effective in reducing smoking rates.

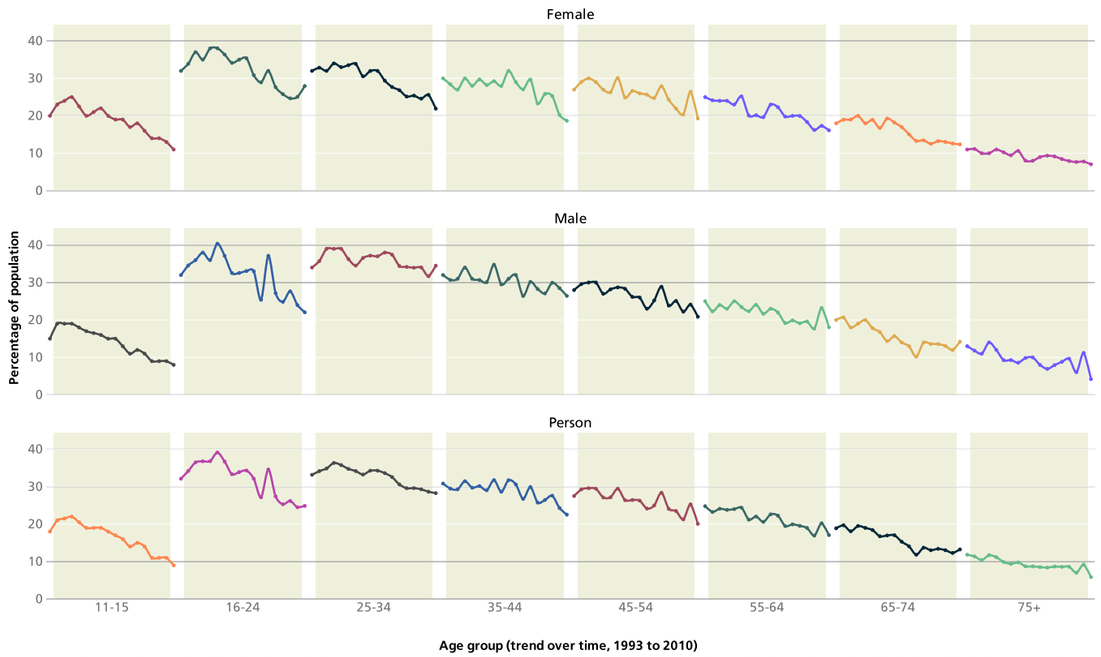
1 Statistics on Smoking, England 2009. The NHS Information Centre for Health and Social Care. 2009.

Smoking prevalence by socio-economic group, English regions, October 2010 - September 2011



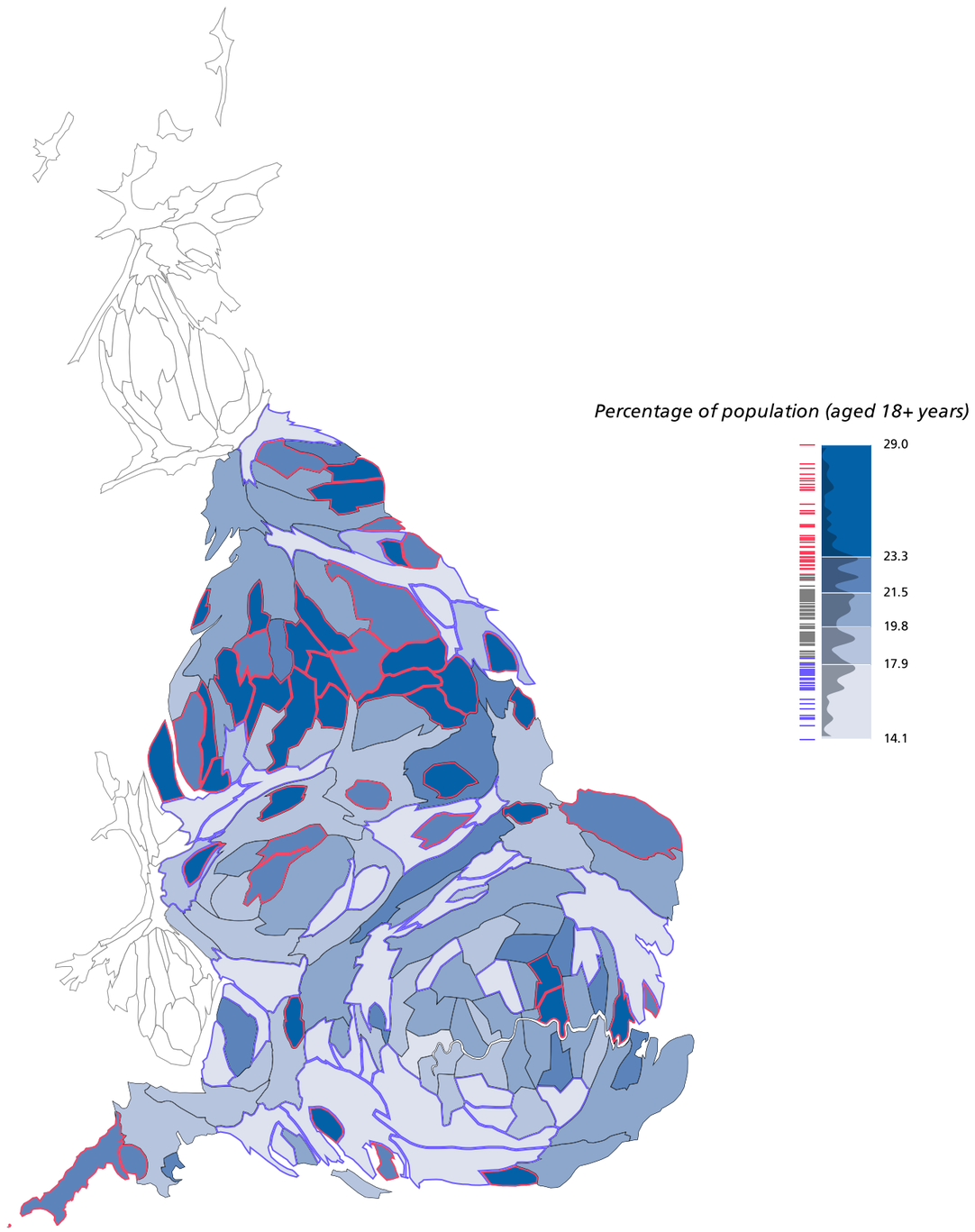
Source: Integrated Household Survey (experimental statistics), ONS. (Provided by LHO)

Trend in smoking prevalence by age and sex, England, 1993 to 2010



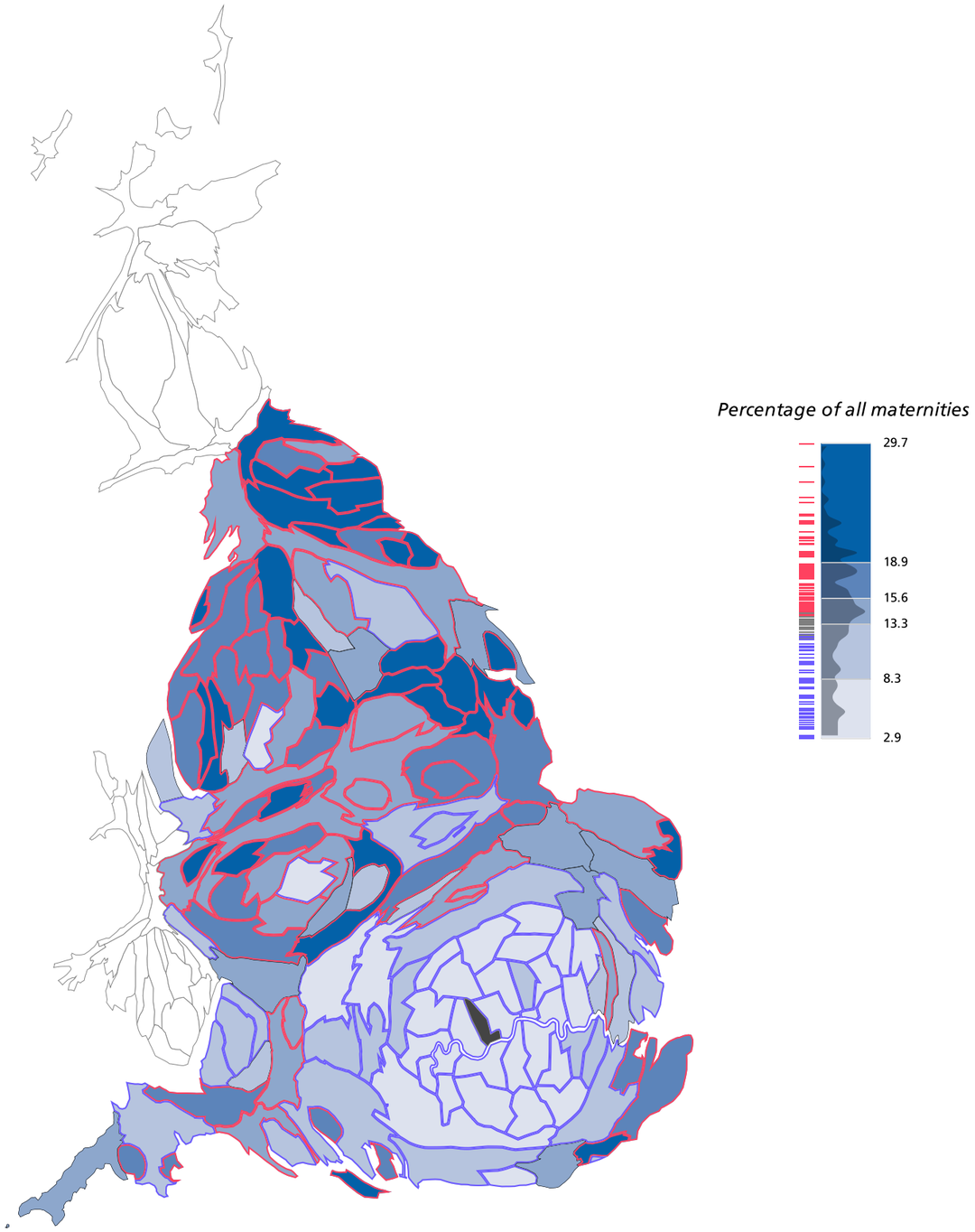
Source: Population aged 11-15: Smoking, drinking and drug use among young people in England in 2010; Population aged 16+: Health Survey for England 2010; Copyright © 2011. Re-used with the permission of The Health and Social Care Information Centre. All rights reserved. Note: Figures for 11-15 age group include 'regular' and 'occasional' smokers

Smoking prevalence by upper tier local authority, England, October 2010 - September 2011



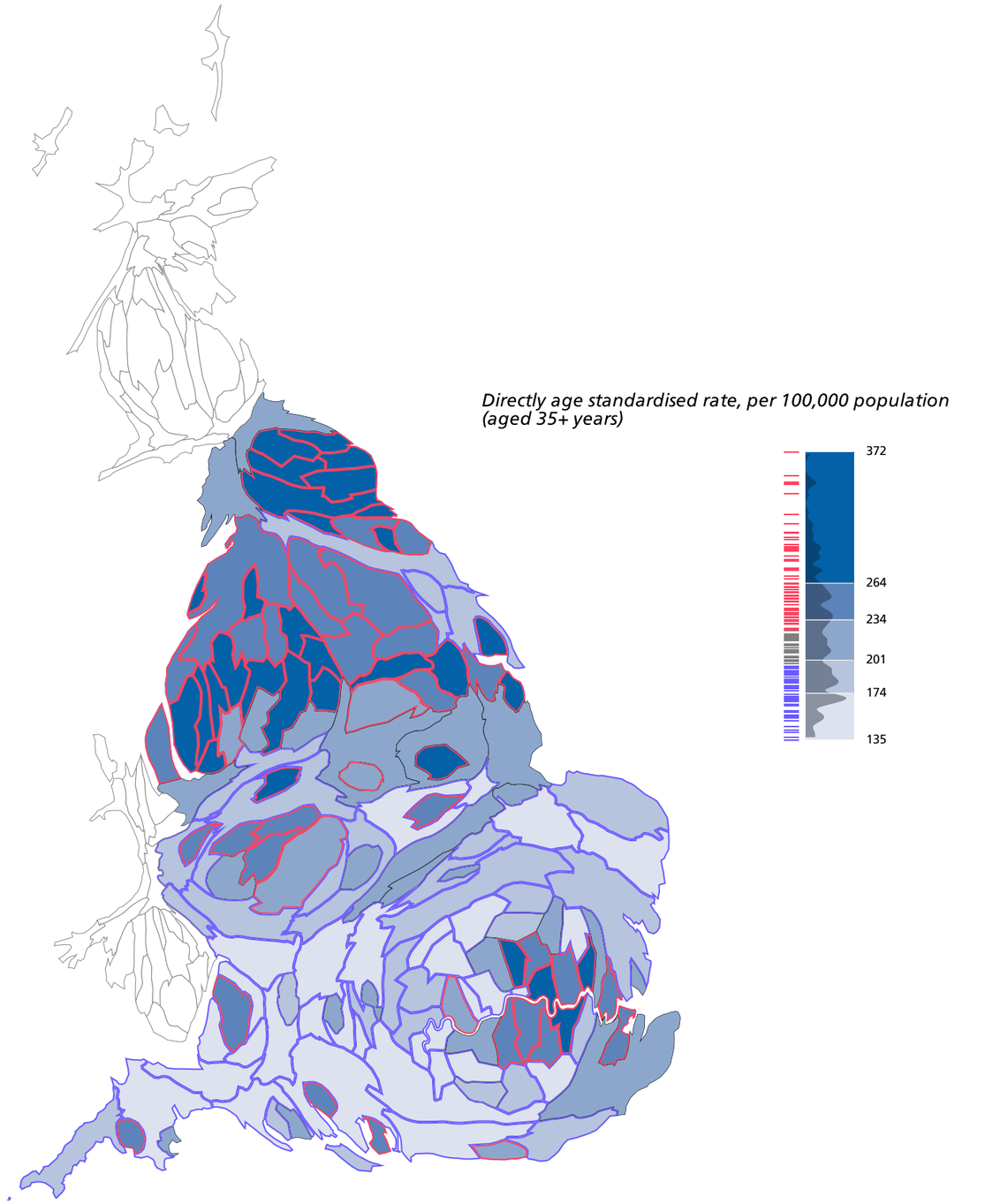
Source: Integrated Household Survey (experimental statistics), ONS. (Provided by LHO). Note: Data for City of London and Westminster London Borough and for Isles of Scilly and Cornwall unitary authorities have been combined

Mothers smoking at time of delivery by primary care trust, England, 2011/12



Source: The Health and Social Care Information Centre, Lifestyle Statistics / Omnibus. Crown Copyright © 2012. Note: Figure not reported for Kensington & Chelsea PCT due to data quality concerns

Smoking-related mortality by upper tier local authority, England, 2008-10



Source: 2012 Local Health Profiles. Note: Data for City of London and Westminster London Borough and for Isles of Scilly and Cornwall unitary authorities have been combined

Alcohol is the second biggest lifestyle health risk factor after tobacco use. Regularly drinking more than the recommended limits increases the risk of a range of chronic diseases including liver disease, diabetes, cardiovascular disease, and cancers of the breast and gastrointestinal tract. High risk drinking increases the risk of psychological ill-health, and is also associated with a range of social problems such as violent crime.

Drinking more than the higher risk limits is more common among young adults: in 2008-10, 26.1% of males and 22% of females aged 16 to 24 drank more than eight units and six units respectively on at least one day in the previous week, compared to 6.2% of males and 2% of females aged 65 and over. However, men and women in older age groups are more likely to have consumed alcohol on five or more days in the last week.

There has been a trend towards drinking less in recent years. For example, the percentage of men aged 25 to 44 who drank 'in the last week' fell from 77.2% in 2000-02 to 71.4% in 2008-10. A change (in 2006) to the survey method used to calculate units means that the trend in higher risk drinking is less clear, but here too there appears to be a downward trend.

The highest percentages of adults drinking more than recommended tend to be found in the north, with more than a fifth of males drinking more than eight units on at least one day in the North West, Yorkshire and The Humber, and the North East. However, the picture for increasing and higher risk drinkers is more complex with modelled estimates suggesting that many areas in the South East, South West and West Midlands have among the highest levels.

The highest hospital admission rates for alcohol-attributable causes, both for adults and those aged under 18, are found in parts of the North West and North East, with Manchester, Middlesbrough, Salford and Liverpool having the highest rates.

While there is evidence that alcohol consumption levels are falling, there is a lagged effect in terms of the harms cause by higher risk drinking. Alcohol related death rates have risen steadily over the last two decades[1], and while there is some evidence that the rate is now falling, hospital admission rates for alcohol conditions continue to rise[2].

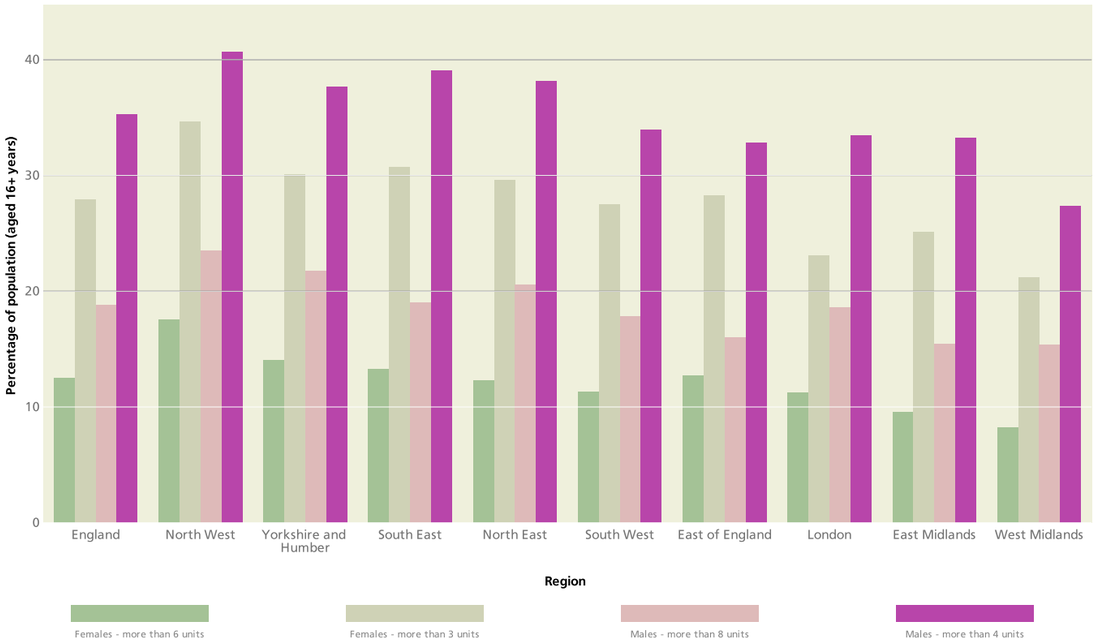
There is clear evidence that a range of interventions in primary care, pharmacy, local authority and workplace settings are effective in reducing drinking rates[3].

1 Alcohol-Related Deaths in the United Kingdom, 2010. The Office for National Statistics.

2 Statistics on Alcohol: England, 2012. Health and Social Care Information Centre.

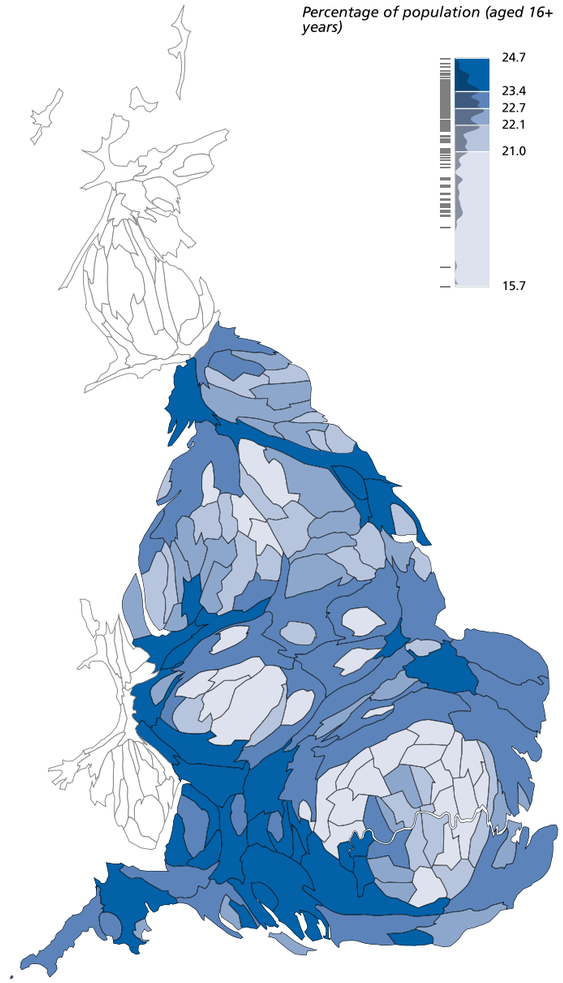
3 The Government's Alcohol Strategy, 2012. HM Government

Maximum daily alcohol consumption in last week by sex and region, England, 2010



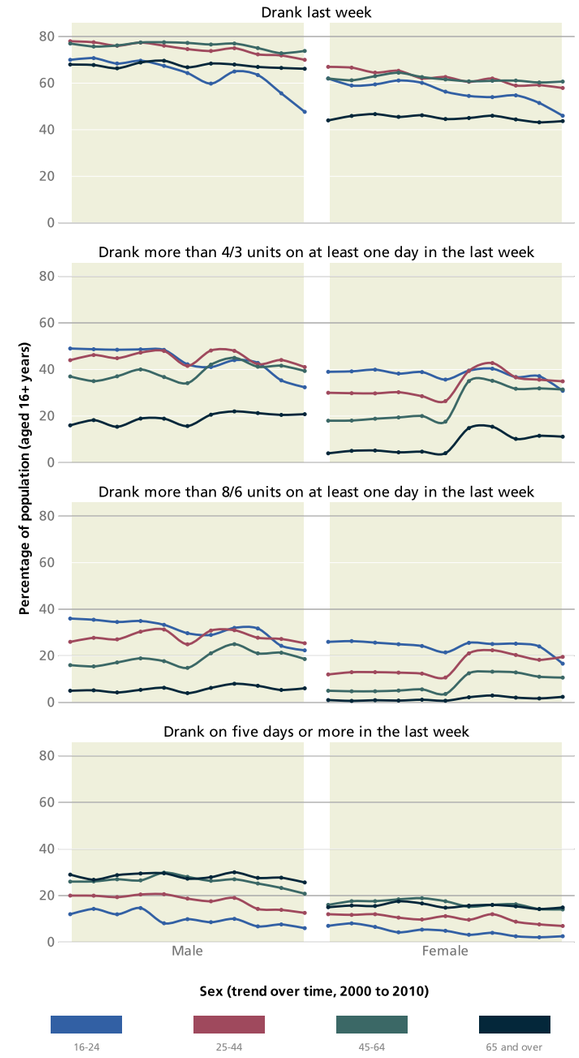
Source: General Lifestyle Survey, 2010. ONS.

Increasing and higher risk drinking by upper tier local authority, England, 2008/09



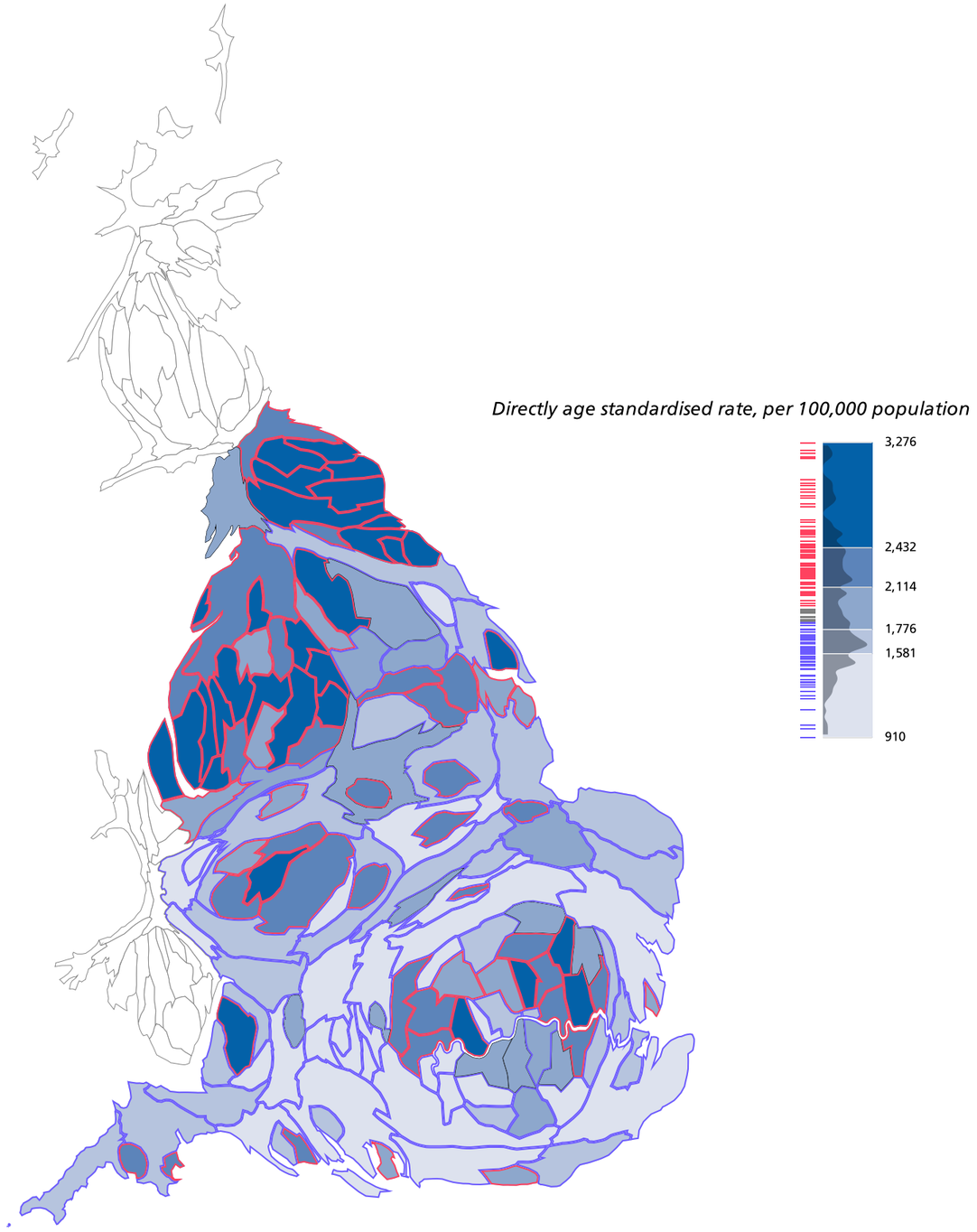
Source: 2012 Local Health Profiles. Note: Data for City of London and Westminster London Borough and for Isles of Scilly and Cornwall unitary authorities have been combined

Trend in drinking behaviours by age and sex, England, 2000 to 2010



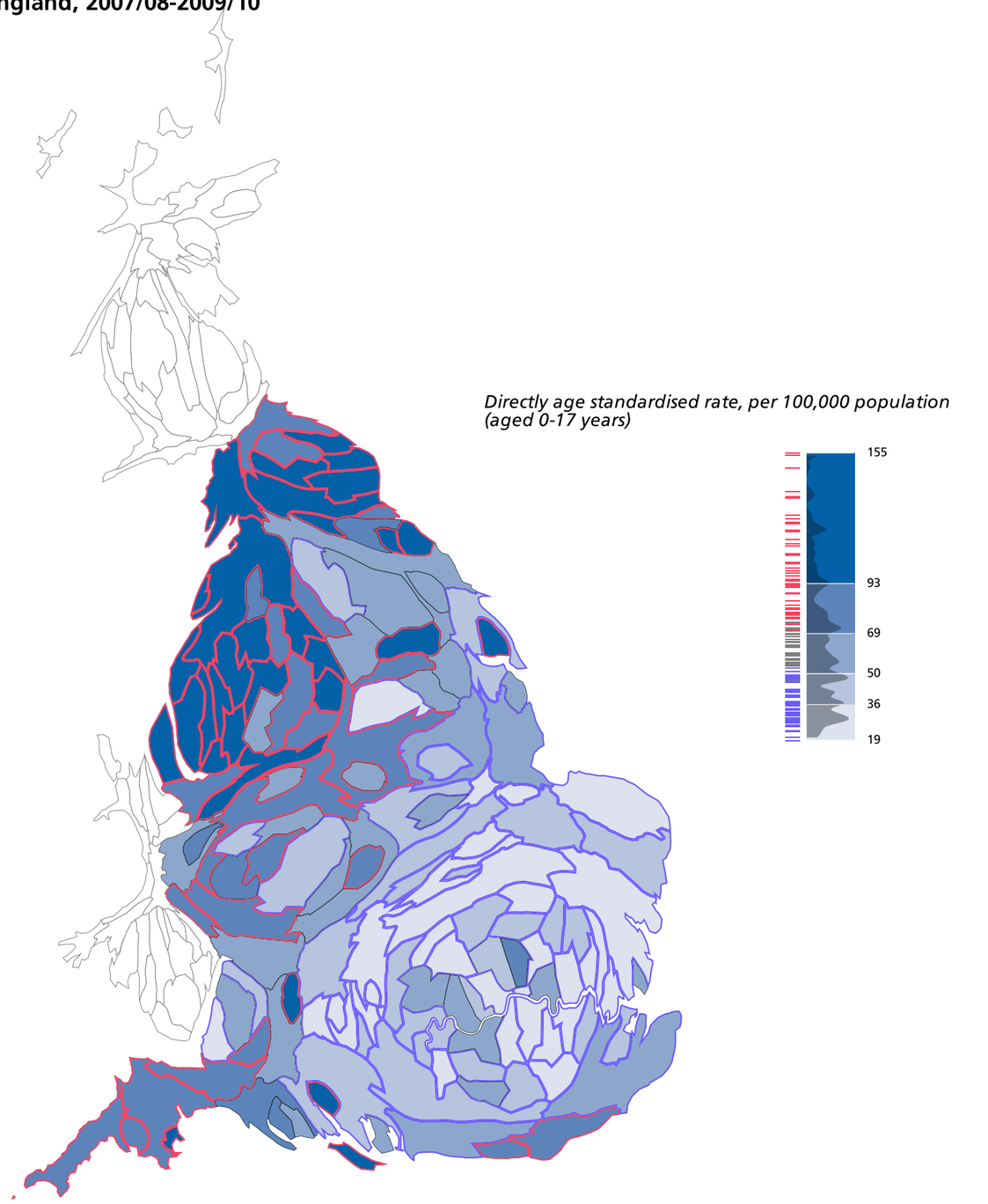
Source: General Lifestyle Survey, 2010. ONS.

Hospital admission rates for alcohol related harms by upper tier local authority, England, 2010/11



Source: 2012 Local Health Profiles. Note: Data for City of London and Westminster London Borough and for Isles of Scilly and Cornwall unitary authorities have been combined

Hospital admission rates for alcohol-specific conditions among under 18 year olds by upper tier local authority, England, 2007/08-2009/10



Source: 2012 Local Health Profiles. Note: Data for City of London and Westminster London Borough and for Isles of Scilly and Cornwall unitary authorities have been combined

High blood pressure, or hypertension, is one of the main risk factors for heart attack and stroke. It is defined as a systolic blood pressure at or above 140 mmHg or diastolic blood pressure at or above 90 mmHg.

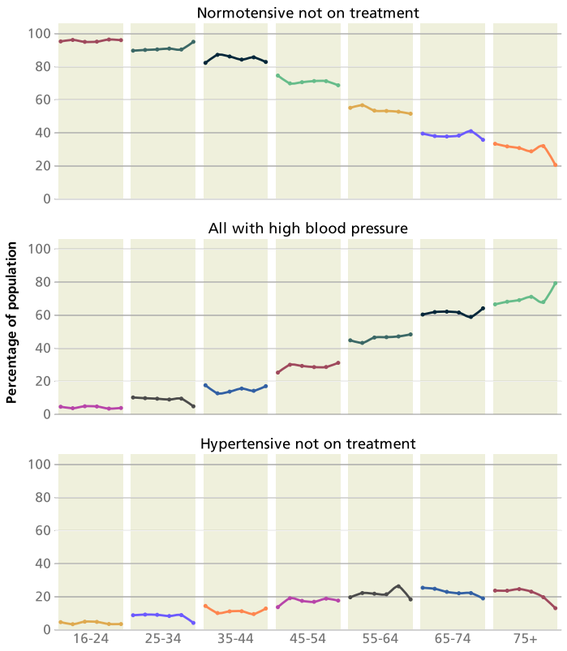
The percentage of the population with high blood pressure increases progressively with age. In 2008-10, 4.1% of 14 to 24 year olds had high blood pressure, compared to 25.9% of 45 to 54 year olds and 72.8% of those aged 75 and over. There is evidence that the prevalence of high blood pressure is increasing among older age groups, although the percentage whose hypertension is not controlled by medication is decreasing.

High blood pressure is more common among men from the Black Caribbean, Irish and Indian ethnic groups, and among women from the Black Caribbean and Irish groups.

The estimated prevalence of high blood pressure varies across England. More than 35% of adults in parts of South West and South East England have high blood pressure, compared to less than 25% in several London boroughs and elsewhere.

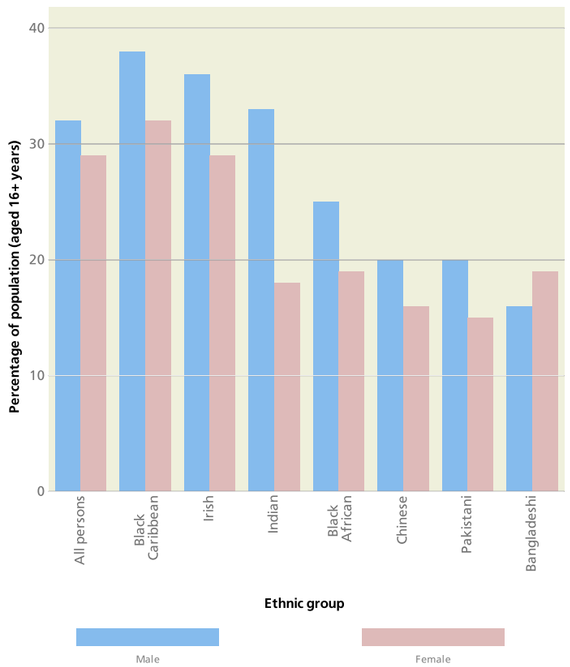
Hypertension is the most important modifiable risk factor for cardiovascular disease. Physical activity, healthy eating (particularly reducing salt intake) and medication can all help control and reduce blood pressure levels.

Trends in blood pressure by age, England, 2005 to 2010



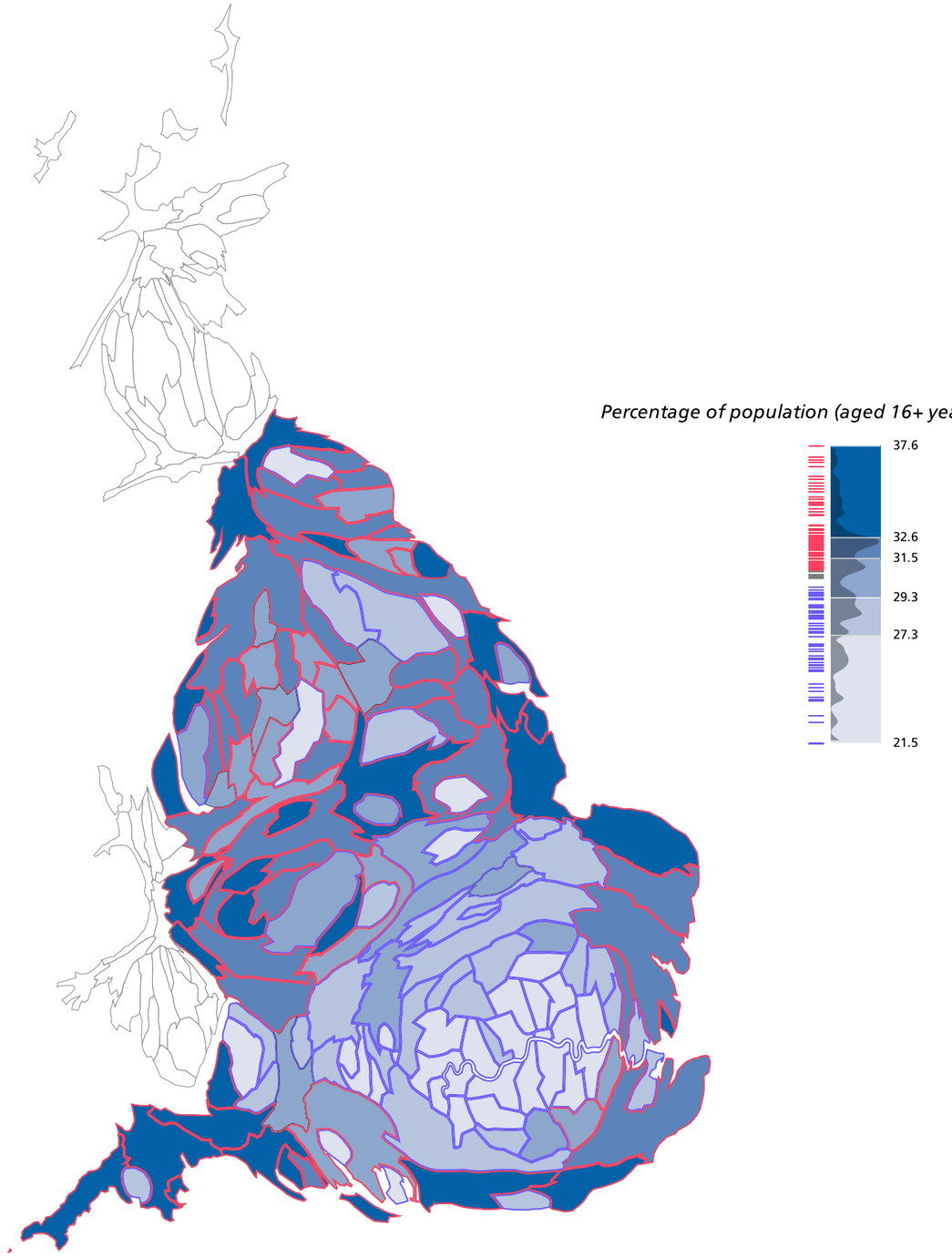
Source: Health Survey for England 2010. Copyright © 2011. Re-used with the permission of The Health and Social Care Information Centre. All rights reserved.

High blood pressure by ethnic group and sex, England, 2004



Source: Health Survey for England 2004. Copyright © 2006. Re-used with the permission of The Health and Social Care Information Centre. All rights reserved.

Hypertension prevalence by upper tier local authority, England, 2009



Source: Hypertension prevalence model. (Provided by ERPHO)

Cholesterol is a fat mostly made in the liver and transported in the blood. Raised cholesterol is defined as a blood cholesterol concentration greater than 5mmol/l and is associated with an increased risk of heart disease and stroke.

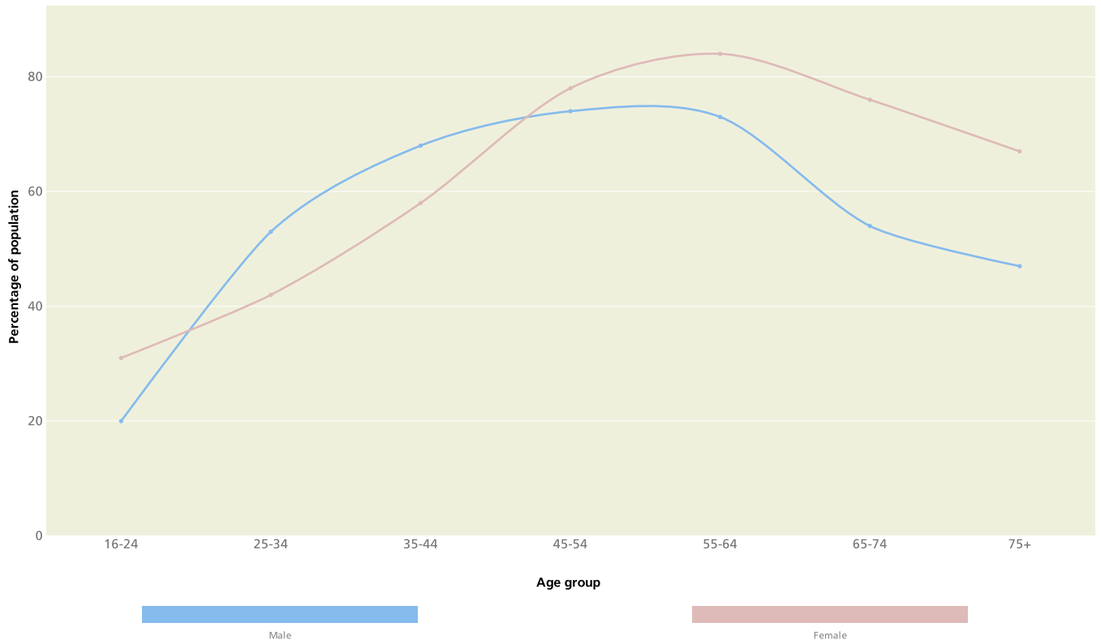
The prevalence of raised cholesterol increases from 31% of females and 20% of males aged 16 to 24, peaks at 84% of women aged 55 to 64 and 74% of men aged 45 to 54, and then falls again for both sexes in the oldest age groups. The percentage of adults with raised cholesterol is broadly comparable across the English regions, although the percentage of women in the South West with this risk factor is higher than the England average at 66%, as is the percentage of males in Yorkshire and The Humber at 62%.

There is evidence that cholesterol levels have been falling over time, largely as a result of an increase in the prescribing of statins and other lipid-lowering drugs: between 1994 and 2006, the percentage of men with raised cholesterol fell from 74% to 57% and among women from 77% to 61%[1]. The percentage of adults with raised cholesterol tends to be higher among lower income groups.

In addition to medication, physical activity and healthy eating (particularly reducing saturated fat intake) can help reduce cholesterol levels.

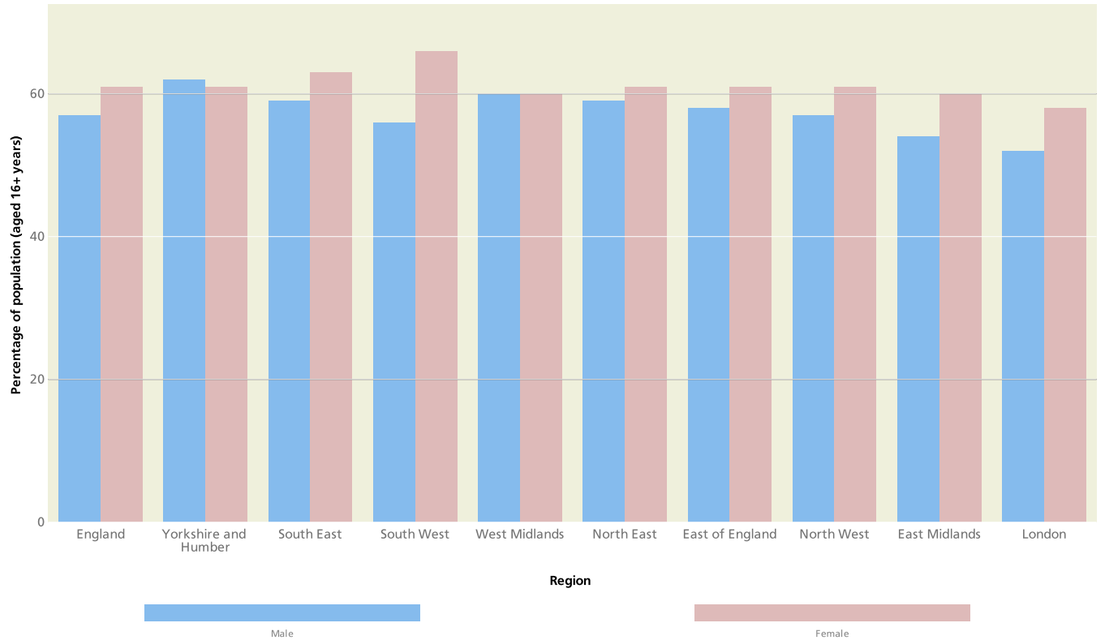
1 Health Survey for England 2006. The Health and Social Care Information Centre.

Prevalence of raised cholesterol by age and sex, England, 2006



Source: Health Survey for England 2006. Copyright © 2008. Re-used with the permission of The Health and Social Care Information Centre. All rights reserved.

Prevalence of raised cholesterol by sex, English regions, 2006



Source: Health Survey for England 2006. Copyright © 2008. Re-used with the permission of The Health and Social Care Information Centre. All rights reserved.

Body mass index is the most common way of measuring obesity among adults, while child obesity is defined using the UK 1990 growth reference charts. Both obesity and overweight are associated with an increased risk of heart disease and stroke, type 2 diabetes, certain cancers, and osteoarthritis.

Patterns of obesity differ substantially by age. The percentage of children and young people defined as obese increases from 14.3% of those aged 2 to 10 to 18.5% of those aged 11 to 15. Among adults, the prevalence of obesity rises from 11.2% of those aged 16 to 24, peaks at 32.4% among those aged 55 to 64, before falling to 25.2% of the 75 and over age group.

There are also differences in prevalence between the sexes, with females having higher levels of obesity in the 16 to 24 and 65 and over age groups, and men having higher levels between the ages of 45 to 64. Common to both sexes and all age groups has been a progressive increase in levels of obesity, although there is evidence among children and younger adults of a levelling off of obesity rates in recent years.

The prevalence of obesity also differs across a range of factors such as deprivation and ethnicity[1]. The percentage of Reception and Year 6 schoolchildren who are obese progressively increases with rising levels of deprivation. Higher percentages of Black or Black British, Asian or Asian British, Mixed, and 'Other' ethnic group schoolchildren are also obese compared to the averages for Reception and Year 6 pupils.

Levels of child and adult obesity vary across England. The highest percentages for children are found in several London boroughs, some metropolitan areas in the Midlands, and in parts of the North West. This pattern broadly reflects the distribution of those ethnic groups with a higher prevalence of obesity.

Among adults, the modelled distribution of obesity differs, with the highest estimated percentages found in parts of the North West, Yorkshire and The Humber, West Midlands and the South East.

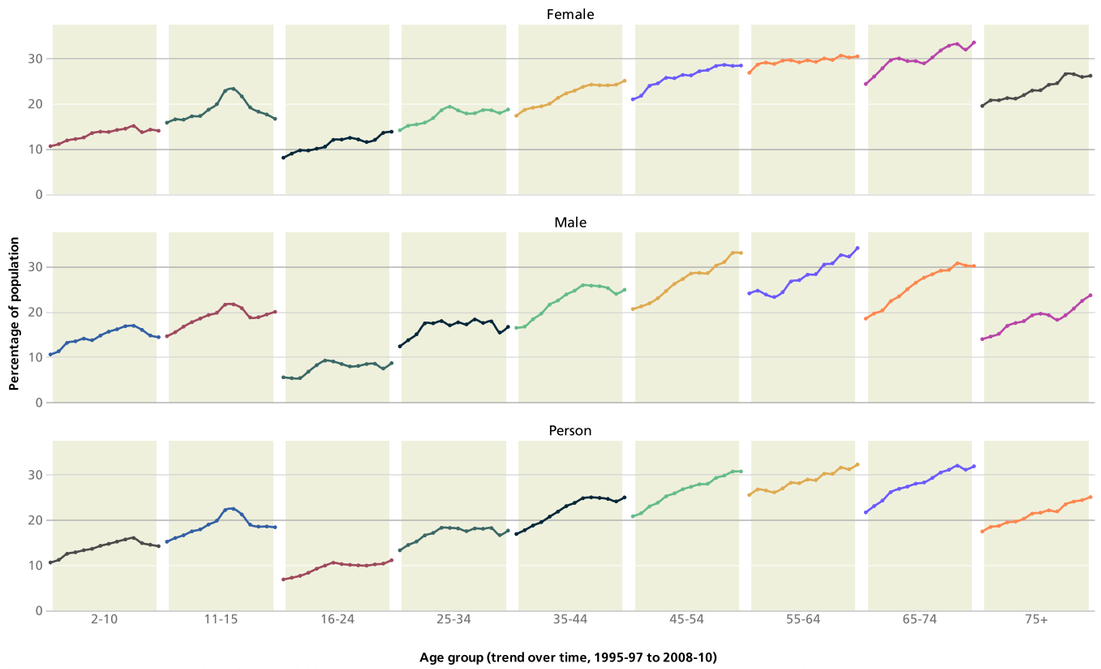
Obesity is associated with multiple health risks. For example, while approximately 18% of normal weight adults have raised blood pressure (hypertension), the figure for those who are obese is 49%[2].

There is clear evidence that dietary control and physical activity are effective in reducing obesity and overweight at an individual level, although creating environments that promote and enable healthy eating and active lives requires action across industry, Local Government and the NHS.

1 National Child Measurement Programme, 2010/11. The Health and Social Care Information Centre.

2 Statistics on Obesity, Physical Activity and Diet: England, 2012. The Health and Social Care Information Centre.

Trend in obesity prevalence by age and sex, England, 1995-97 to 2008-10



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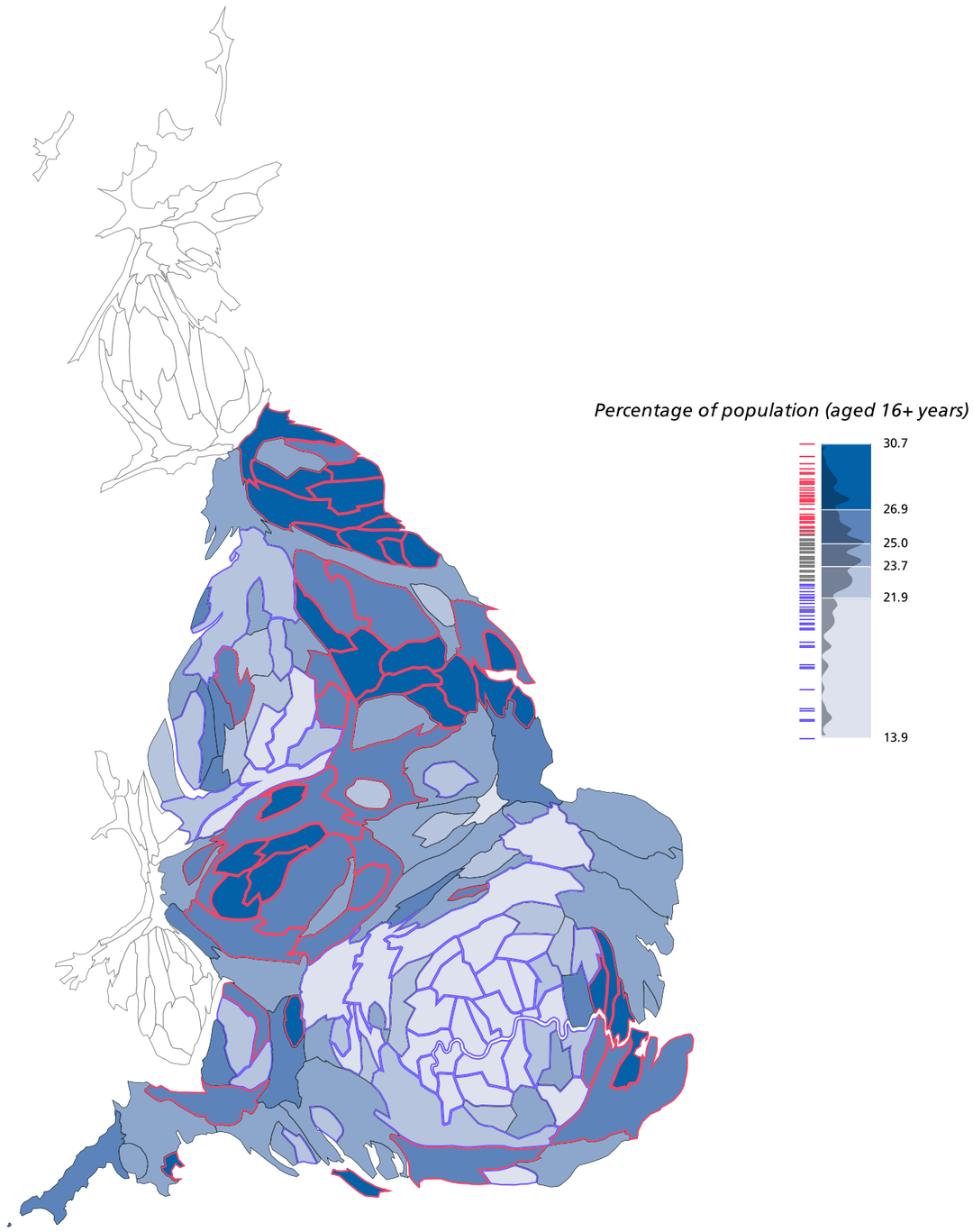
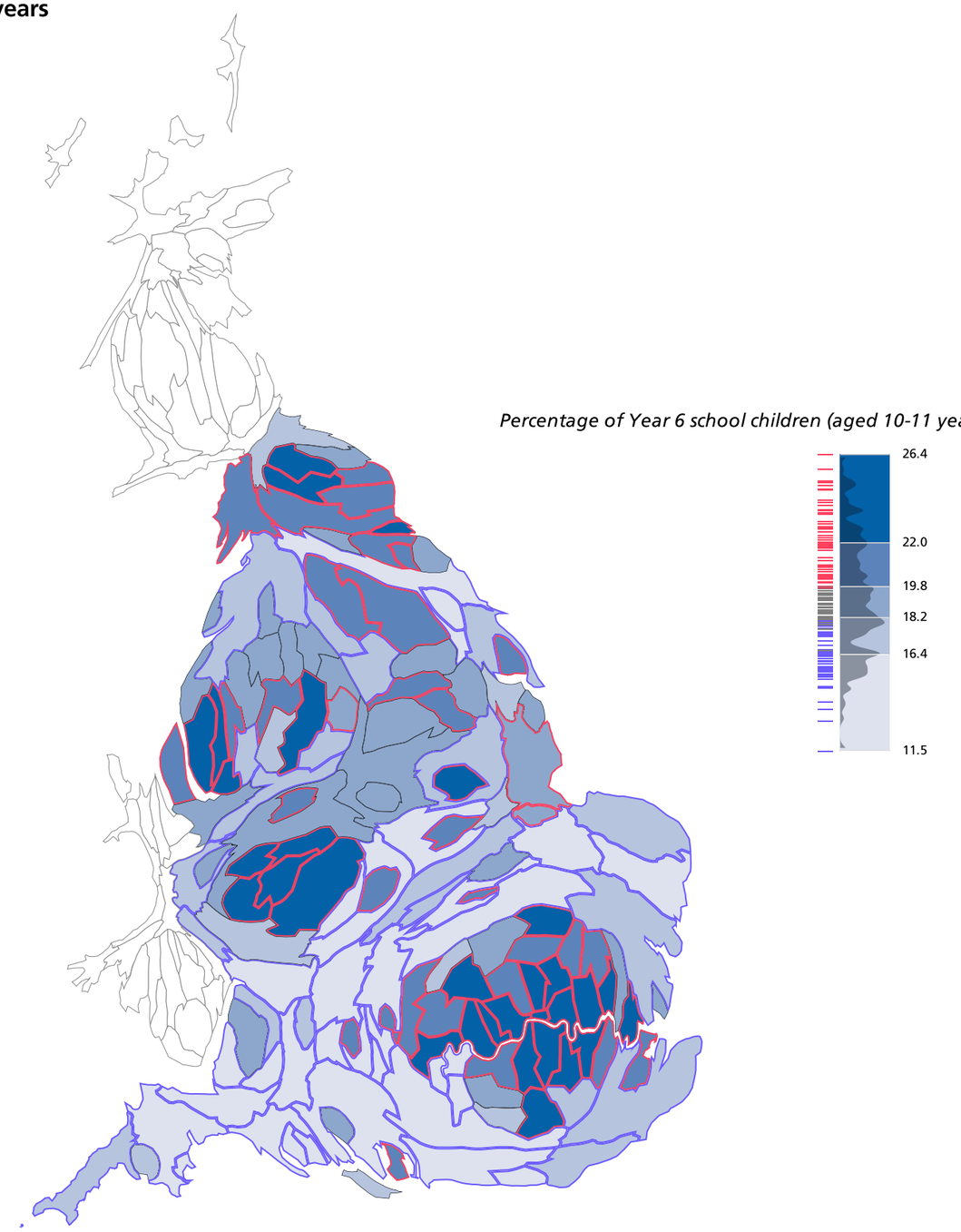
Obesity prevalence among persons aged 16 and over by upper tier local authority, England, 2006-08



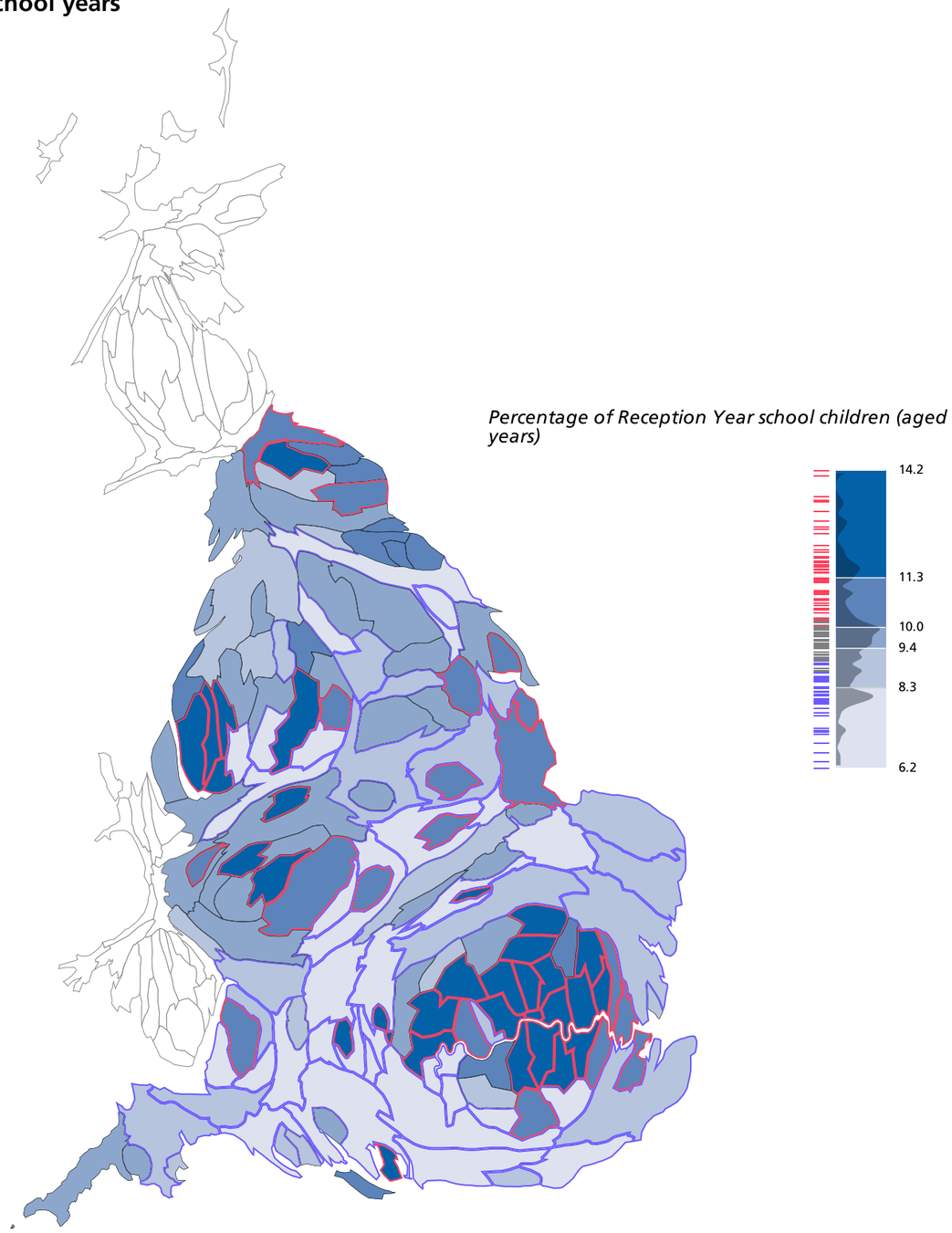
Source: 2012 Local Health Profiles. Note: Data for City of London and Westminster London Borough and for Isles of Scilly and Cornwall unitary authorities have been combined

Obesity prevalence among Year 6 school children by upper tier local authority, England, 2008/09-10/11 school years



Source: National Child Measurement Programme. Copyright © 2009-11. The Health and Social Care Information Centre, Lifestyle Statistics. All Rights Reserved. (Analysis by NOO). Note: Data for City of London and Westminster London Borough and for Isles of Scilly and Cornwall unitary authorities have been combined

Obesity prevalence among Reception Year school children by upper tier local authority, England, 2008/09-10/11 school years



Source: National Child Measurement Programme. Copyright © 2009-11. The Health and Social Care Information Centre, Lifestyle Statistics. All Rights Reserved. (Analysis by NOO). Note: Data for City of London and Westminster London Borough and for Isles of Scilly and Cornwall unitary authorities have been combined

Physical activity includes all forms of exercise such as walking, cycling, active play, work-related activity, active recreation and organised sport, dancing, gardening or playing active games. A physically active lifestyle can reduce the risk of many chronic conditions including coronary heart disease, stroke, type 2 diabetes, some cancers, obesity, mental health problems and musculoskeletal conditions.

The benefits of being active are present across the life course. It is recommended that children and young people aged 5 to 18 should engage in moderate to vigorous intensity physical activity for at least 60 minutes and up to several hours every day[1]. For adults, the corresponding recommendation is for 150 minutes of moderate intensity activity over a week, or the equivalent of vigorous activity. All age groups should aim to be active daily and minimise the amount of time spent being sedentary for extended periods.

Structured exercise and school sport can make an important contribution to children's physical activity. Activity levels for boys remain high between the ages of 9 and 14 before falling at age 15. For girls, activity levels decline progressively from 72.2% at age 9 to 47.4% at age 15.

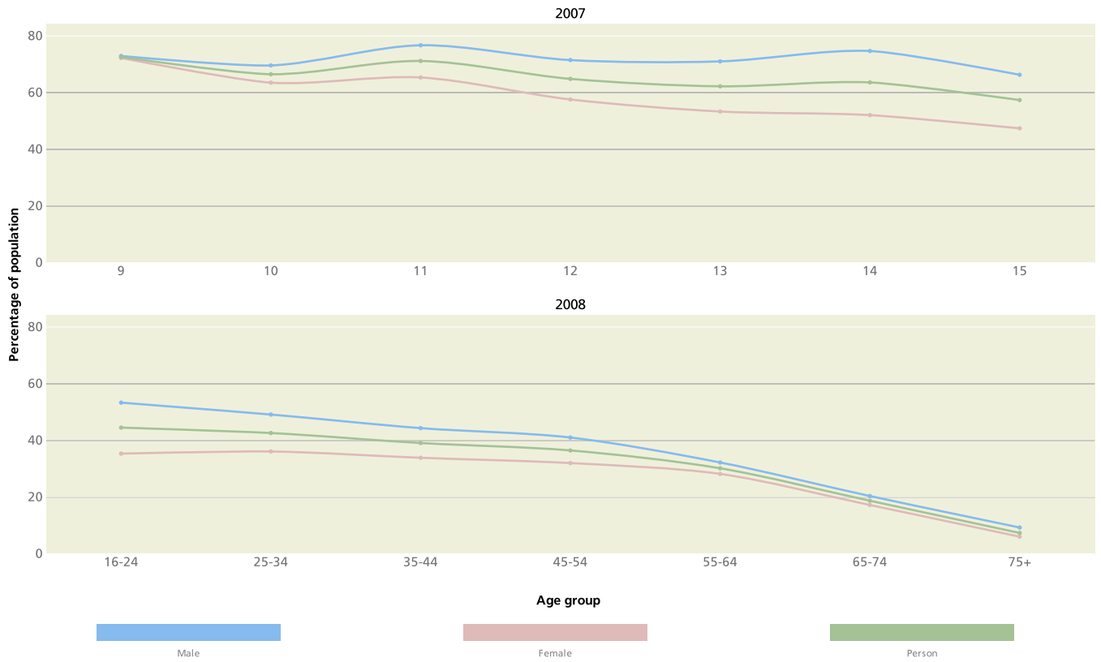
In 2009/10, 55.1% of schoolchildren across England participated in at least three hours of physical education and school sport within and beyond the curriculum in a typical week. However, reported activity levels vary substantially across the country: in some local authority areas fewer than 45% of children achieve the recommended levels, while the figure for the best performing areas is in excess of 70%.

For adults, there is a marked reduction in the percentage meeting the appropriate activity level as age increases. In 2008, an average of 39.2% of men and 28.7% of women reported they were active to at least the recommended level, with the percentage falling progressively from 44.5% of 16 to 24 year olds to 7.3% of those aged 75 and over. The percentage of active adults has increased from 26.1% in 1997 to 33.8% in 2008, but this rise should be seen in the context of a long term decline in walking and cycling for travel purposes.

The direct cost of physical inactivity to the NHS across the UK is estimated to be £1.06 billion. There is evidence that action at multiple levels is effective in increasing physical activity levels, from primary care professionals encouraging individuals to lead active lives, to local authorities investing in community level activity programmes and employers promoting active workplaces.

1 Start Active, Stay Active. A report on physical activity for health from the four home countries' Chief Medical Officers. 2011. Department of Health

Physical activity levels by age and sex, England, 2007 (children) and 2008 (adults)



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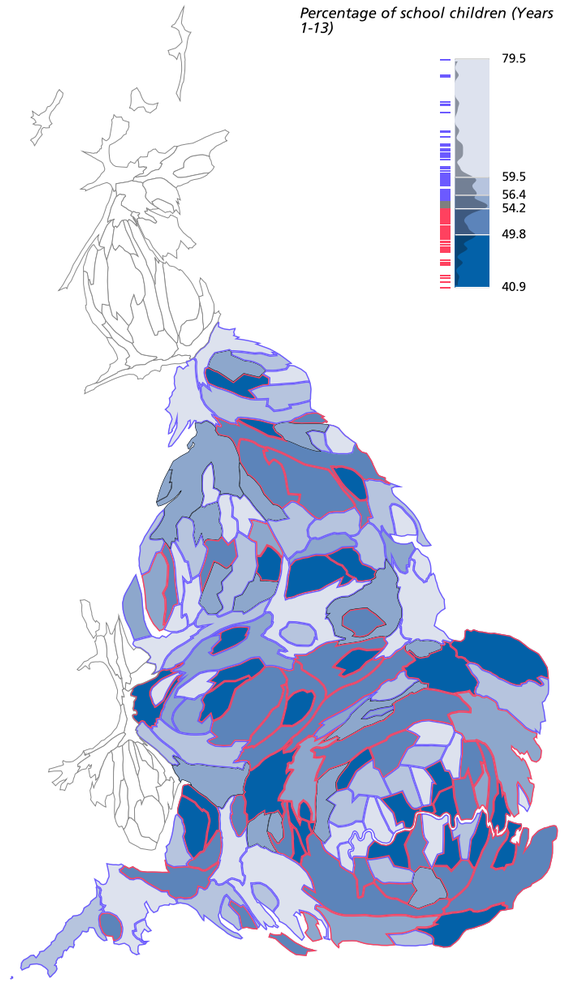
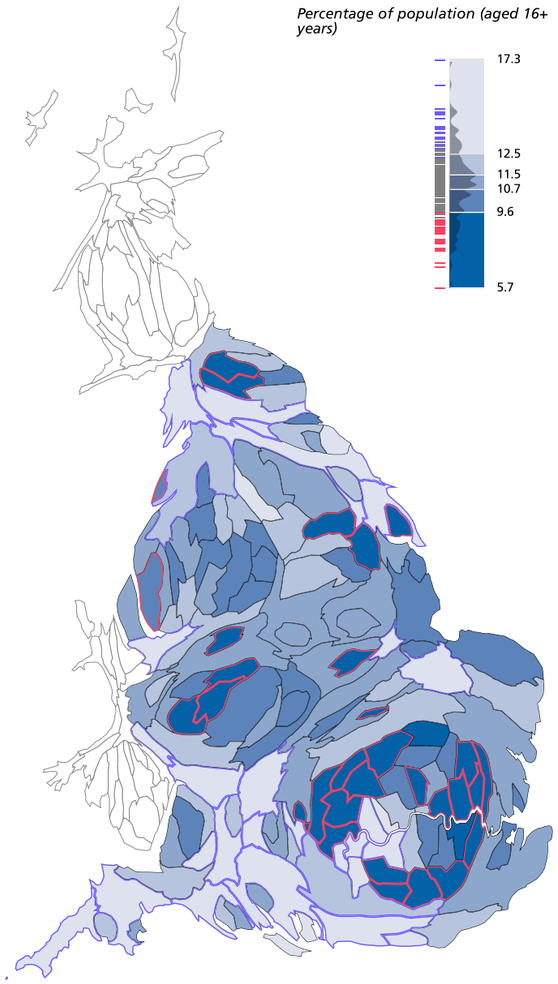
Physically active children by upper tier local authority, England, 2009/10



Source: 2011 Local Health Profiles. Note: Data for City of London and Westminster London Borough and for Isles of Scilly and Cornwall unitary authorities have been combined

Physically active persons aged 16 years and over by upper tier local authority, England, 2009-11



Source: 2012 Local Health Profiles. Note: Data for City of London and Westminster London Borough and for Isles of Scilly and Cornwall unitary authorities have been combined

The use of illicit drugs such as opiates and crack cocaine increases the risk of bloodborne diseases such as HIV and hepatitis, and increases the risk of death from overdose. Many problem drug users lead chaotic lives and often resort to crime to fund their addiction.

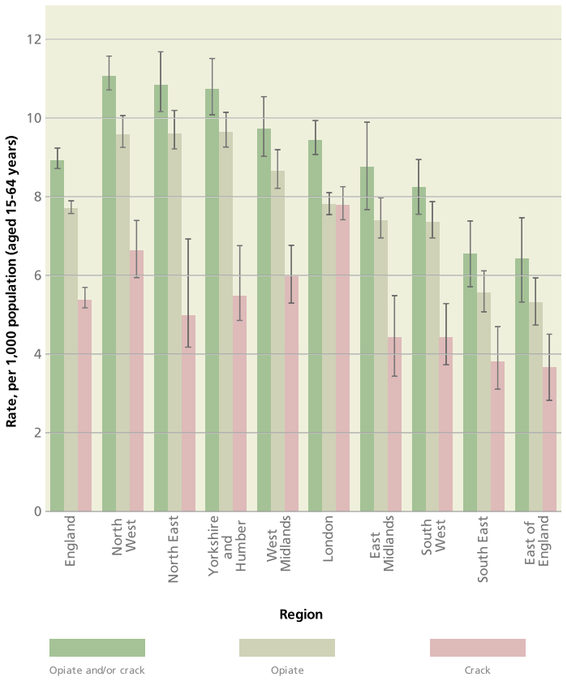
There were an estimated 306,150 opiate and/or crack cocaine users in 2009/10[1]. The regions with the highest rates are the North West, North East, and Yorkshire and The Humber. Estimates of opiate and/or crack cocaine use by local authority indicate the highest rates are found in urban areas, with the worst performers having rates over 2.5 times above the national average. There has been a general increase in drug-related deaths over the last 18 years, particularly among males aged 20 to 69.

Figures from drug treatment services indicate that just under 28,000 users (or 43% of the total) exited the treatment system free from dependency in 2010/11. This is more than double the percentage for 2005/06[2].

1 Estimates of the Prevalence of Opiate Use and/or Crack Cocaine Use, 2009/10: Sweep 6 report. University of Glasgow and University of Manchester, 2012.

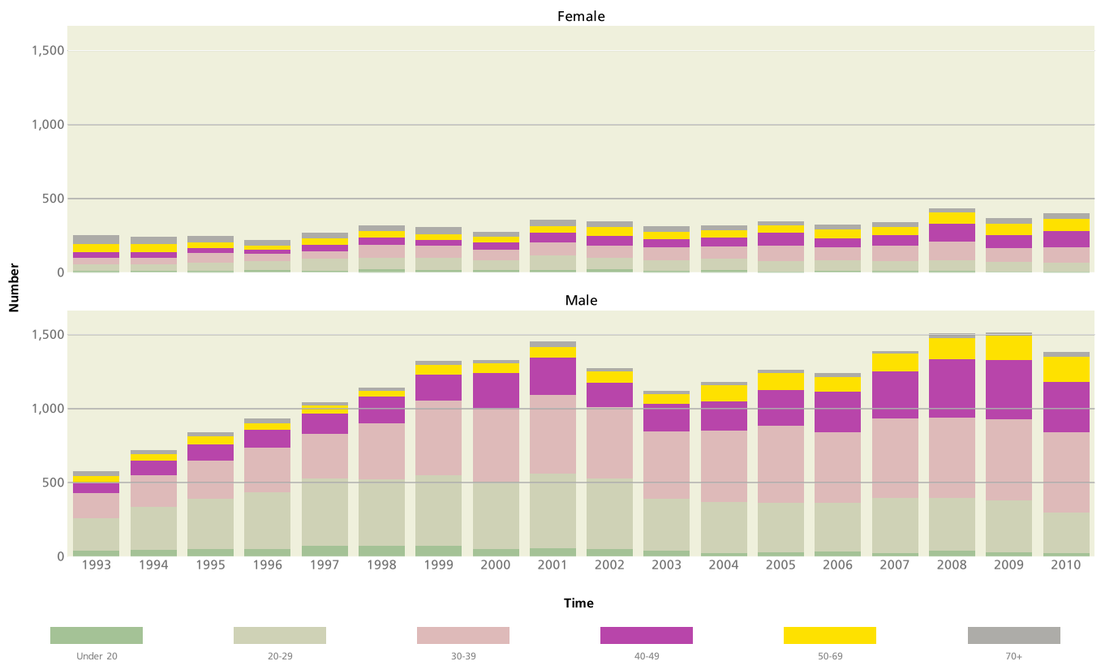
2 Statistics from the National Drug Treatment Monitoring System (NDTMS), 1 April 2010– 31 March 2011. National Treatment Agency, 2011.

Prevalence of opiate and/or crack cocaine use by region, England, 2009/10



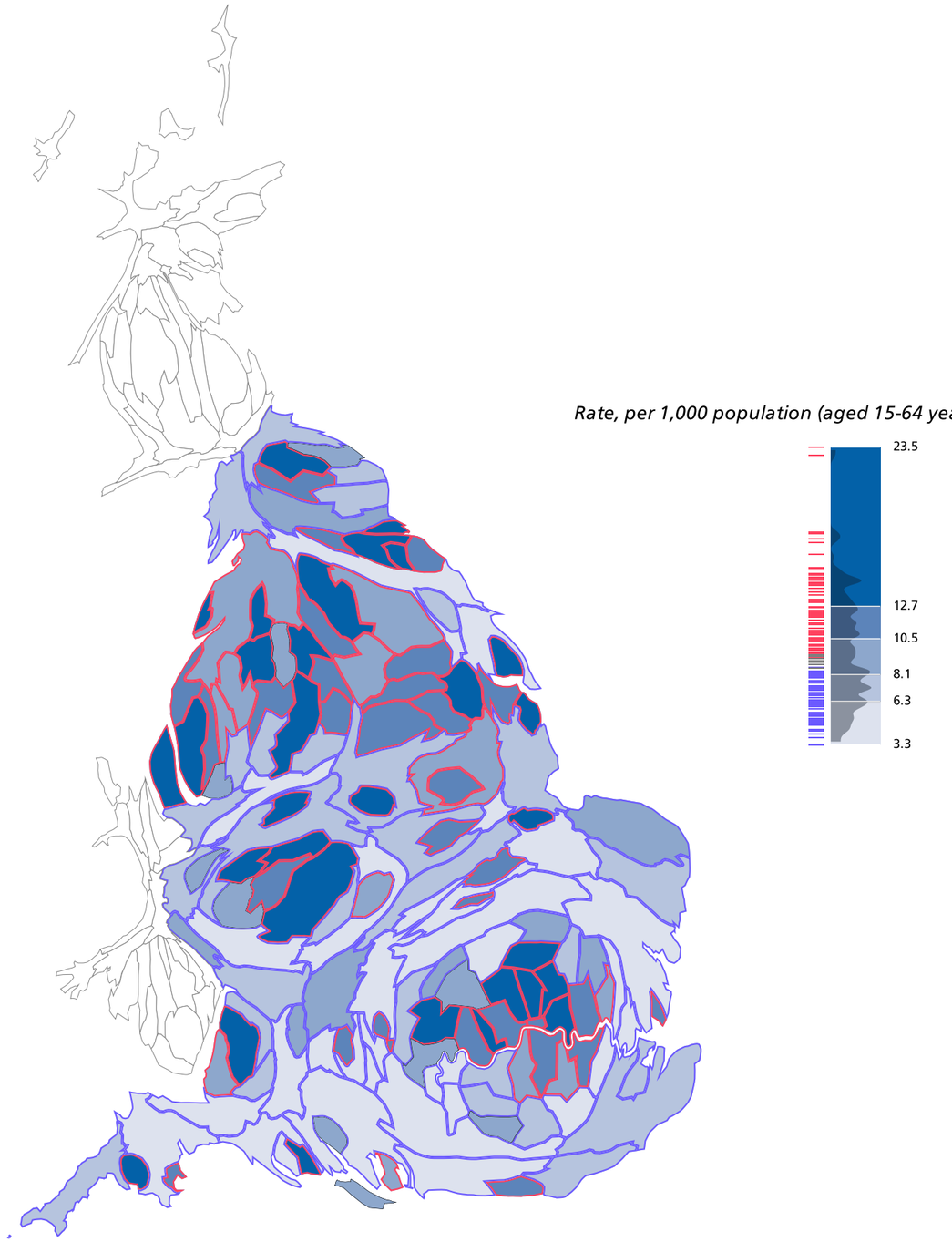
Source: National Treatment Agency (NTA).

Trend in drug-related mortality by age and sex, England and Wales, 1993 to 2010



Source: Deaths Related to Drug Poisoning in England and Wales, 2010. ONS.

Opiate and crack cocaine use rate by upper tier local authority, England, 2009/10



Source: 2012 Local Health Profiles. Note: Data for City of London and Westminster London Borough and for Isles of Scilly and Cornwall unitary authorities have been combined

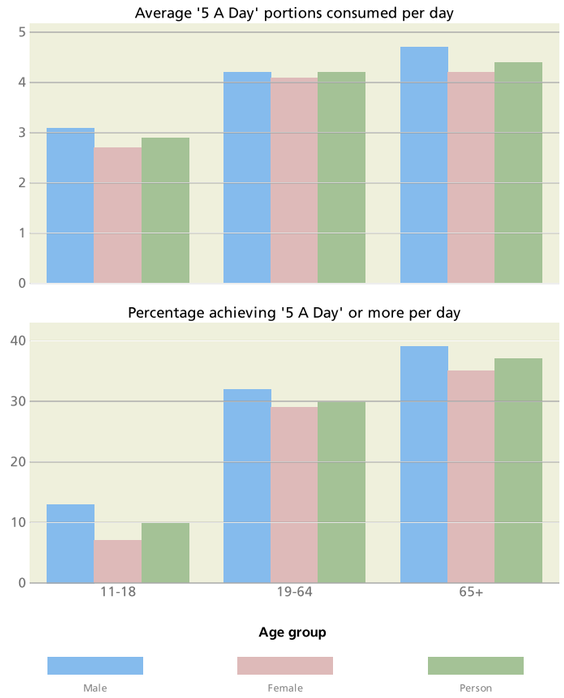
High levels of energy intake without sufficient physical activity can lead to obesity and increase the risk of diabetes, cardiovascular disease, high blood pressure, some cancers and osteoarthritis. Excessive sugar intake is a particular concern, but is often only one source of unhealthy energy intake. High levels of salt consumption are associated with an increase in blood pressure which is a risk factor for heart disease and stroke. Diets high in saturated fat also increase cholesterol levels, another heart disease risk factor.

Low nutrient intakes can cause health problems. For example, inadequate folic intake in the first four weeks of pregnancy increases the risk of neural tube defects, while low vitamin D intake increases the risk of rickets.

Eating plenty of fruit and vegetables reduces the chance of developing a range of health problems. Recent estimates suggest that fruit and vegetable consumption increases with age, but that even among those aged 65 and over, the average '5 A Day' portions consumed is 4.4. Only 10% of those aged 11 to 18 achieve the recommended number of '5 A Day' portions, compared to 30% of those aged 19 to 64, and 37% of those aged 65 and over.

Modelled estimates indicate that the highest percentages of adults eating healthy diets are found in several London boroughs and in parts of the South East and East of England.

Fruit and vegetable consumption, UK, 2008/09-2009/10

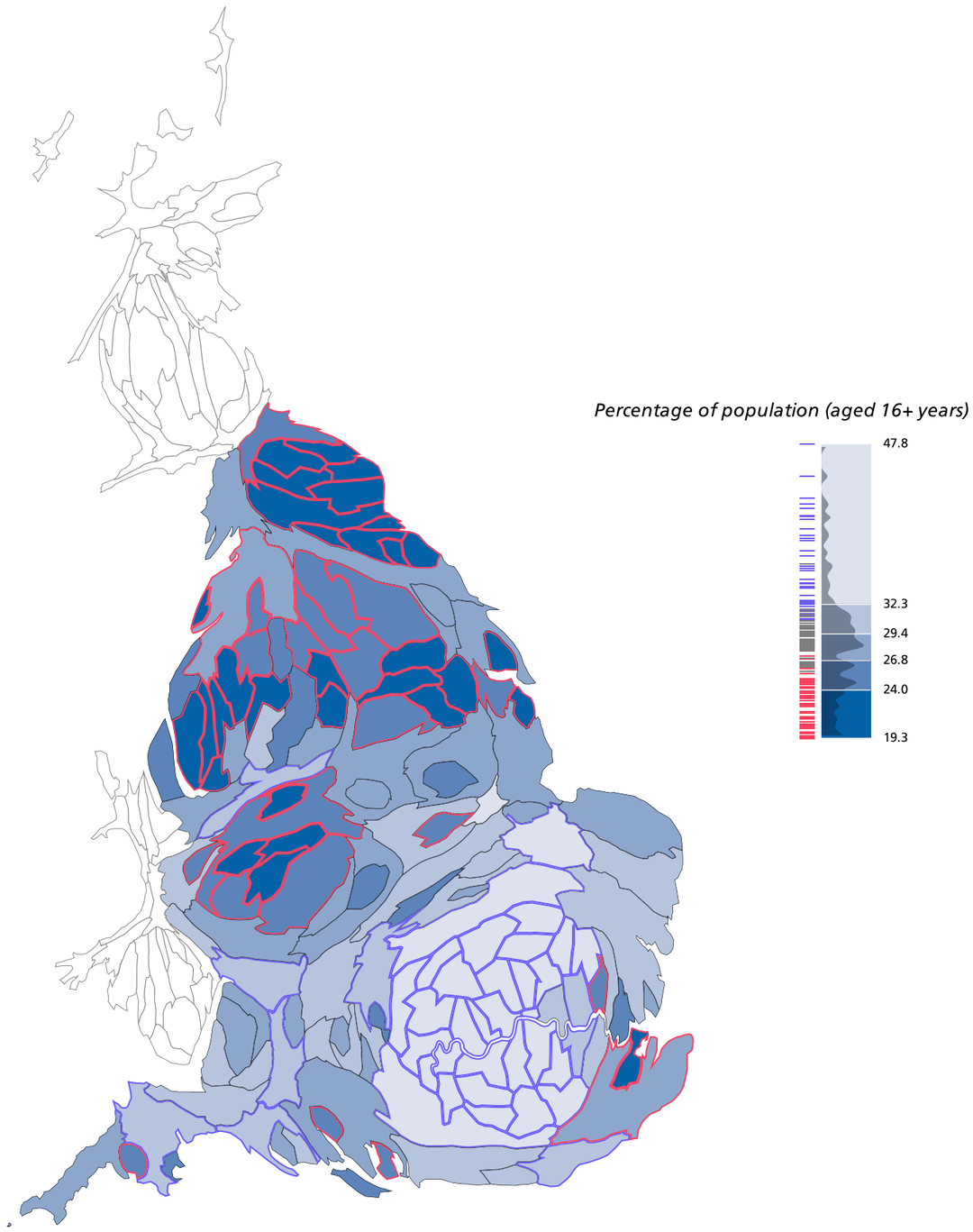


Source: National Diet and Nutrition Survey.

Nutrient and sodium intake by age and sex, UK, 2008/09-2009/10

Source: National Diet and Nutrition Survey.

Healthy eating prevalence by upper tier local authority, England, 2006-08



Source: 2012 Local Health Profiles. Note: Data for City of London and Westminster London Borough and for Isles of Scilly and Cornwall unitary authorities have been combined

Poor sexual health is responsible for significant levels of morbidity within the population, while teenage pregnancy can result in poor child and maternal health and wellbeing outcomes. Teenage parents and their children are also more likely to live in poverty.

Some groups have sexual behaviours that put them at particular risk of STIs. A third of young people use condoms inconsistently; almost 50% of men who have sex with men report an episode of unprotected anal sex in the preceding year; some ethnic groups have higher levels of sexual risk behaviour; and alcohol and illicit drug use are associated with higher numbers of sexual partners and a reduced likelihood of using protection[1].

The distribution of sexual transmitted infections at local authority level shows that the highest rates are found in many London boroughs, and in urban areas across the North West, South East and elsewhere.

Young people have higher numbers of sexual partners, and inconsistent use of condoms, putting them at risk of unintended pregnancy and contracting a sexually transmitted infection.

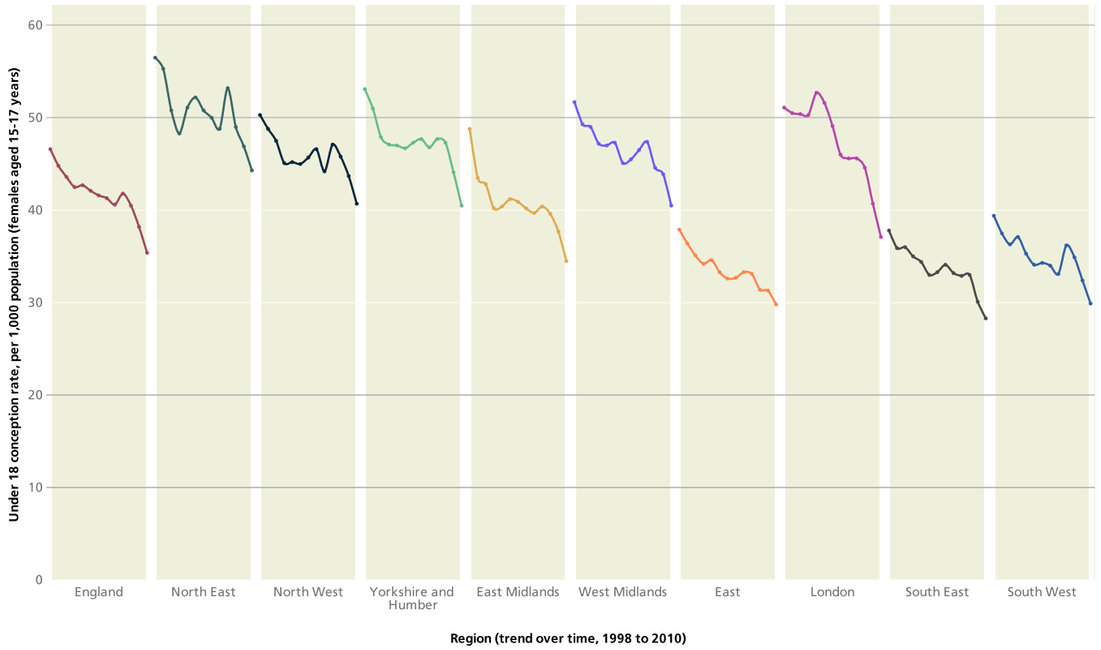
Teenage pregnancy rates fell by 24% across England between 1998 and 2010, although there remain marked differences in rates across the country. There is clear evidence of what works to reduce both poor sexual health[2] and teenage pregnancy[3].

1 Progress and priorities – working together for high quality sexual health. Independent Advisory Group on Sexual Health and HIV.

2 Start Active, Stay Active. Department of Health.

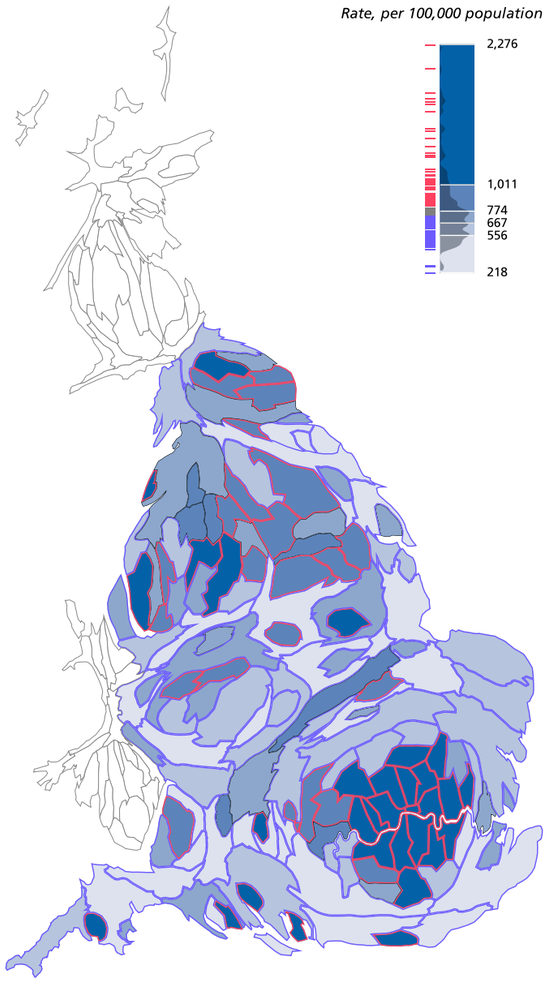
3 Teenage Pregnancy Strategy: Beyond 2010. Department for Education and Department of Health.

Trend in teenage pregnancy rate by region, England, 1998 to 2010



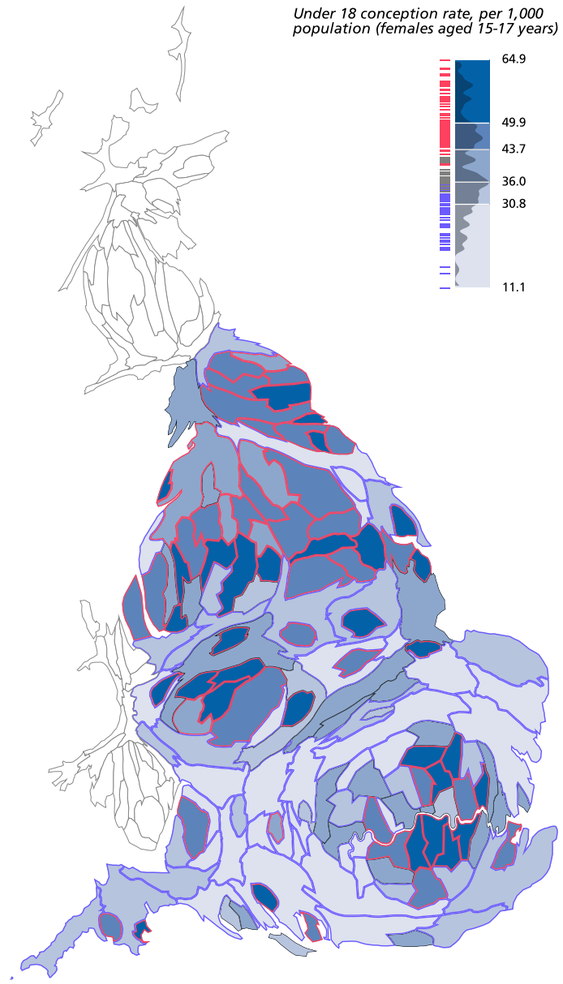
Source: Conceptions Statistics, England and Wales, 2010. ONS.

Acute sexually transmitted infection rates by upper tier local authority, England, 2010



Source: Genito-Urinary Medicine Clinic Activity Dataset (GUMCAD) and community setting (National Chlamydia Screening Programme (NCSP) & Non-NCSP/Non-GUM), HPA. 2010. Taken from 2012 Local Health Profiles. Note: Data for City of London and Westminster London Borough and for Isles of Scilly and Cornwall unitary authorities have been combined

Teenage pregnancy rates by upper tier local authority, England, 2008-10



Source: 2012 Local Health Profiles. Note: Data for City of London and Westminster London Borough and for Isles of Scilly and Cornwall unitary authorities have been combined

Urban outdoor pollution has a substantial impact on health. Although air pollution has decreased significantly since the 1970s as a result of technological advances and legislation, it remains a problem and can have an adverse impact on health, particularly among older people and those with existing conditions.

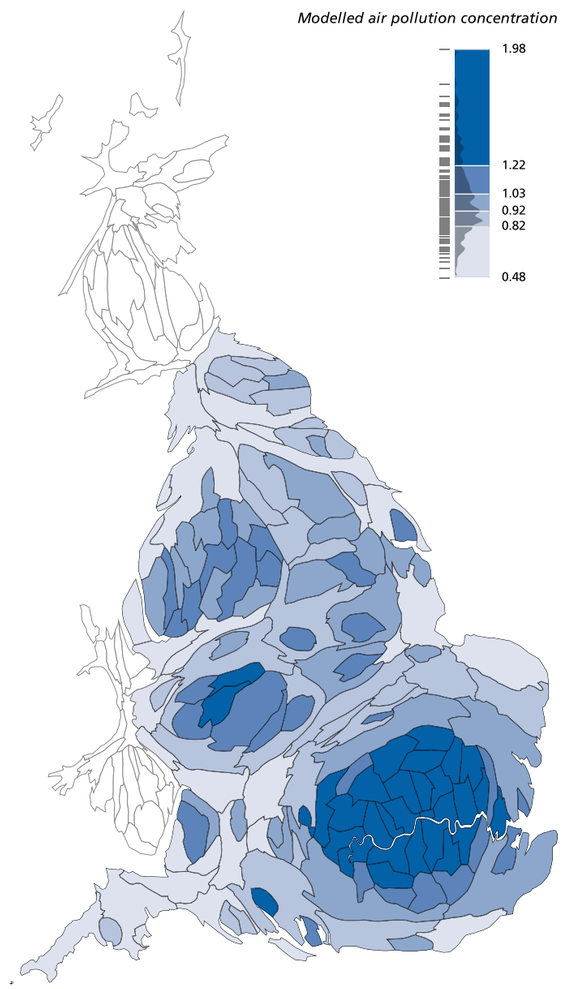
The majority of urban outdoor pollution is a consequence of our reliance on fossil fuels for transport and for generating heat and electricity. Particulate air pollution is composed of different chemicals, including toxic metals and organic compounds. Particulates are of particular concern as there is evidence that small particles are carried deep into the lungs where they cause inflammation and cause or exacerbate heart and lung disease.

Road transport is responsible for up to 70% of air pollutants in urban areas. Detailed local estimates are available[1], but average figures at local authority level suggest that the poorest air quality and highest particulate concentrations in England are found in and around London and Birmingham.

An estimated 29,000 deaths a year are attributable to air pollution, and the predicted health gain if all man made particles were removed from the air is an increase in life expectancy from birth of six months.

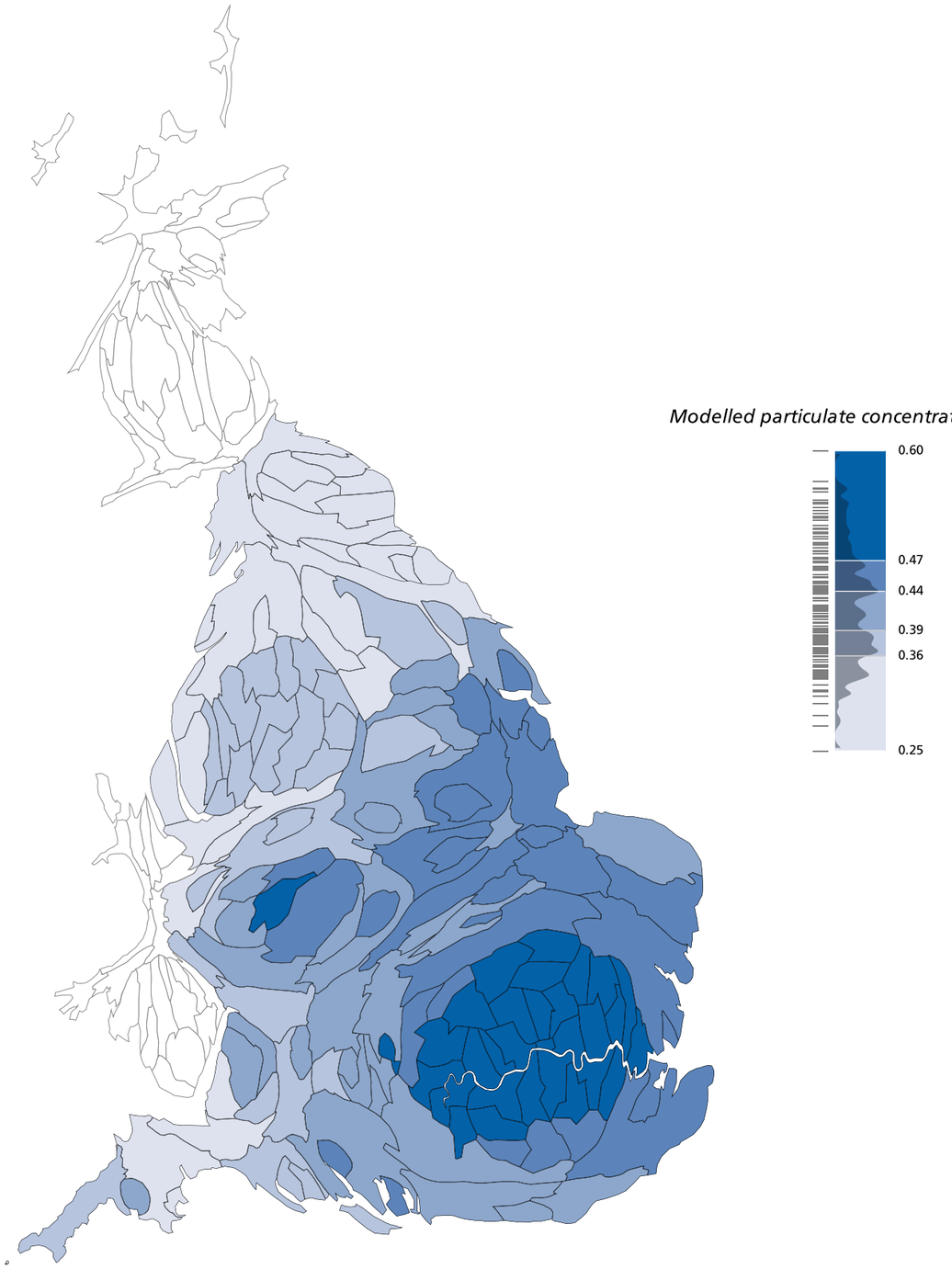
1 http://www.defra.gov.uk/statistics/environment/air-quality

Air quality by upper tier local authority, England, 2010



Source: English Indices of Deprivation 2010, DCLG. (Estimates produced by Staffordshire University; Analysis by DH)

Particulate concentration by upper tier local authority, England, 2010



Source: English Indices of Deprivation 2010, DCLG. (Estimates produced by Staffordshire University; Analysis by DH)

Much of the available information on the health behaviours of the population of England focuses on the prevalence of specific individual risk factors. However, these factors often occur alongside one another, and many people have multiple lifestyle risks to their health.

These percentages vary by age group and sex. Information on the clustering of seven lifestyle risk factors – smoking, binge drinking, low fruit and vegetable consumption, obesity, diabetes, high blood pressure and raised cholesterol[1] – is available from the Health Survey for England. Approximately 25% of those aged 16 and over report one lifestyle risk factor, 33% two risk factors, 23% three risk factors and 12% four or more risk factors. Only 7% of adults have no risk factors.

Among males, the percentage with four or more risk factors increases from 3.5% of 16 to 24 year olds, to 21.4% of those aged 55 to 64, before declining to 11% of those aged 75 and over. Among females, the percentage with four or more risks rises from 5.5% of 16 to 24 year olds, to 16.2% of those aged 65 to 74, before falling to 12.7% of the 75 and over group. For both sexes, the increase between the first two age groups is mainly due to the rise with age in the prevalence of raised cholesterol, hypertension, obesity and diabetes.

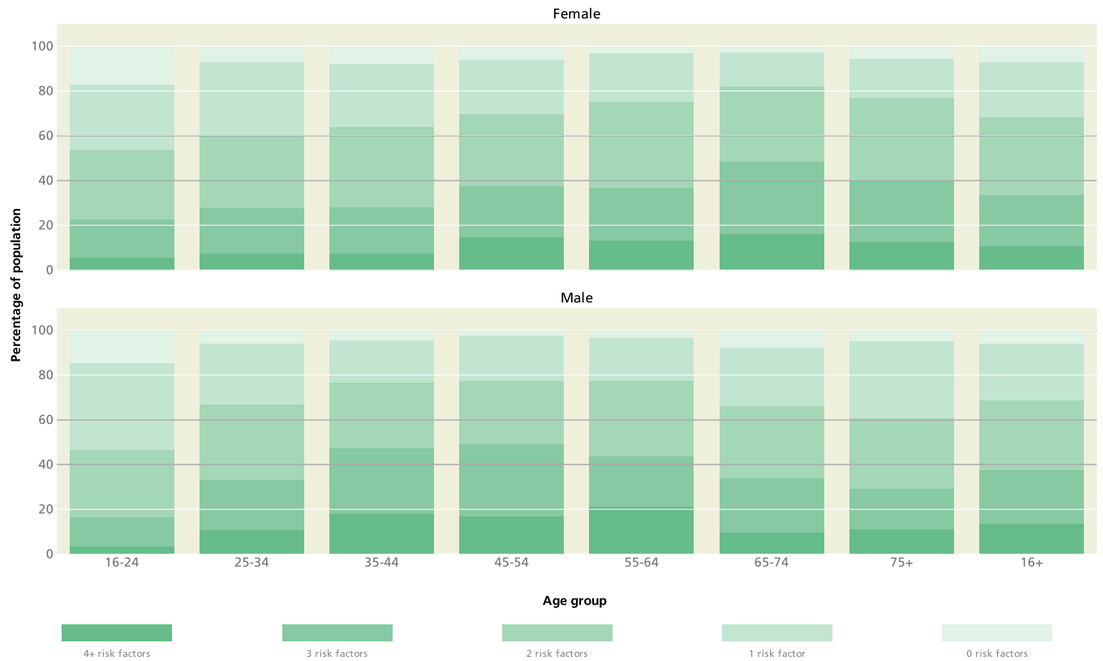
There is a socioeconomic gradient in the percentage of adults with multiple risk factors. Among males, the percentage with three or more risks rises from 34.7% in the least deprived national quintile to 42.4% of the most deprived quintile. Among women, the corresponding increase is from 23.4% and 42.3%. The differences between the quintiles are mainly due to the higher prevalence of smoking, obesity and diabetes in more deprived areas.

There is evidence that the percentage of adults with multiple risk factors is decreasing. For example, 47.9% of males had three or more risks in 2003 compared to 37.5% in 2010. Among females, the figure fell from 39.1% to 33.7% over the same period. These improvements are mainly due to the reduced prevalence of raised cholesterol, hypertension and smoking, although over the same period, there has been a less positive decline in healthy eating levels, an increase in binge drinking, and increases in the prevalence of obesity and diabetes.

These results show that the majority of adults in England have multiple lifestyle risks to their health. Understanding the way these factors interact is central to increasing the effectiveness of interventions to improve health and wellbeing, and to reducing inequalities.

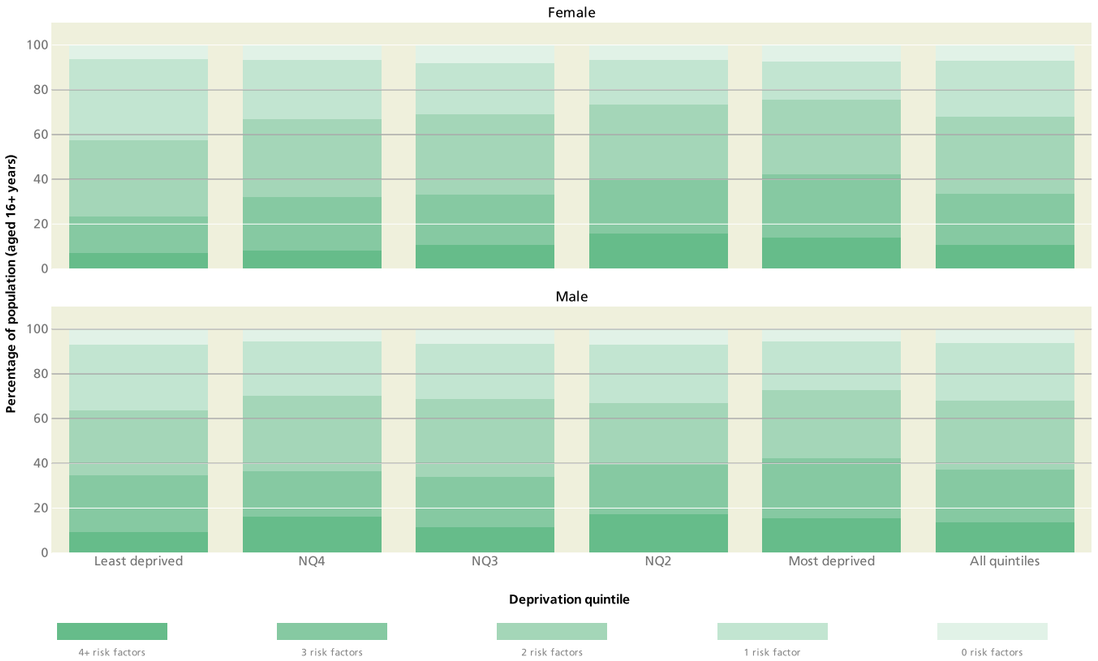
1 Changes to the way the Health Survey for England measures physical activity levels meant it was not possible to include this risk factor in the analysis. All the figures presented are weighted for non-response.

Multiple risk factors by age and sex, England, 2010



Source: Health Survey for England 2010. Copyright © 2012. Re-used with the permission of The Health and Social Care Information Centre. All rights reserved.

Multiple risk factors by deprivation, England, 2010



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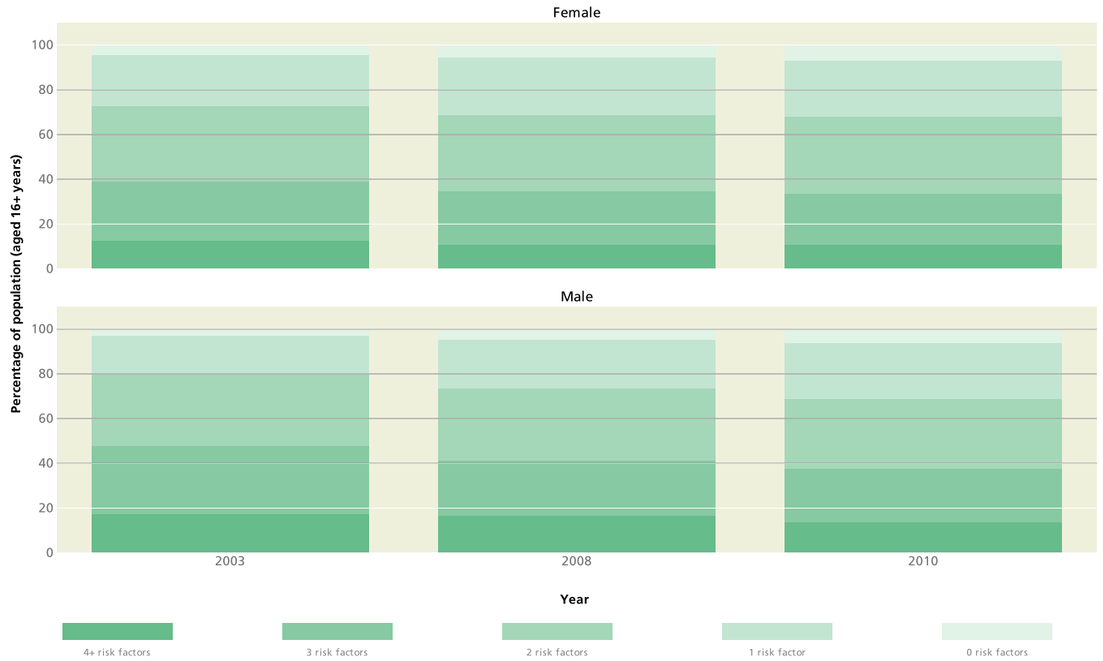
Trend in multiple risk factors by sex, England, 2003, 2008 and 2010



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Chapter 4

Social determinants of health

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The social determinants of health are the conditions of daily life and the fundamental drivers that give rise to them – often referred to as the 'causes of the causes' of ill health[1]. Inequalities in the social determinants lead to inequalities in health. *Fair Society, Healthy Lives*[2], the report of the strategic review of health inequalities in England post 2010, led by Sir Michael Marmot, presented the latest evidence on inequalities in the social determinants and the relationship to health outcomes. The Public Health White Paper *Healthy Lives, Healthy People*[3], published in November 2010, responded to the review and adopts its life course framework for tackling the social determinants of health.

The early years of a child's life set the foundations for their experiences throughout the rest of their life. For example, a child's development during the early years, including before birth, strongly influences their ability to sustain positive relationships, develop skills and build the capacity and resilience needed to have control over their lives. These in turn determine their educational attainment, employment and health. Giving every child the best possible start in life will reduce health inequalities and improve the population's health right across the life course[2].

This chapter examines trends and inequalities in the social determinants of health. It is divided into 14 sections reflecting five of the six areas of action highlighted in *Fair Society, Healthy Lives*[2]. The action areas considered are:

- Early years (child development)
- Cognitive skills (educational attainment)
- Employment and work (unemployment, work related ill health and health risks, working conditions)
- Healthy standard of living (income, poverty, fuel poverty, deprivation)
- Sustainable communities, places and vulnerability (green space and green infrastructure, housing conditions, homelessness, crime and fear of crime, social inclusion)

Data on the health behaviours that reflect the sixth area of action identified in *Fair Society, Healthy Lives*, to strengthen the role and impact of ill-health prevention, are presented elsewhere in this report. However, many of these health behaviours are strongly related to the social determinants of health. For example, data from the *Integrated Household Survey* (October 2010 to September 2011) show that smoking prevalence in England is 20% for all adults aged 18 and over, while for those in the routine and manual group it is 30%. Therefore, many of the actions to tackle the social determinants of health impact on health behaviours by creating the conditions for people to have greater control over their lives[4].

The *Public Health Outcomes Framework*[5] sets out the Government's desired outcomes for public health between now and 2016 and how they will be measured. It includes indicators on the wider determinants of health. Where possible and where relevant, the indicators presented in this chapter align with those included in the Public Health Outcomes Framework. However, this has not been possible where a relevant outcomes framework indicator has not been defined or data are not available.

This chapter contains a number of maps illustrating geographic inequalities in the social determinants of health by upper tier local authority. The inequalities between areas, presented by these maps, often reflect the inequalities in health outcomes presented in other chapters. For example, the map 'Proportion of the population living in the most deprived national quintile by upper tier local authority, England, 2010' closely reflects the maps shown in the 'Life expectancy' pages of this report (see Chapter 2), particularly the map of male life expectancy. Generally, those local authorities with a high percentage of the population living in deprived areas have lower than average male life expectancy. The map 'Proportion of children aged under 16 living in poverty that are in lone parent families by upper tier local authority, England, 2009' closely reflects the maps of childhood obesity shown in the 'Physical activity' pages of this report (see Chapter 3). Generally, those local authorities with a large percentage of children living in poverty also have high childhood obesity levels.

Areas with the worst picture in terms of social determinants are often those with the worst health outcomes, however, this is not always the case as the relationship between health and the determinants is often more complex, and the determinants are often inter-related. For example, the map of excess winter deaths in this report ('Excess Winter Deaths Index by upper tier local authority, England, 2007-10', see Chapter 2), does not fully reflect the map 'Proportion of the population living in the most deprived national quintile by upper tier local authority, England, 2010' shown in the 'Healthy standard of living - deprivation' pages of this chapter, as other factors, such as the percentage of the population over 65 years, housing quality and home insulation will affect the level of excess winter deaths.

To reflect fully the social determinants of health this chapter also presents inequalities in the social and economic conditions of different population groups e.g. age groups, ethnic groups, people with a disability or different household types.

Many groups present a poor picture across a range of indicators as the determinants of health are often inter-related. For example:

- Among children who receive free school meals, a lower than average percentage are assessed as ready for school at age five and achieve the required educational attainment levels at each subsequent key stage. A higher percentage of persons who receive free school meals in year 11 are not in education, employment or training (NEET) at age 19.
- Single adults with children have lower than average income levels, and a large proportion of children living in poverty are also in lone parent families. In addition, a large percentage of young people under the age of 20 with their own children are NEET.
- Single pensioners have lower than average income levels and a high percentage live in fuel poverty. In addition, single person households are more likely to live in non-decent housing.

For those social determinants where it is possible to present inequalities on an ordered scale e.g. unemployment rates by deprivation deciles, a clear social gradient is apparent. That is to say, as the level of deprivation increases, the unemployment rate increases. Therefore, it is important to address the social determinants across the whole social gradient, as opposed to focusing on the worst off or most deprived areas.

The Government has an ambitious programme to improve public health through strengthening local action, supporting self-esteem and behavioural changes, promoting healthy choices and changing the environment to support healthier lives. As part of this programme local authorities will regain a much greater responsibility for improving public health. Local authorities already have direct responsibility for the environment in which people live, work and play including housing, green space, leisure and workplaces – all of which have a direct impact on health and wellbeing. Local authorities also have direct responsibility for a number of key services that protect and improve health e.g. fire services, education services and road safety. For these reasons, local authorities are well placed to take on a broader remit for public health.

References

1. CSDH (2008) Closing the gap in a generation: *health equity through action on the social determinants of health. Final Report of the Commission on Social Determinants of Health*. Geneva: World Health Organisation.

2. Marmot Review Team (2010) *Fair Society, Healthy Lives: Strategic review of health inequalities in England post-2010* (The Marmot Review). London: Marmot Review Team.

3. HM Government (2010) *Healthy Lives, Healthy People: Our strategy for public health in England*. London: Department of Health.

4. Marmot M, Allen J, Bell R and Goldblatt P, Building of the global movement for health equity: from Santiago to Rio and beyond. Lancet 2012; 379: 9811: 181-188

5. Department of Health (2012) *Healthy Lives, Healthy People: Improving outcomes and supporting transparency. Part 1: A public health outcomes framework for England, 2013-2016*. London: Department of Health The Stationery Office.

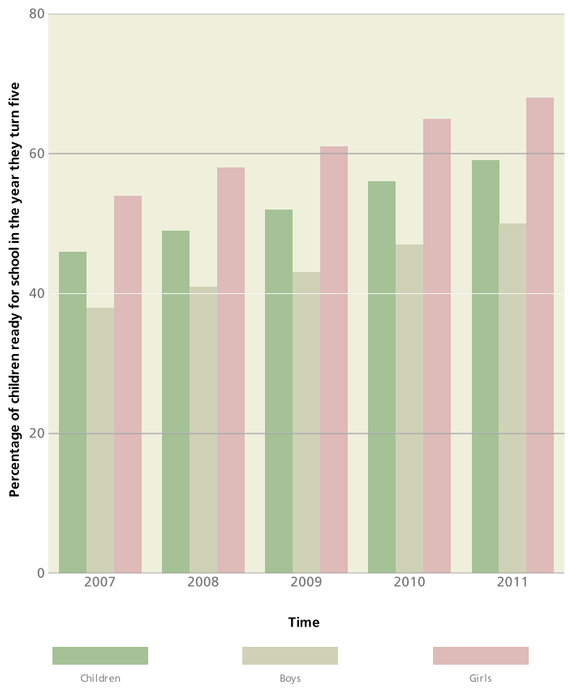
To reduce health inequalities across the life course, it is crucial that we work towards 'giving every child the best start in life'. A child's development during the early years has a lifelong effect on many aspects of health and wellbeing.

The percentage of children assessed as being ready for school has increased since 2007 but still varies considerably by local authority. Readiness is determined by observing children's behaviour and understanding against a range of learning goals. Children of Travellers with Irish heritage and Gypsy/Roma ethnicities have the lowest levels of school readiness. Boys have a lower level of school readiness than girls. Receipt of free school meals is often used as an indicator of deprivation. Excepting the Gypsy/Roma ethnic group, children of all ethnicities who receive free school meals (FSM) have lower levels of school readiness than those who do not.

Early intervention covers a range of tried and tested policies for the first three years of children's lives. These can make lasting improvements in their development, and, if focused on the most deprived, could reduce inequalities in child development[1].

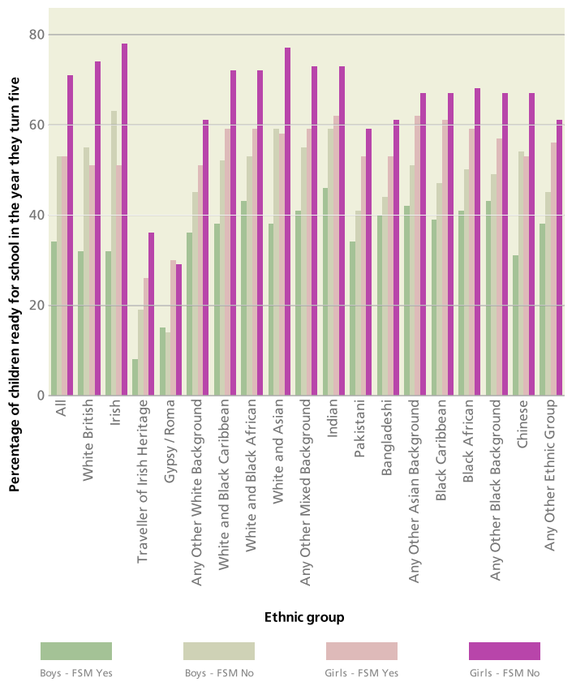
1 Allen, G. (2011) *Early intervention: The next steps. An independent report to Her Majesty's Government.* London: The Cabinet Office.

Trend in readiness for school, England, 2007 to 2011



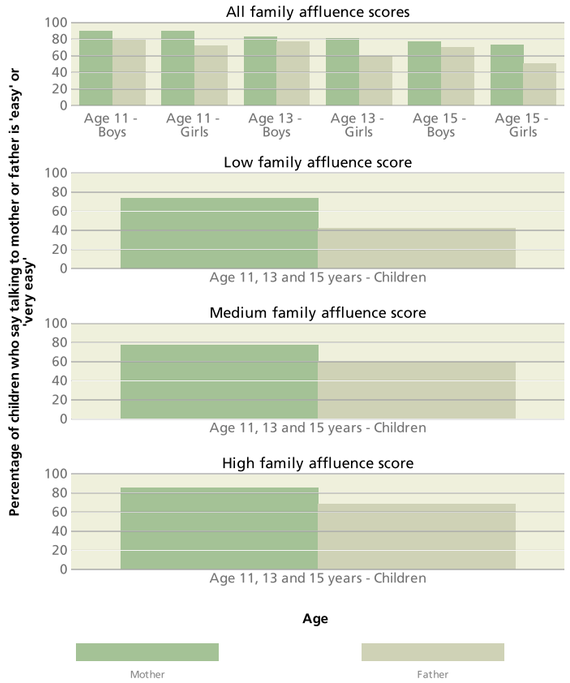
Source: DFE.

Readiness for school by sex, ethnicity and free school meal (FSM) status, England, 2011



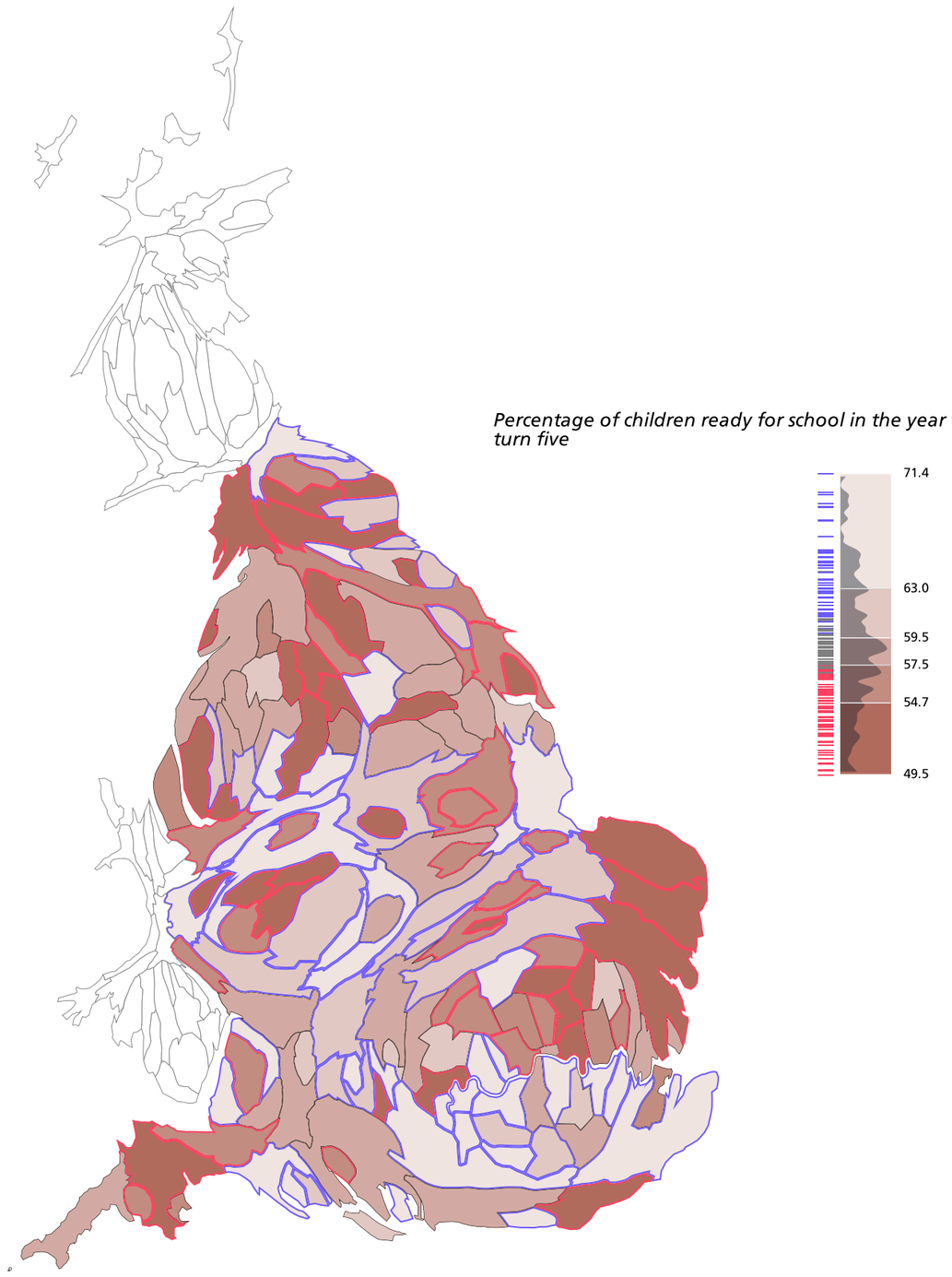
Source: DFE.

Ease of communication with parents by age and sex of child and family affluence score, England, 2010



Source: Health Behaviour in School-aged Children, England National Report, October 2011. Findings from the 2010 HBSC study for England. (Provided by ChiMat)

Readiness for school at age five by upper tier local authority, England, 2011



Source: DFE.

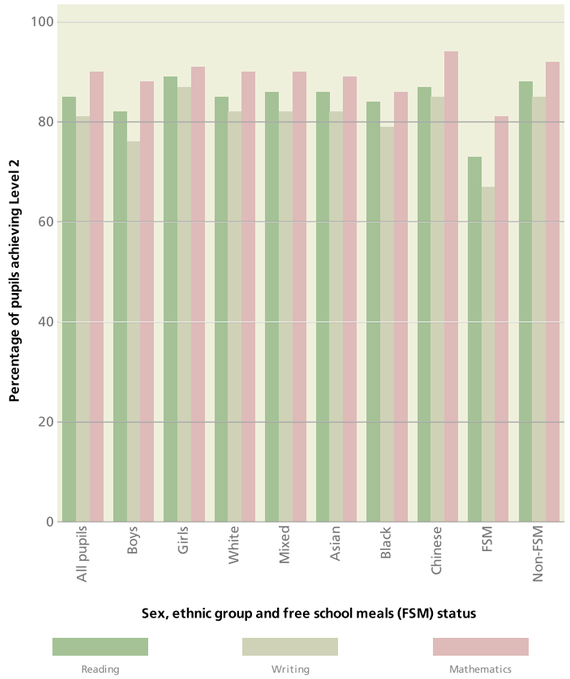
Educational attainment is strongly related to deprivation, socioeconomic factors, parental educational attainment, family support and the characteristics of individual schools. It is also associated with reduced smoking, improved diet and increased physical activity.

At Key Stage 1, children who receive free school meals are less likely to achieve the required level of attainment in reading, writing and mathematics than those who do not. Boys have a lower level of attainment than girls, and boys in the White ethnic group who claim free school meals have the lowest level of attainment. Children of Chinese origin have a higher level of attainment than other ethnic groups. Within the White ethnic group, children of Travellers of Irish Heritage and Gypsy/Roma ethnicities have the lowest level of attainment. The picture is similar at Key Stage 2.

Although GCSE achievement has increased since 2006/07, Key Stage 1 and 2 achievement has remained fairly constant. GCSE, A level and undergraduate study achievement varies considerably by local authority.

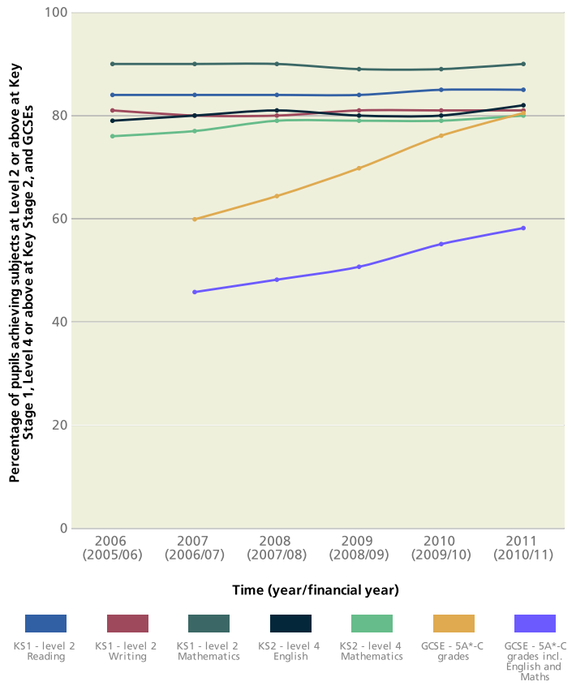
Local authorities should prioritise educational outcomes as a key area for action. To reduce health inequalities, strategic plans and action should consider all stages of educational development.

Educational attainment at Key Stage 1 by sex, ethnic group, free school meals status (FSM) and subject, England, 2011



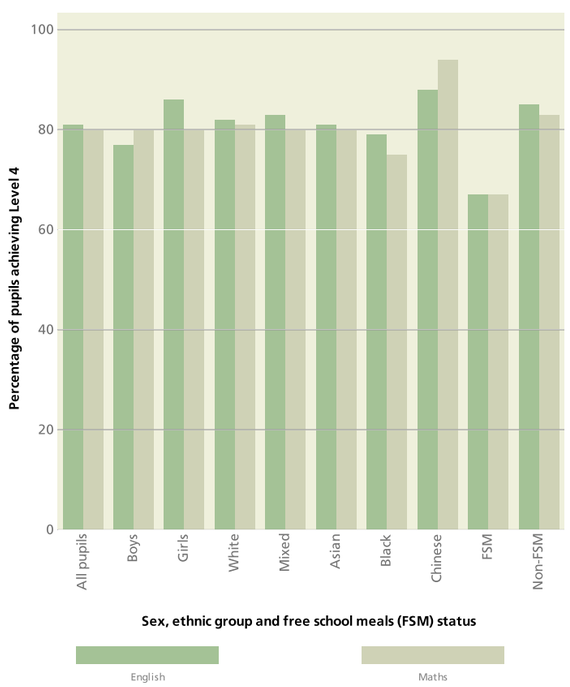
Source: DFE.

Trend in educational attainment at key stages, England, 2006 to 2011



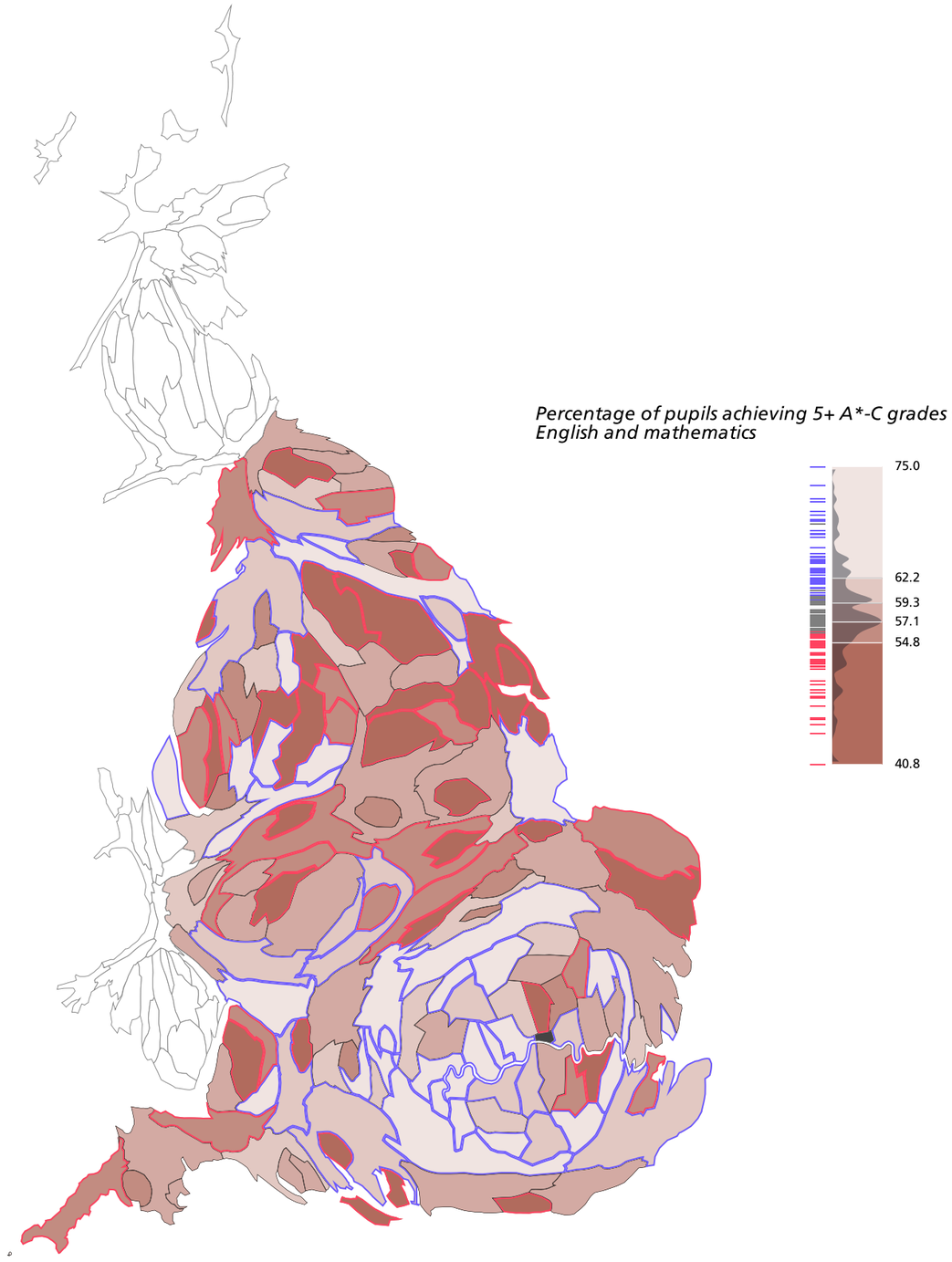
Source: DFE.

Educational attainment at Key Stage 2 by sex, ethnic group, free school meals (FSM) status and subject, England, 2011



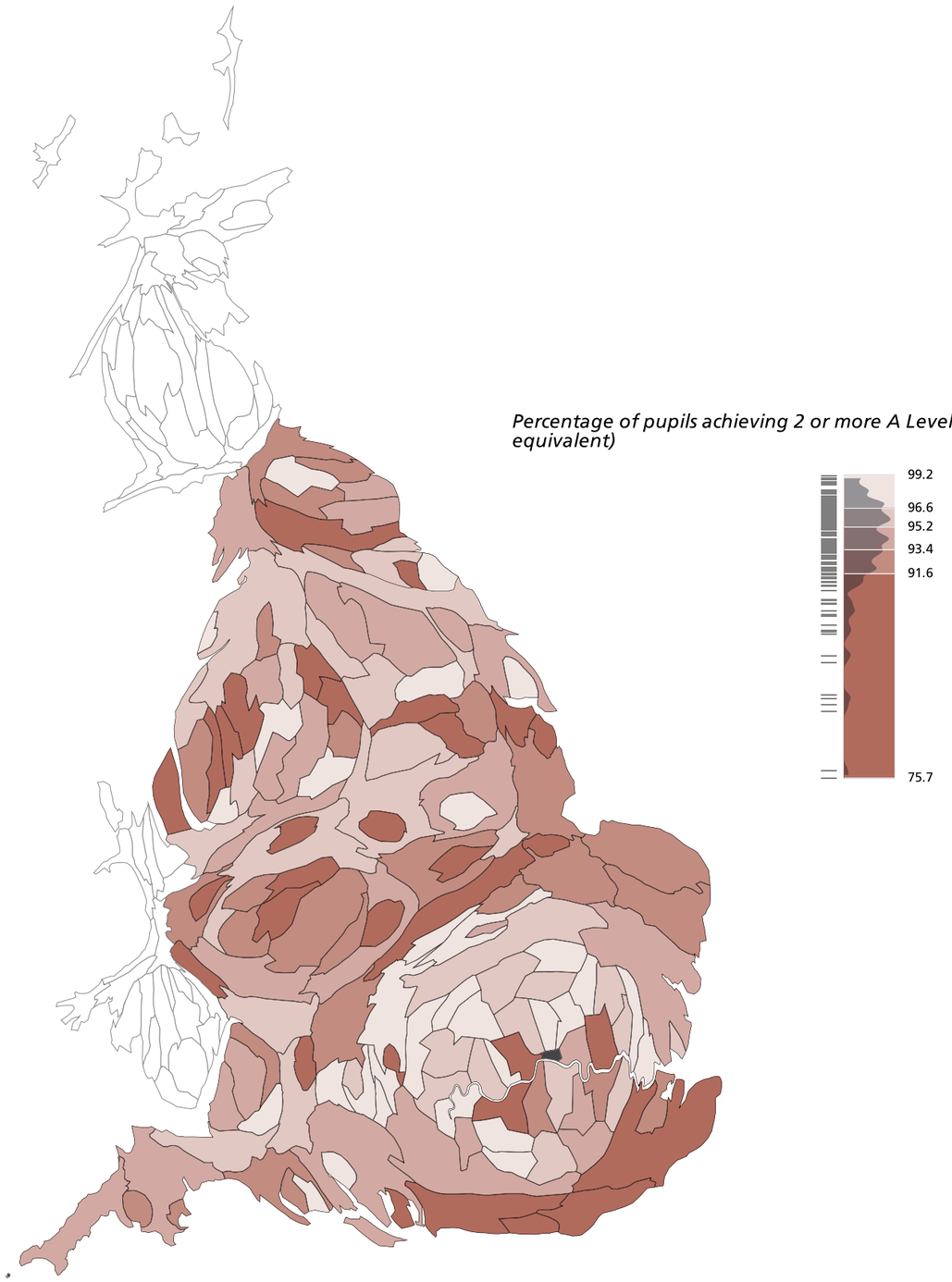
Source: DFE.

GCSE achievement by upper tier local authority, England, 2010/11



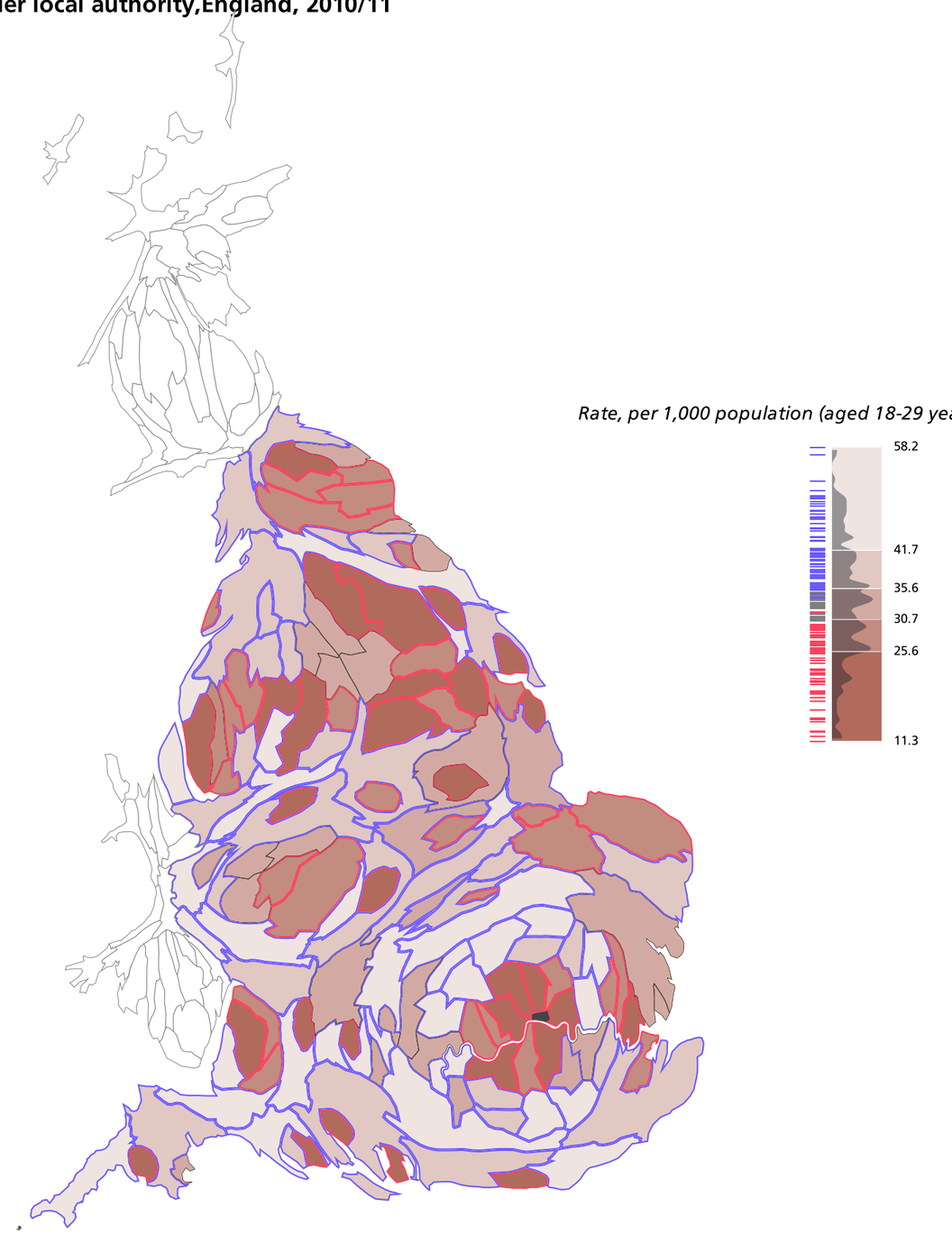
Source: DCLG. (Provided by 2012 Local Health Profiles)

A level achievement by pupils aged 16 to 18 years by upper tier local authority, England, 2010/11



Source: DFE.

First degree or other undergraduate qualification achievement rate in persons aged 18 to 29 years by upper tier local authority,England, 2010/11



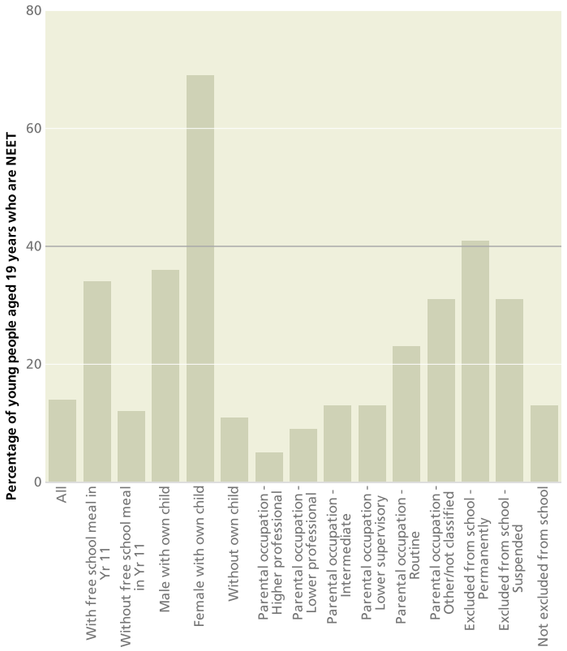
Source: HESA Student Record 2010/11, Copyright Higher Education Statistics Agency Ltd 2012. HESA cannot accept responsibility for any inferences or conclusions derived from the data by third parties. 2010 population estimates, ONS. (Analysis by LHO)

Unemployment is associated with a range of health risks and health inequalities caused both by the event of becoming unemployed as well as the reduced income, deprivation and poverty due to being out of work. The risk of ill health increases as the duration of unemployment increases. The unemployment rate, and rate of long term unemployment, are generally highest in the most deprived areas.

National deprivation deciles (ND) divide small areas into ten groups according to the level of deprivation in the area. Unemployment increased between July 2007 - June 2008 and July 2009 - June 2010 among both men and women, and in all areas regardless of the level of deprivation in the area. However, the trend since July 2009 - June 2010 varies by sex and the level of deprivation in the area.

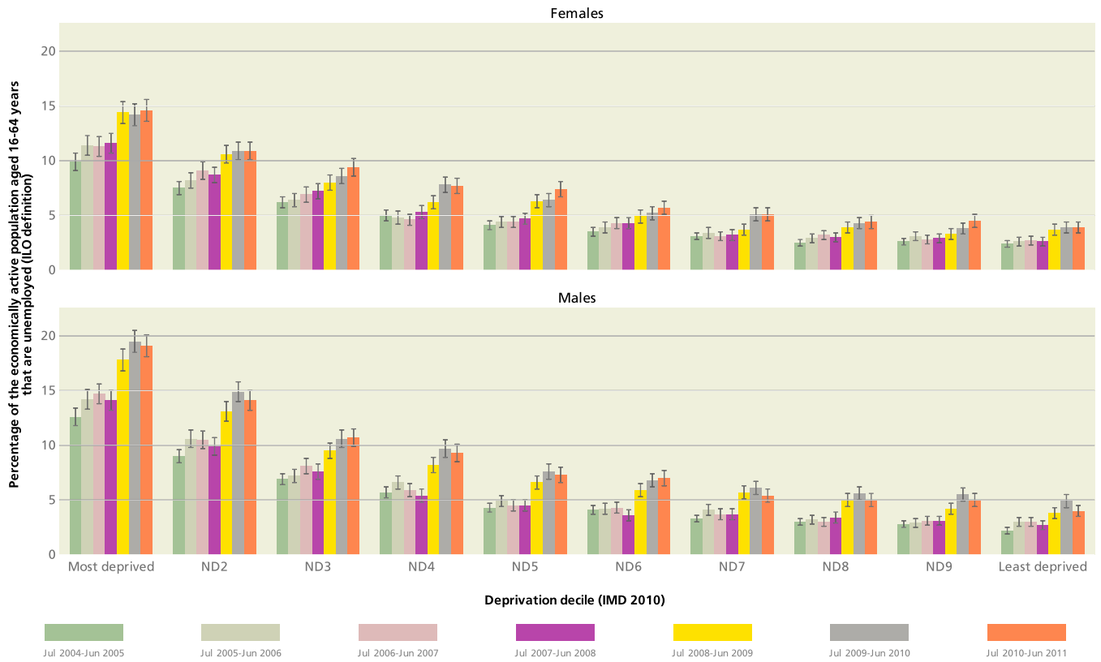
About 6% of people aged 16-18 are not in employment, education or training (NEET). This varies by local authority and is highest in the north of England and selected towns in the south of England. Data from the Youth Cohort Study suggest that as many as 14% of 19 year olds are NEET. In addition, among 19 year olds, almost 70% of females and 36% of males who have their own children are NEET, as are 41% of those who were permanently excluded from school and 34% of those who received free school meals in year 11.

Young persons aged 19 years not in employment, education or training (NEET) by personal or family characteristic, England, May 2011



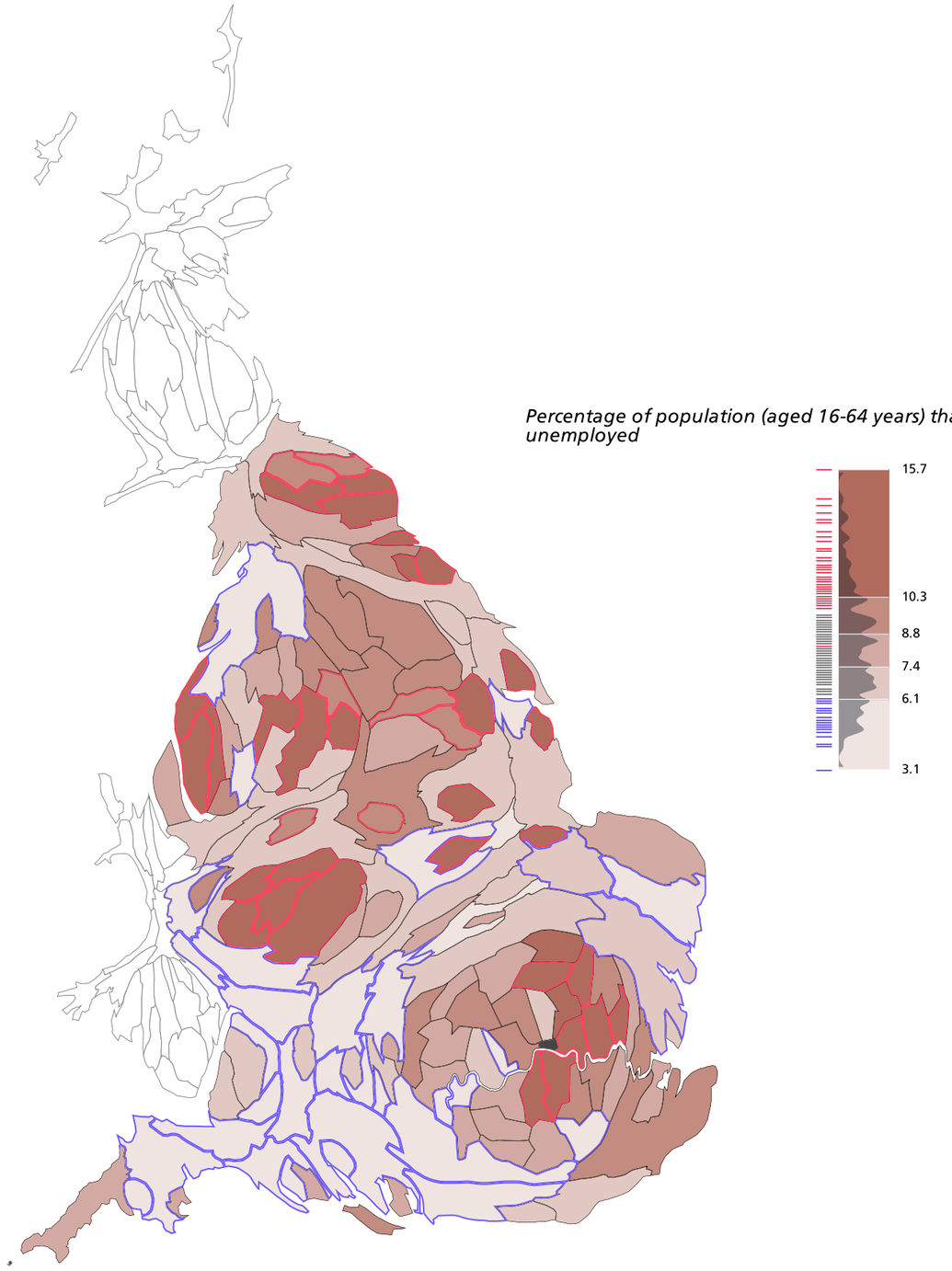
Source: Youth Cohort Study & Longitudinal Study of Young People in England, DFE.

Trend in unemployment by sex and deprivation decile, England, July 2004-June 2005 to July 2010-June 2011



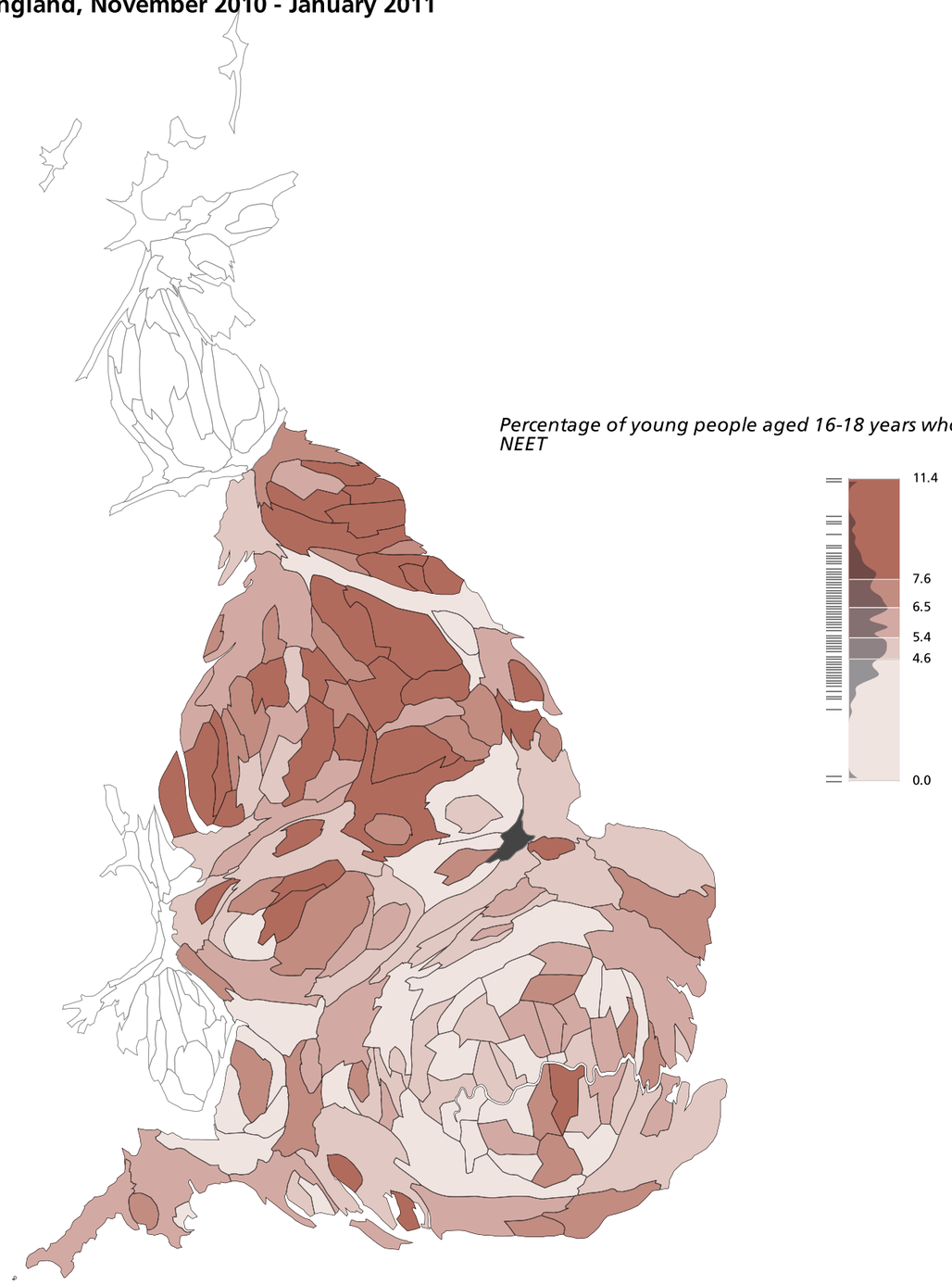
Source: NOMIS, ONS.

Unemployment (ILO definition) by upper tier local authority, England, July 2010 - June 2011



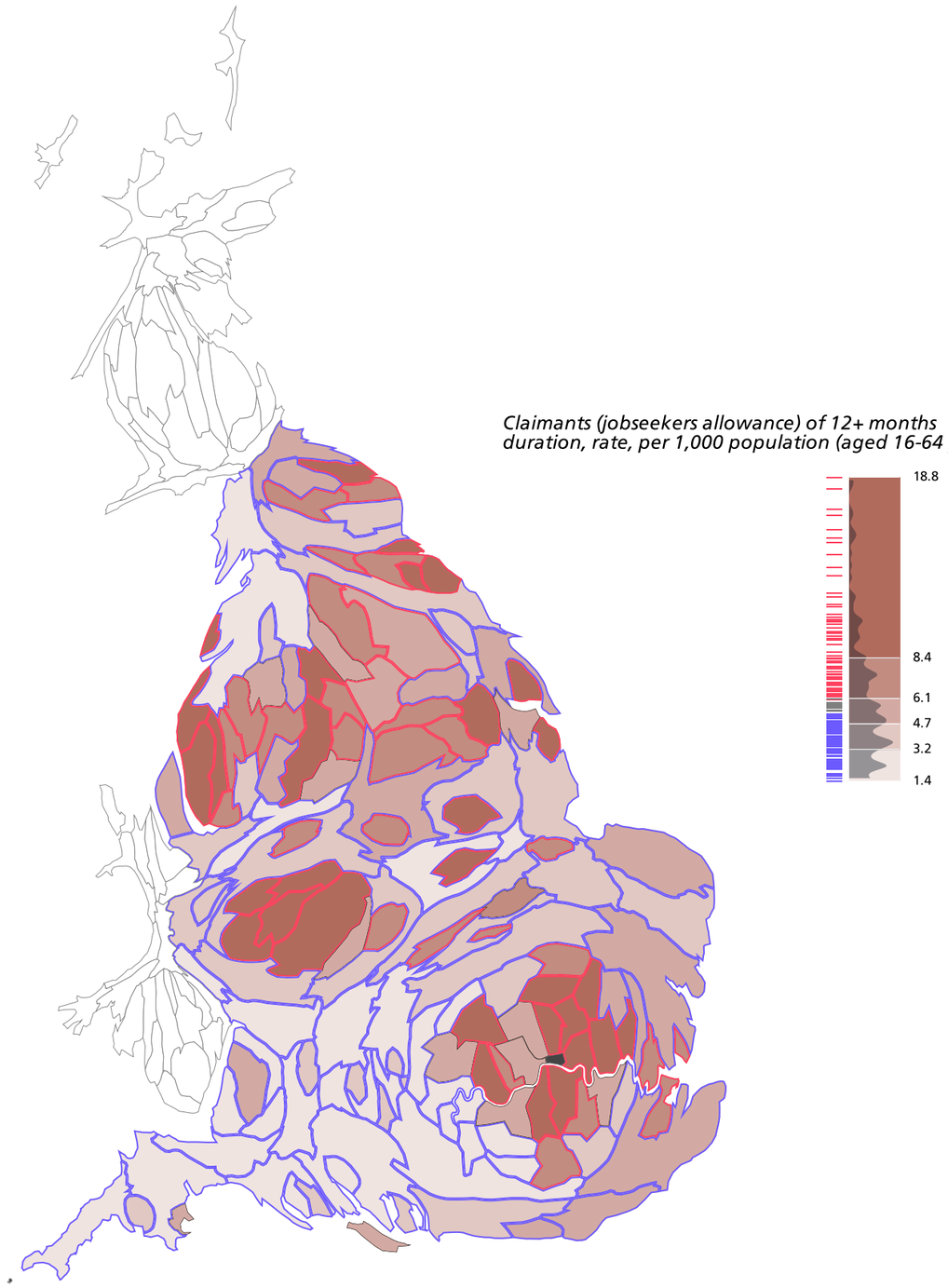
Source: NOMIS, ONS.

Proportion of young persons not in employment, education or training (NEET) by upper tier local authority, England, November 2010 - January 2011



Source: DfE.

Long term unemployment rate by upper tier local authority, England, 2011



Source: ONS. (Provided by 2012 Local Health Profiles)

Exposure to physical hazards at work, a stressful working environment, physically or emotionally demanding work and dangerous work can increase the risk of sickness absence and pose a risk to health. These conditions are more common among certain jobs and population groups, leading to health inequalities.

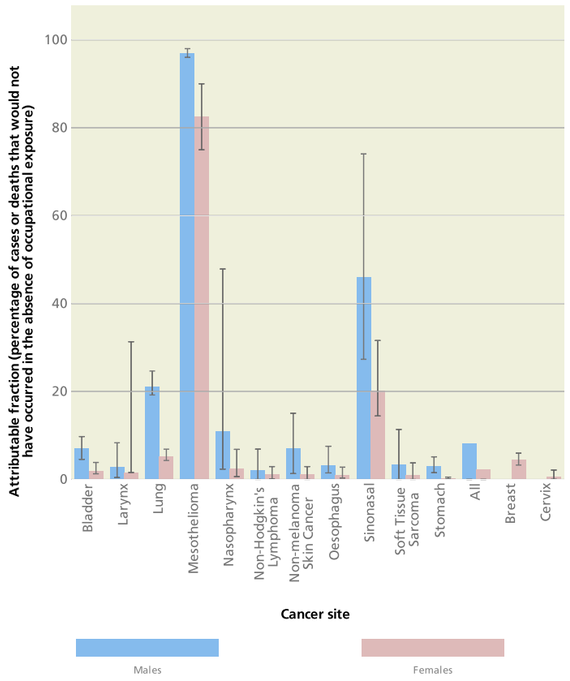
In England, in 2009-2011, 2.4% of employees had a least one day of sickness or injury absence in a given week. This percentage varied by local authority. There has been no consistent trend in absence by age and sex since 2006.

In 2010/11, the rate of self-reported illness caused or made worse by work was highest in the South West and lowest in the West Midlands. It was highest for musculoskeletal disorders, and for common mental health disorders such as stress, depression or anxiety.

For conditions such as cancer it is possible to estimate the number of cases and deaths that would not have occurred without occupational exposure to hazards. 97% of mesothelioma cases in men and 83% of cases in women, and 46% of sinonasal cancer cases in men and 20% in women, would not have occurred.

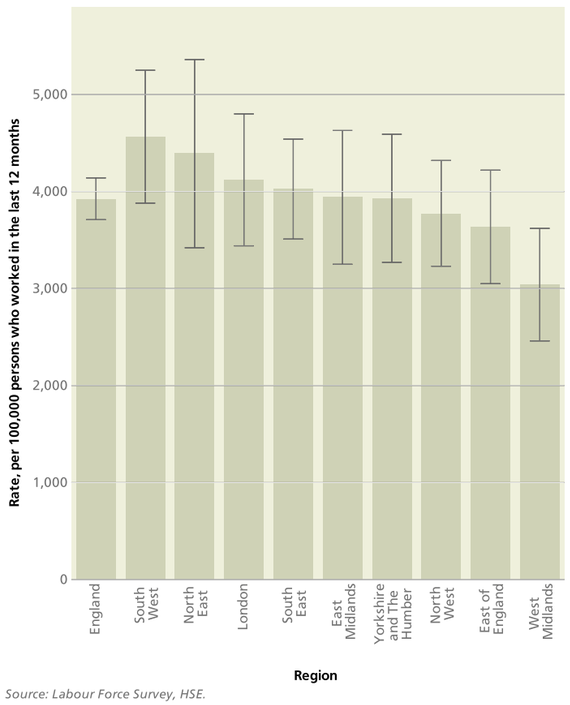
The newly formed Health and Wellbeing Boards need to be encouraged to work with local employers to reduce ill health associated with the workplace, including reducing stress.

Cancer attributable to occupation, by cancer site and sex, Great Britain, 2004/05



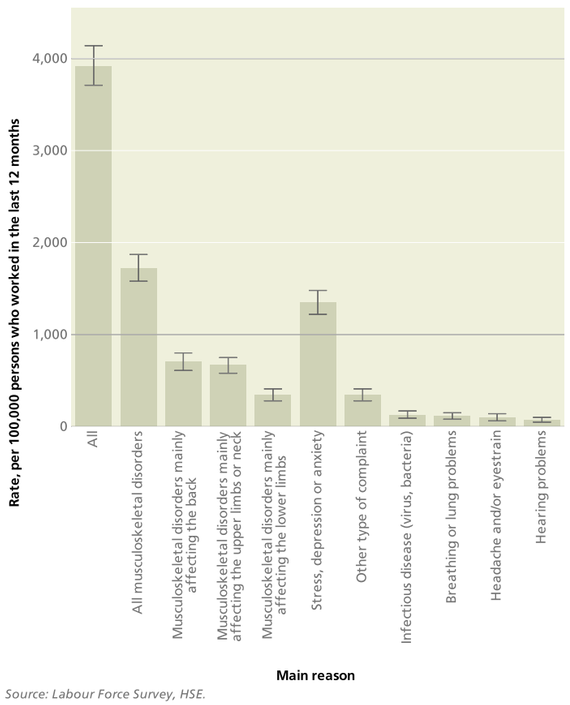
Source: Burden of Occupational Cancer in Great Britain, HSE.

Estimated rate of self-reported illness caused or made worse by work, by region, 2010/11



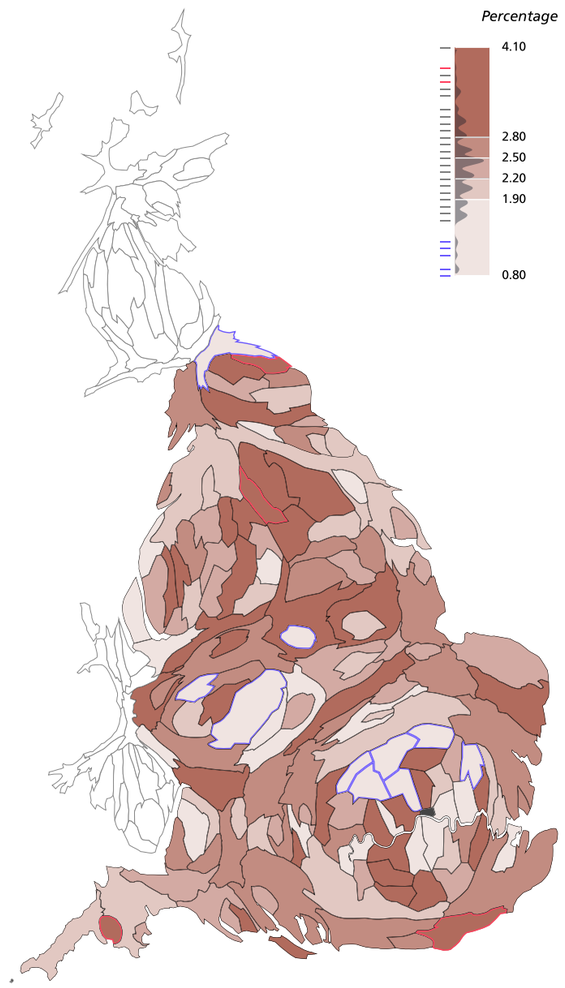
Source: Labour Force Survey, HSE.

Estimated rate of self-reported illness caused or made worse by work, by main reason, England, 2010/11



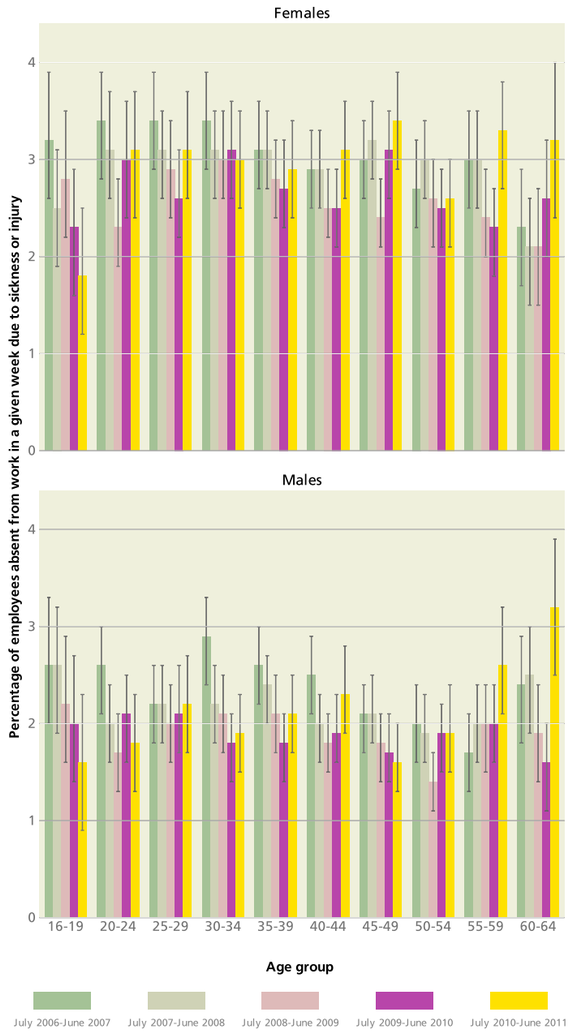
Source: Labour Force Survey, HSE.

Proportion of employees absence due to sickness or injury by upper tier local authority, England, July 2009 - June 2011



Source: Greater London Authority Intelligence Unit analysis of ONS Annual Population Survey Dataset (July 2009 - June 2011). Data obtained under special license from the Economic and Social Data Service.

Trend in sickness absence by age and sex, England, July 2006-June 2007 to July 2010-June 2011



Source: Greater London Authority Intelligence Unit analysis of ONS Annual Population Survey Dataset (July 2006 - June 2011). Data obtained under special license from the Economic and Social Data Service.

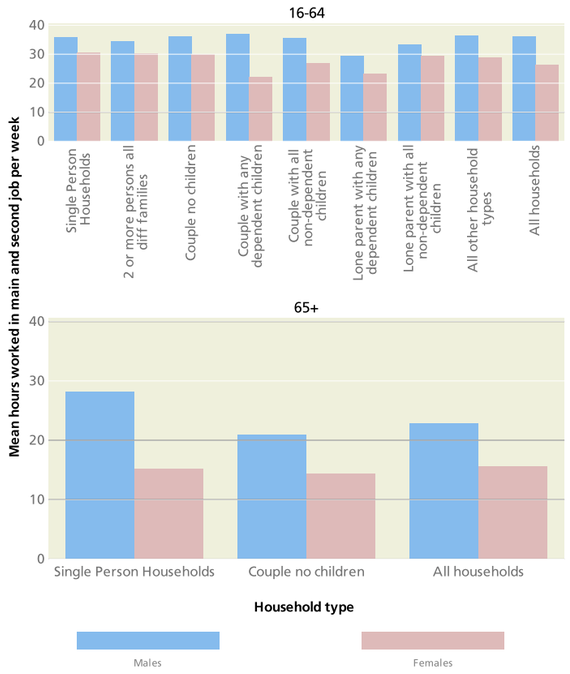
Long or irregular working hours, shift work and other aspects of working life can adversely affect health. In 2010-2011, 24% of the working population worked 45 hours or more a week. This percentage was highest in areas in and around London. On average, men work more hours in paid employment per week than women. This difference is greatest among those living in couple households with dependent children and those over the age of 65 living alone. However, the unequal gender distribution, at the population level, of domestic and carer responsibilities should be taken into consideration.

Among men aged 16-64, those living in lone parent households work the shortest hours in paid employment. Among women aged 16-64, lone parents and those living in couple households with dependent children work the shortest hours. Lone parents and other households with children have to balance paid employment with childcare responsibilities.

People in managerial, professional and administrative occupations are most likely to be offered flexible working options along with those earning more than £20,800 per year.

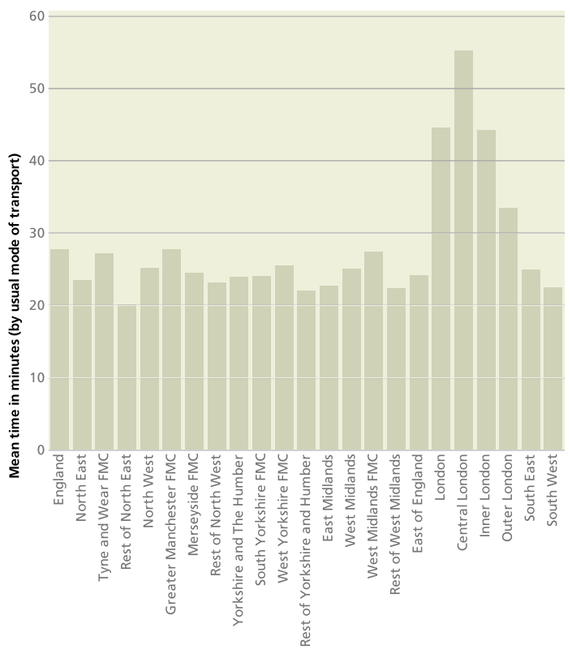
In the last quarter of 2010, people took an average of 28 minutes to get to work. This rose to 55 minutes for those working in Central London.

Average weekly hours worked by age group, sex and household type, England, October - December 2010



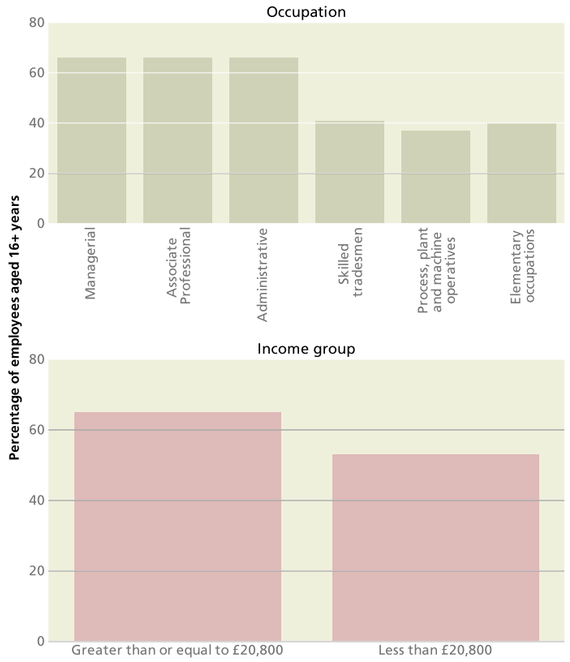
Source: Greater London Authority Intelligence Unit analysis of ONS Labour Force Survey Household Dataset (Oct-Dec 2010). Data obtained under special license from the Economic and Social Data Service.

Time taken to get to work by region and sub-region of workplace, England, October - December 2010



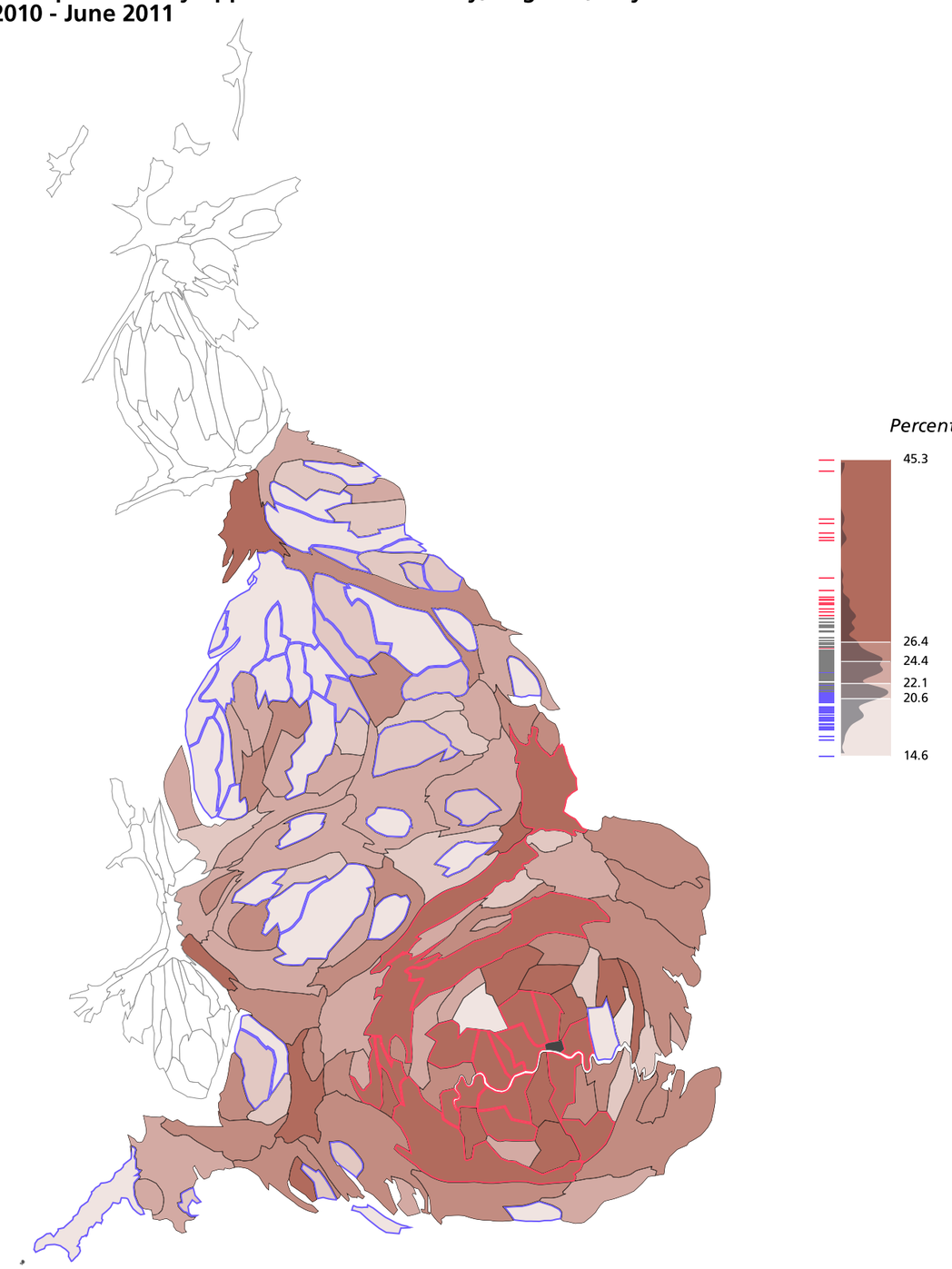
Source: Labour Force Survey, DfT.

Proportion of employees in organisations offering flexible working offered flexible working options, by occupation and income, Great Britain, 2009



Source: Health and well-being at work: A survey of employees, DWP.

Proportion of employed persons working 45 hours or more per week by upper tier local authority, England, July 2010 - June 2011



Source: Annual Population Survey, NOMIS, ONS.

Sufficient income is required to lead a healthy life. Weekly household income, adjusted to take account of family size, is used here as a proxy for the living standards of individuals.

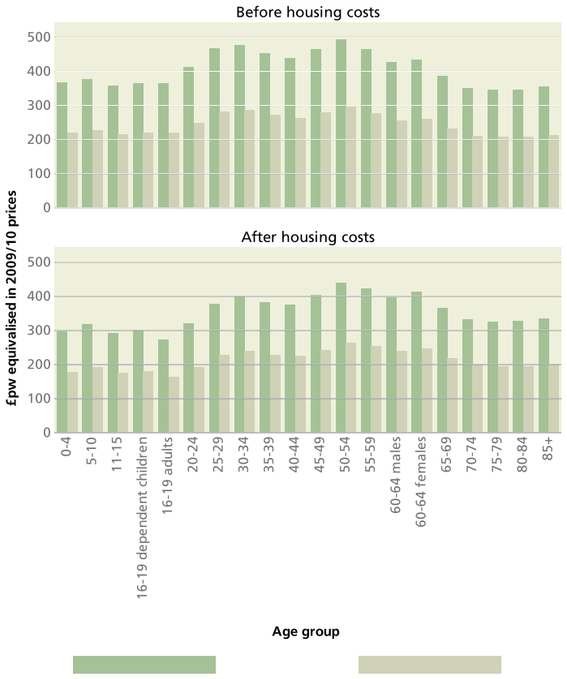
Weekly household income is highest in the South East, London and the East of England, both before and after adjusting for housing costs. However, this will not account for other differences in the cost of living between regions. Couples without children are the household type with the highest income and single adults with children and single pensioners are the household types with the lowest.

Although median household income has been rising within the UK/Great Britain since 1994/95, in recent years the increase has slowed. Deciles divide the UK population, when ranked by income, into ten equal-sized groups. The median income level of all deciles increased between 1994/95 and 2009/10, however, there has been no sustained reduction in inequalities in income levels[1].

Action to bring income in the lower deciles closer to those above will help to improve the health of the population, and reduce health inequalities.

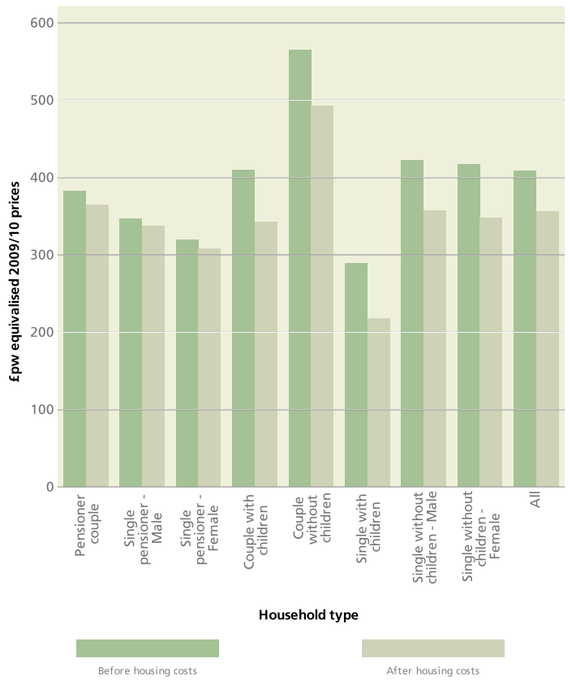
1 DWP (2011) Households below average income: An analysis of the income distribution 1994/95 – 2009/10. London: Department for Work and Pensions.

Median and 60% of median weekly equivalised household income by age, United Kingdom, 2009/10



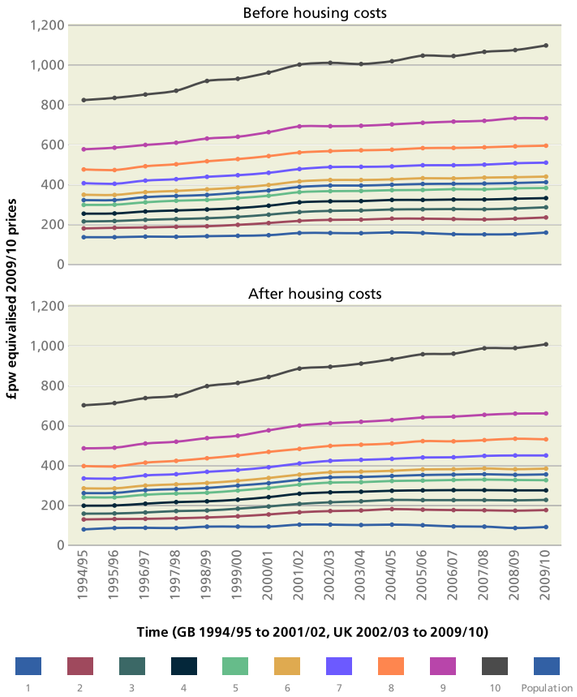
Source: Households Below Average Income Team, DWP.

Median weekly household income by household type, United Kingdom, 2007/08 to 2009/10



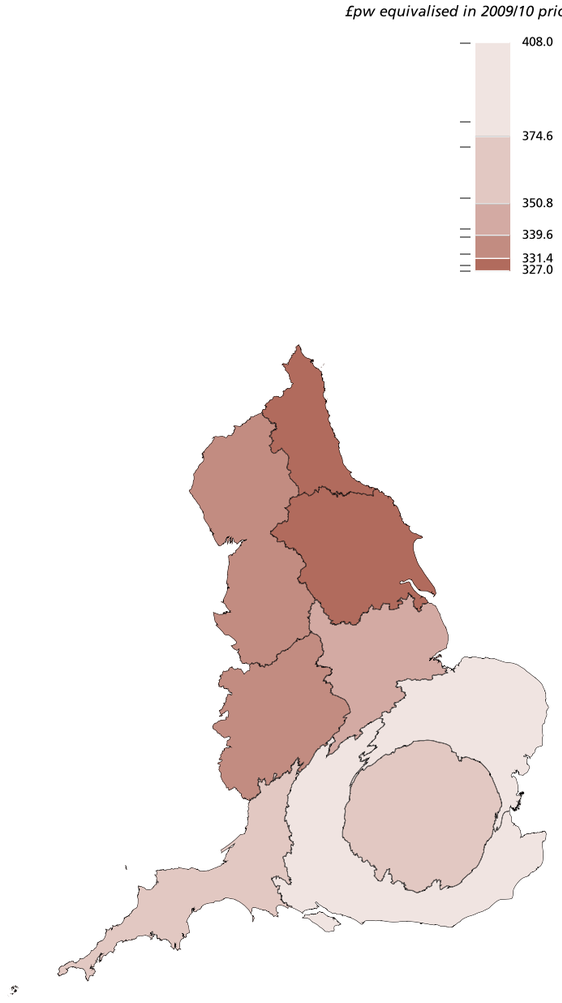
Source: Households Below Average Income Series, Family Resources Survey, DWP.

Trend in decile values of median weekly household income, Great Britain or United Kingdom, 1994/95 to 2009/10



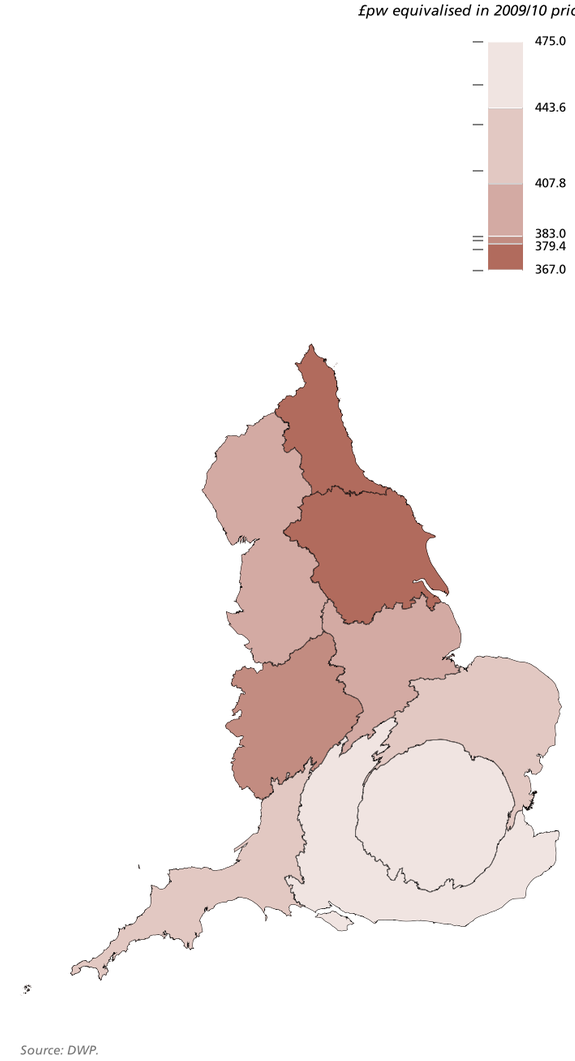
Source: Households Below Average Income Series, Family Resources Survey, DWP.

Median weekly household income after housing costs by region, England, 2007/08-2009/10



Source: DWP.

Median weekly household income before housing costs by region, England, 2007/08-2009/10



Source: DWP.

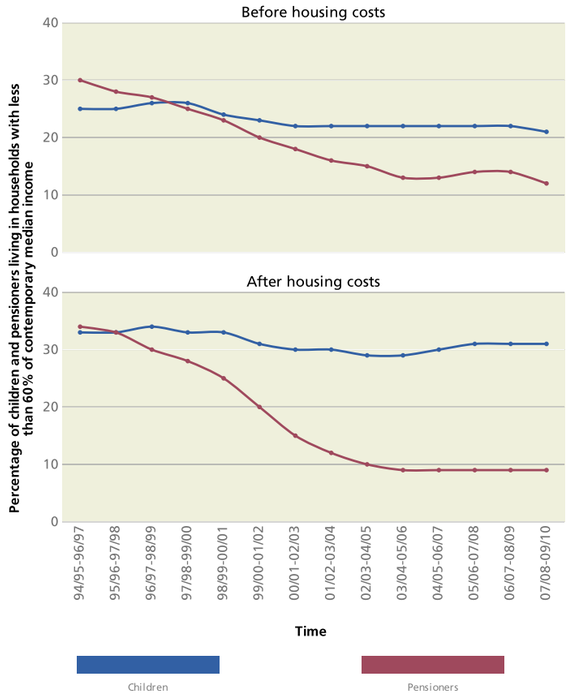
People living in poverty have poorer health. Particular population groups, such as children and pensioners, are at higher risk of poverty, and also tend be more vulnerable to the impact of poverty on health.

In 2009/10, 22% of people in the United Kingdom were living on low incomes (less than 60% of median income) after housing costs. Single adults with children have the highest percentage of people on low incomes. The Pakistani and Bangladeshi ethnic groups have the highest levels of people on low incomes out of all ethnic groups. The percentage of children and pensioners in households on low incomes has declined since 1994/95, although the decline has been marginal in recent years, and, once accounting for housing costs, this has halted.

Child poverty is measured by the percentage of children living in families in receipt of out of work benefits or tax credits, where their reported income is less than 60 per cent of median income. More than a fifth of children in England are living in poverty, two thirds of whom are also living in lone parent families. There is wide variation in these figures by local authority.

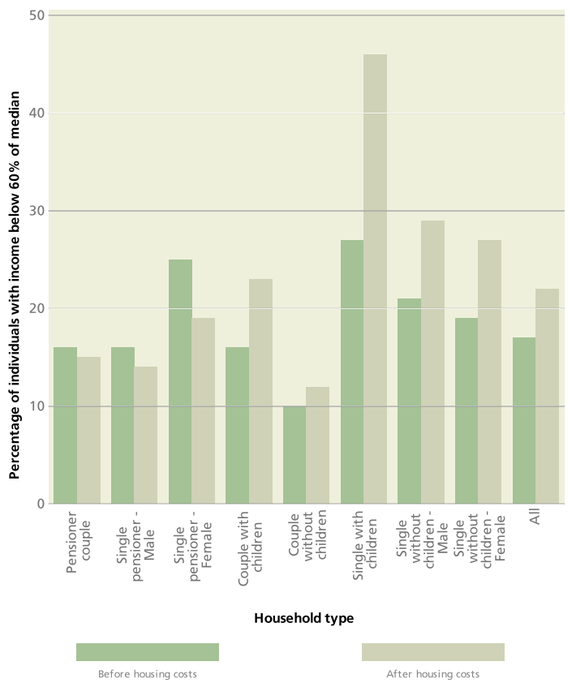
The nation's future depends on our children yet too many are living in poverty and are not experiencing a good start in life.

Trend in the percentage of children and pensioners living in households with low incomes, England, 1994/95-1996/97 to 2007/08-2009/10



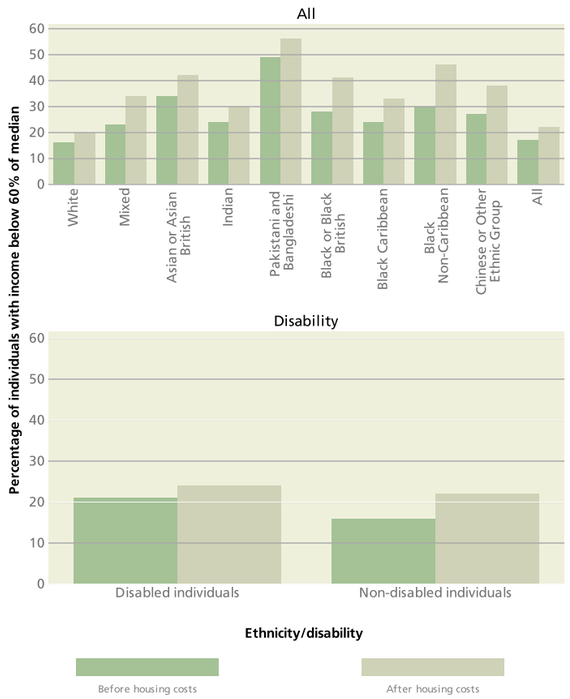
Source: Households Below Average Income Statistics, Family Resources Survey, DWP.

Proportion of persons in low-income groups by household type, United Kingdom, 2009/10



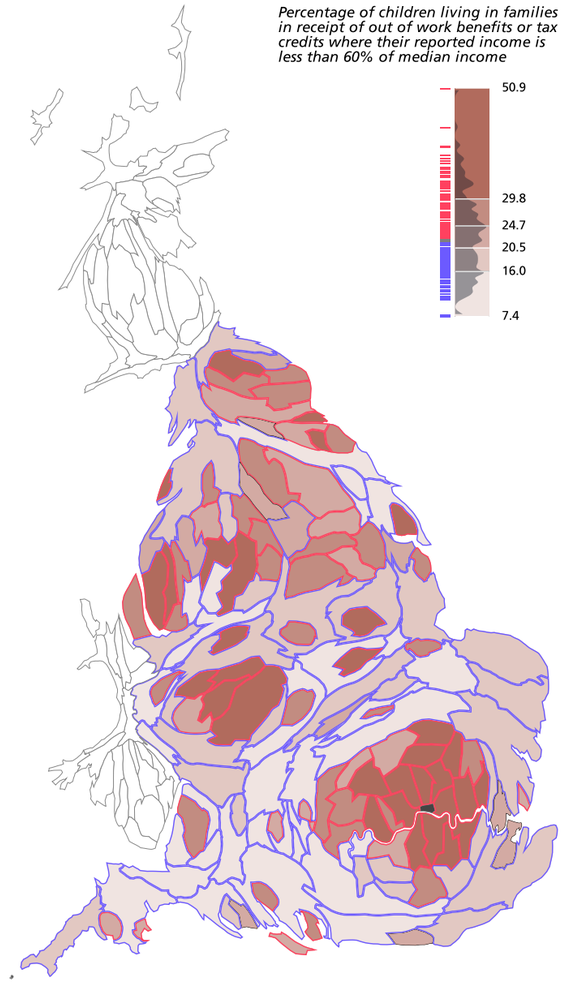
Source: Households Below Average Income Series, Family Resources Survey, DWP.

Proportion of persons in low-income groups by ethnic group and disability, United Kingdom, 2009/10



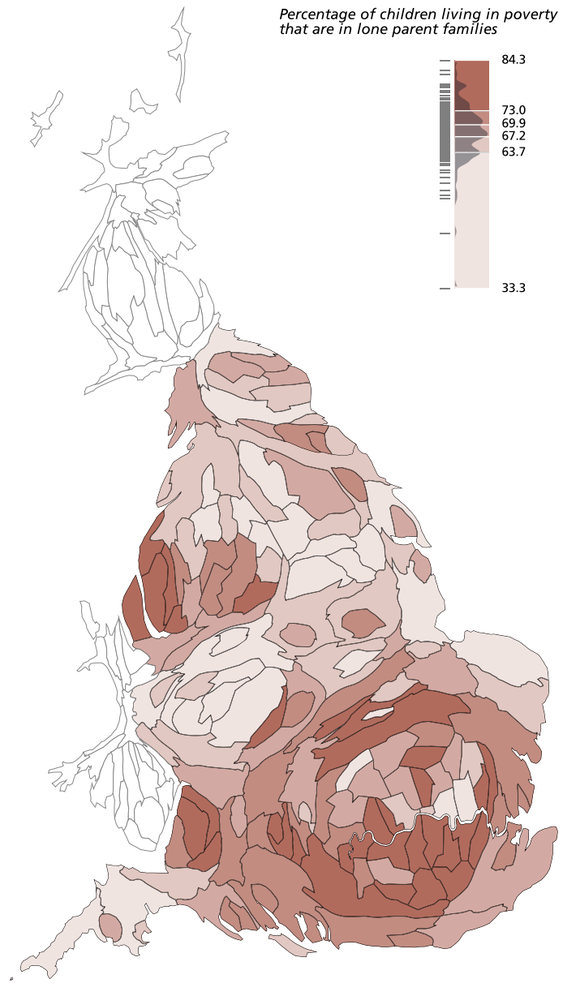
Source: Households below average income series, Family Resources Survey, DWP.

Proportion of children aged under 16 living in poverty by upper tier local authority, England, 2009



Source: HM Revenue & Customs. (Provided by 2012 Local Health Profiles)

Proportion of children aged under 16 living in poverty that are in lone parent families by upper tier local authority, England, 2009



Source: HM Revenue & Customs.

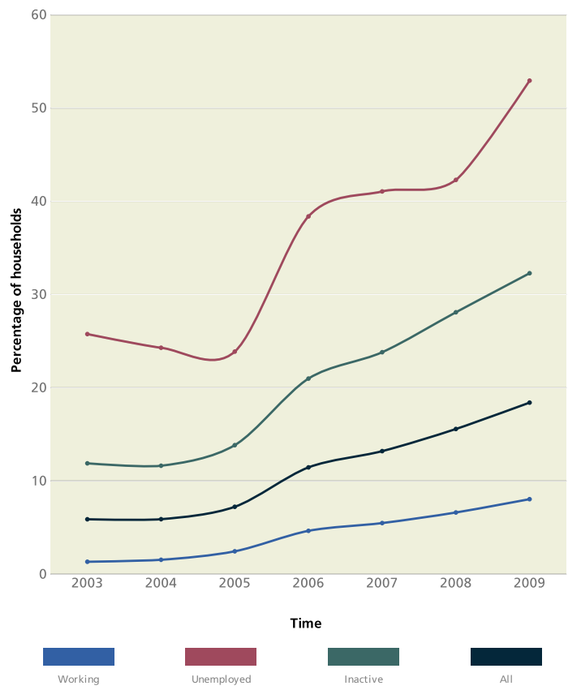
There is a risk to health if an adequate level of warmth in the home is not maintained. Currently, a household is said to be in fuel poverty if it needs to spend more than 10% of its income on fuel to maintain an adequate level of warmth.

In 2009, 18% of households were living in fuel poverty, a three-fold increase since 2003. The percentage of households was particularly high among the unemployed (53%) and people living alone over the age of 60 (39%). Households classed as vulnerable, and those containing someone with a limiting long term illness or disability, are more likely to be fuel poor.

There are wide variations between local authorities in the percentage of households that are fuel poor, with the highest percentages in the north, midlands and south west of England.

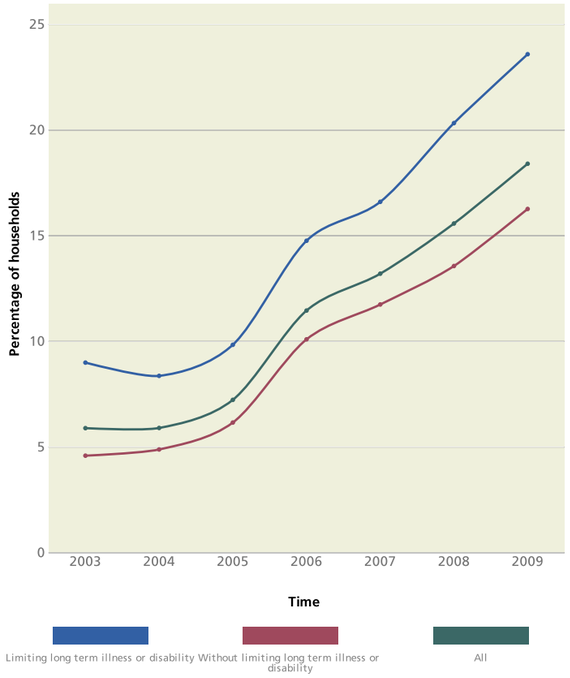
There have been, on average, 20,400 excess winter deaths per year (see Chapter 2) over the last four years. Many of these are preventable and may be associated with fuel poverty. The 'Warm Front' scheme installs insulation and heating improvements to make homes warmer and more energy efficient and is available to households on income-related benefits living in properties that are poorly insulated or heated. Local authorities should actively promote the uptake of insulation.

Trend in percentage of households in fuel poverty by working status of household reference person, England, 2003 to 2009



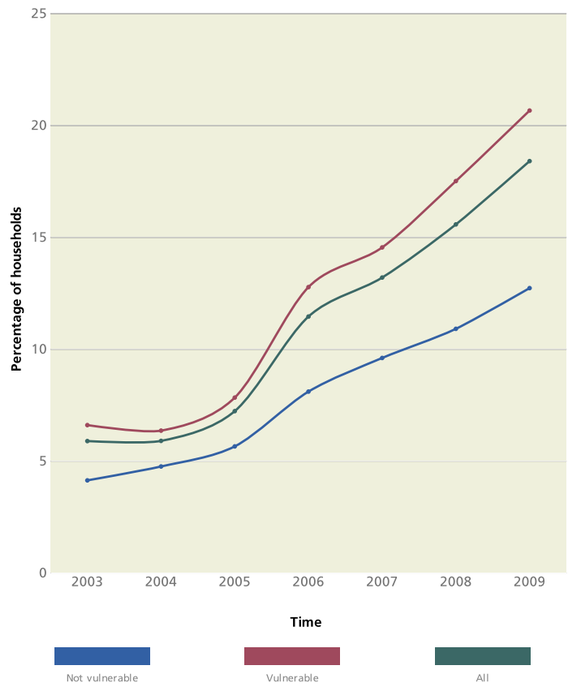
Source: Fuel Poverty Statistics, DECC.

Trend in households in fuel poverty by whether someone in household has a long term illness or disability, England, 2003 to 2009



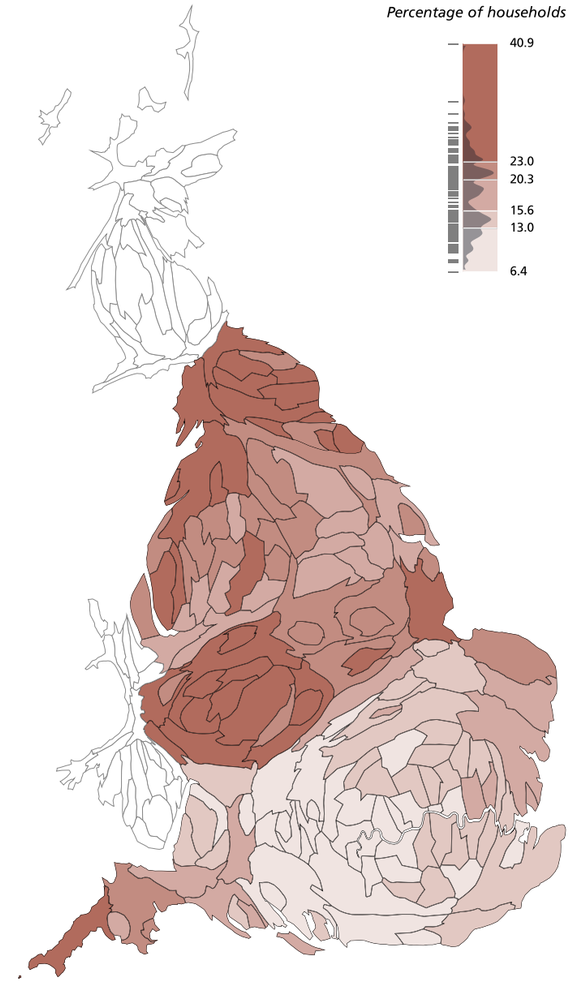
Source: Fuel Poverty Statistics, DECC.

Trend in percentage of households in fuel poverty by vulnerability of household, England, 2003 to 2009



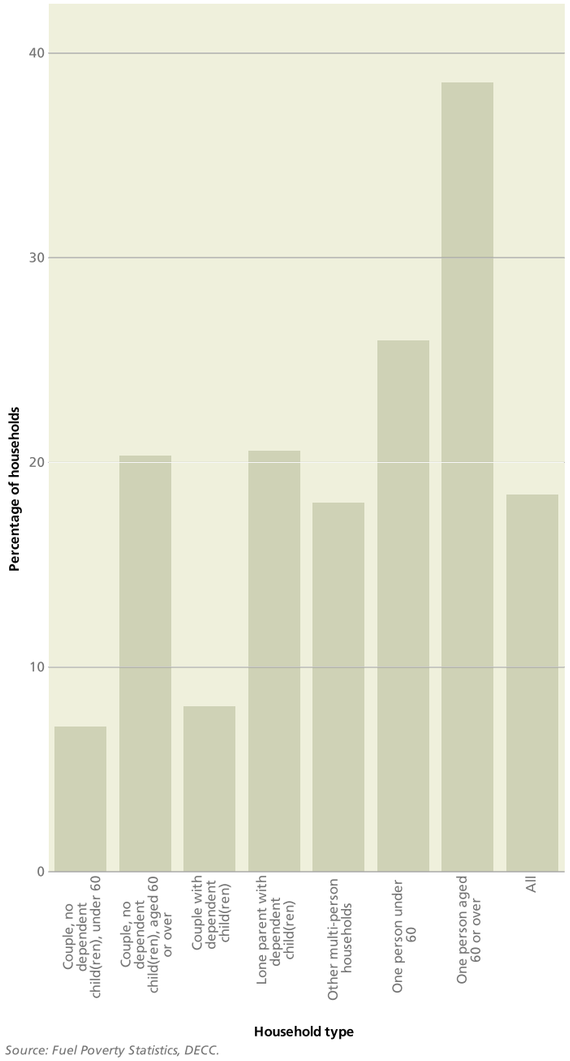
Source: Fuel Poverty Statistics, DECC.

Proportion of households in fuel poverty by upper tier local authority, England, 2009



Source: Fuel Poverty Statistics, DECC.

Proportion of households in fuel poverty by household type, England, 2009



Source: Fuel Poverty Statistics, DECC.

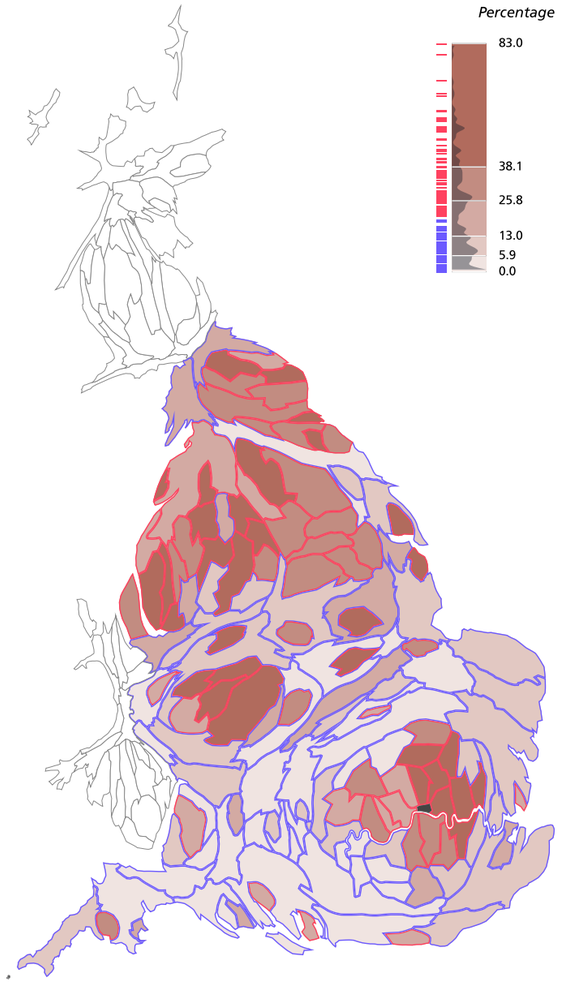
Deprivation refers to a general lack of resources. The Index of Multiple Deprivation (IMD)[1] 2010 combines 38 indicators, covering a range of economic, social and housing issues. The indicators are organised in seven domains which can be combined into a single deprivation score for each small area. Deprived areas are more likely to have social and environmental characteristics that present risks to health.

The percentage of the population within each local authority that is living in the 20% most deprived small areas of England is highest in north east London, and selected authorities in the north and midlands.

The percentage of the population in receipt of means tested benefits is a domain of the IMD. The Slope Index of Inequality (SII) used here, measures the level of inequality in means tested benefits within local authorities. A higher SII indicates greater inequality. An SII of 5, for example, indicates that, compared with the best-off in the authority, the percentage of benefit recipients among the worst-off is 5 percentage points higher. Inequality in means-tested benefits is highest in selected authorities in the north, midlands and London.

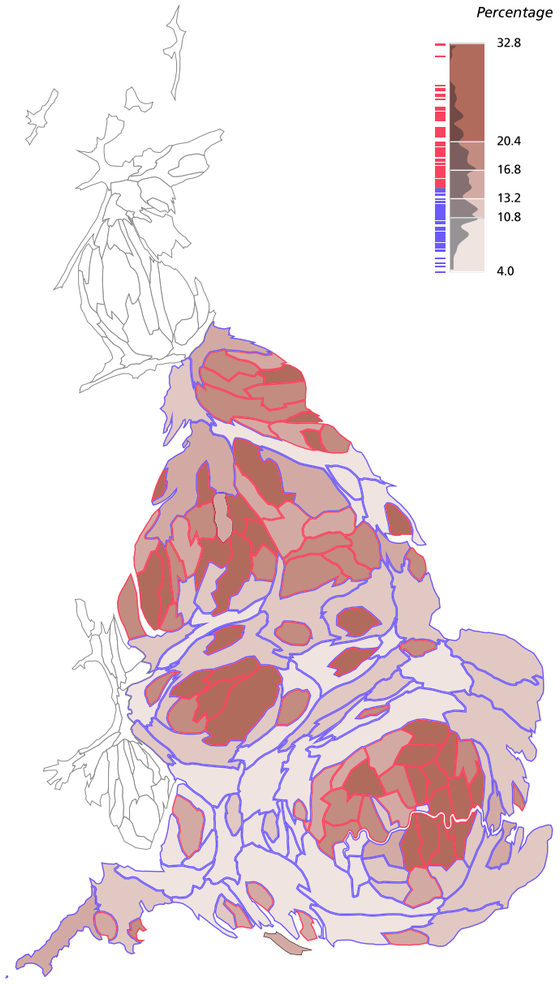
1 Communities and Local Government (2011) The *English Indices of Deprivation 2010*. London: Communities and Local Government.

Proportion of the population living in the most deprived national quintile by upper tier local authority, England, 2010



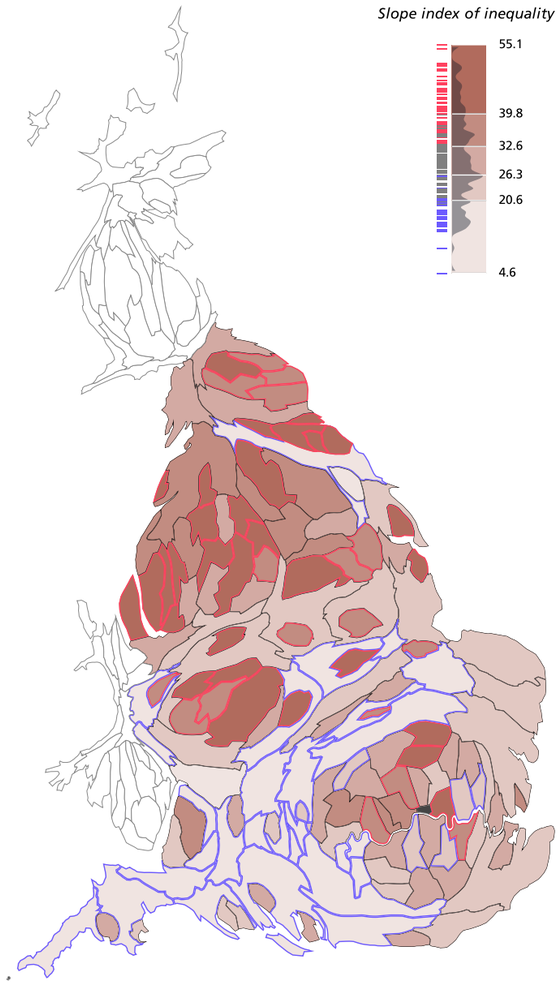
Source: Index of Multiple Deprivation 2010, DCLG. (Provided by 2012 Local Health Profiles)

Proportion of persons in households in receipt of selected means-tested benefits by upper tier local authority, England, 2010



Source: Income Domain of the Index of Multiple Deprivation 2010, DCLG.

Inequality in percentage of persons receiving means-tested benefits by upper tier local authority, England, 2010



Source: Income Domain of the Index of Multiple Deprivation 2010, DCLG. (Analysis and slope index by LHO)

Access to green space and people's use of green infrastructure may promote physical activity and impact positively on wellbeing. Green infrastructure is also associated with lower carbon emissions and mitigation of the effects of climate change.

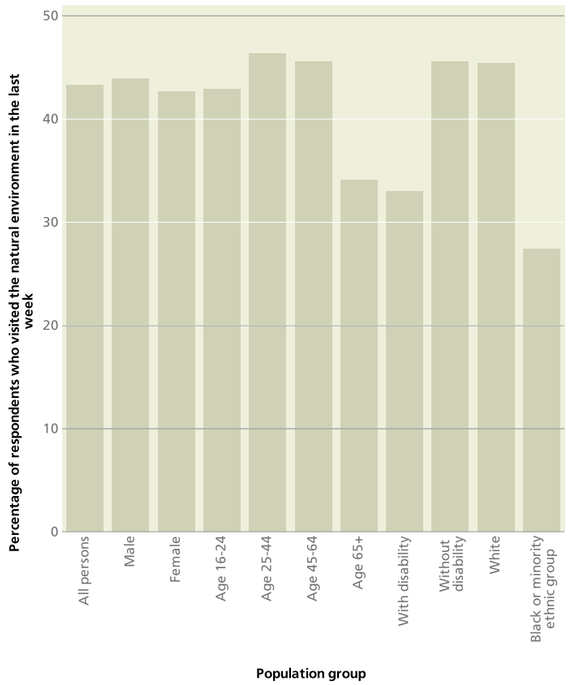
Access to green space is highest in rural areas. In 2009/10 it is estimated that 43% of the population visited green and open spaces in a given week. This percentage is lower among minority ethnic groups, disabled people and people aged 65 and over.

The percentage of service users with reasonable access to key services - such as employment, hospital, primary school or GP - varies by service and by mode of transport. The definition of reasonable access and service user depends on the service and mode of transport. Less than half of service users have reasonable access by public transport or on foot to hospitals, primary schools and town centres whereas more than half have access to other services on foot or by public transport.

The percentage of waste that is recycled has increased in every region of England, although London still recycles a lower percentage of waste than elsewhere.

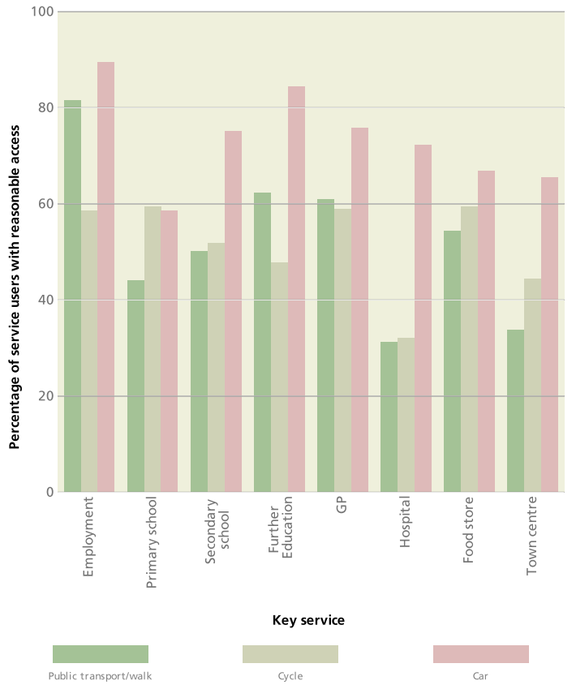
Local authorities have an opportunity to maximise the 2012 Olympic and Paralympic legacy by promoting physical activity and the use of green space.

Visitors to the natural environment by population group, England, 2009/10



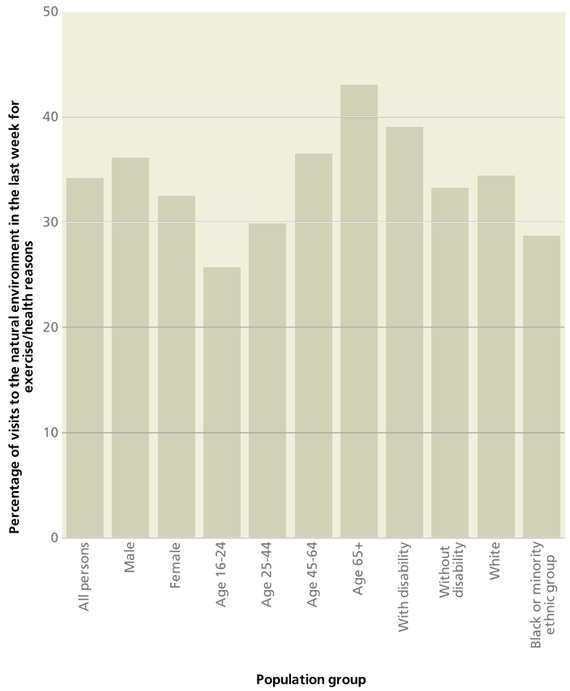
Source: Monitor of Engagement with the Natural Environment, Natural England.

Proportion of service users with reasonable access to key services by service and mode of travel, England, 2010



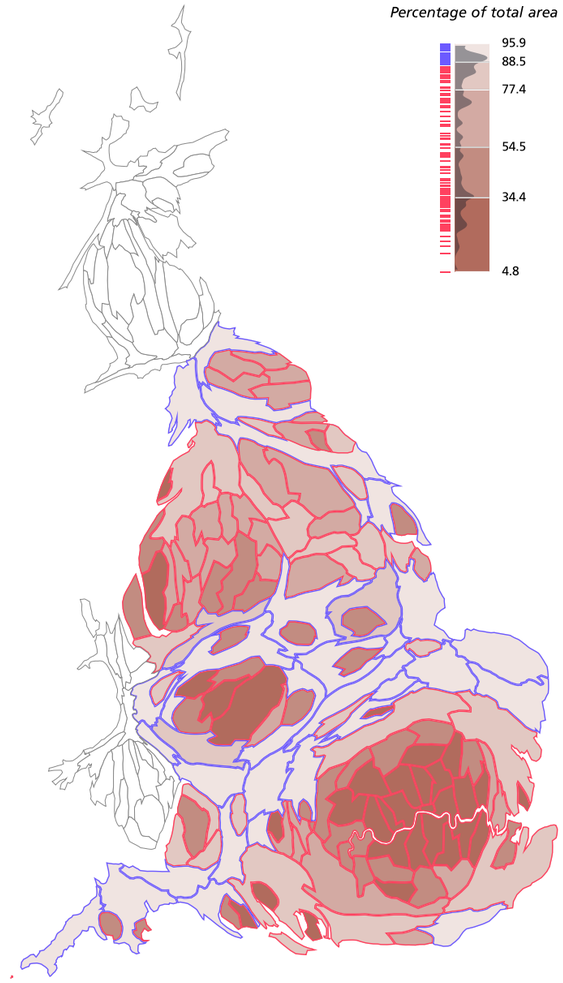
Source: Accessibility Statistics, DFT.

Visits to the natural environment for exercise/health reasons by population group, England, 2009/10



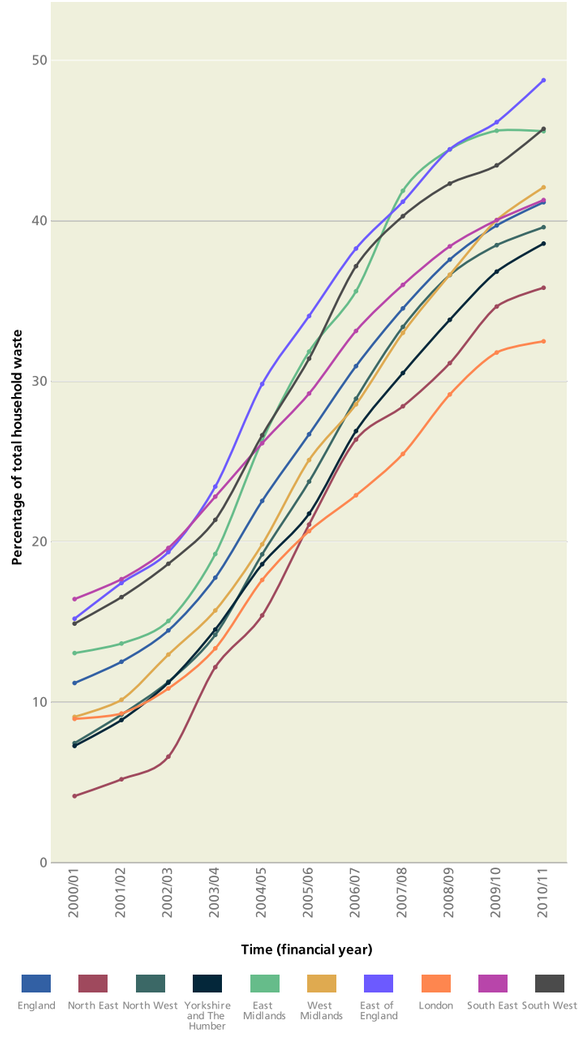
Source: Monitor of Engagement with the Natural Environment, Natural England.

Proportion of total area that is greenspace by upper tier local authority, England, 2005



Source: Generalised Land Use Database, DCLG.

Trend in percentage of total household waste that is sent for recycling, reuse or composting, by region, 2000/01 to 2010/11

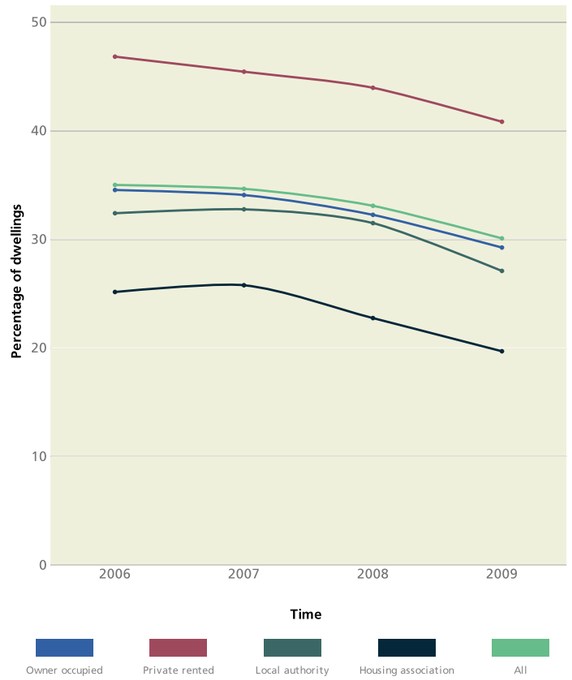


Source: DEFRA.

Poor quality housing, including poor physical living conditions, constitutes a health risk. The percentage of dwellings that are poor quality ("non-decent") has declined in recent years, although private rented homes are still more likely to be non-decent than any other housing type. More than 30% of single person or 'other' households (other multi-person households) live in homes that are non-decent. Residents of 'other' households are most likely to live in damp homes (13.9%). Households in the lowest income group are two times more likely to live in damp housing than households in the highest income group, and are more likely to live in a home that is non-decent.

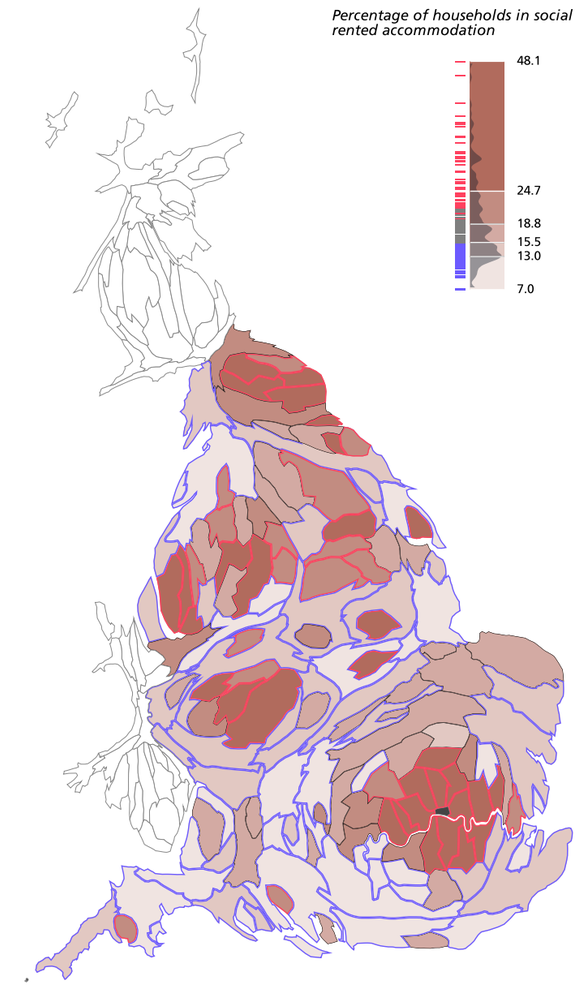
Social housing (rented from a local authority or housing association) is less likely to be non-decent than other housing types. However, living in social housing is associated with higher than average poverty rates and worse than average employment experiences which are also associated with poorer health outcomes. The percentage of households living in social housing is highest in urban areas. More than 40% of households with an income of less than £10K per year are in social housing, as compared to less than 4% of households with an income of more than £30K per year.

Trend in percentage of dwellings that are non-decent, by tenure, England 2006 to 2009



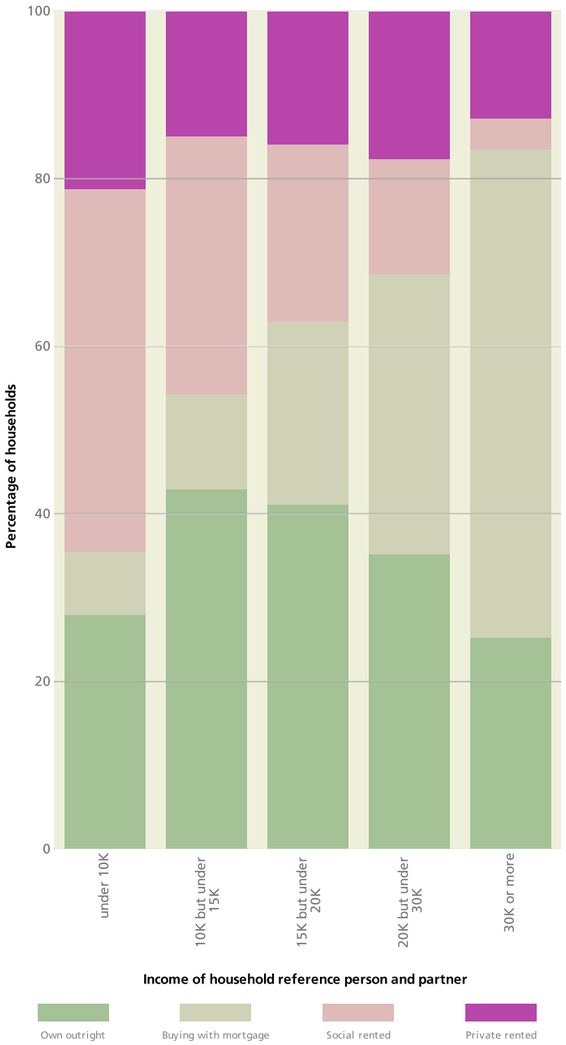
Source: English House Condition Survey, 2006-7, English Housing Survey 2008-9. DCLG.

Proportion of households in social rented accommodation by upper tier local authority, England, July 2010 to June 2011



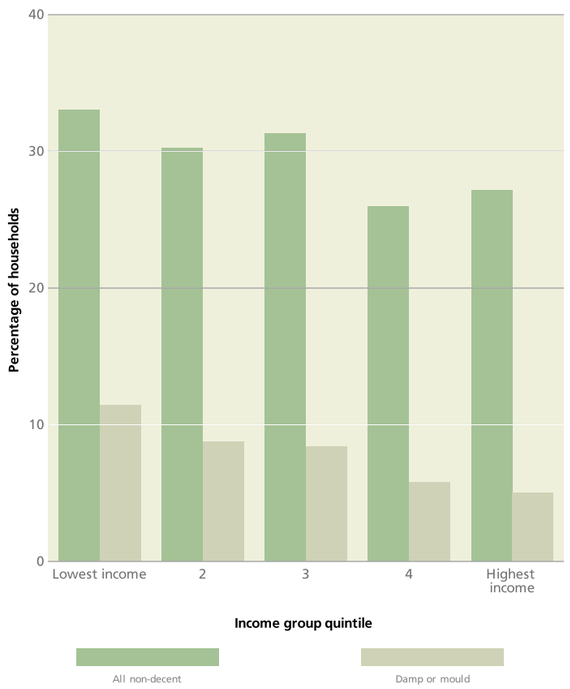
Source: Greater London Authority Intelligence Unit analysis of ONS Annual Population Survey Dataset (July 2010 - June 2011). Data obtained under special license from the Economic and Social Data Service.

Housing tenure by income, England, 2009/10



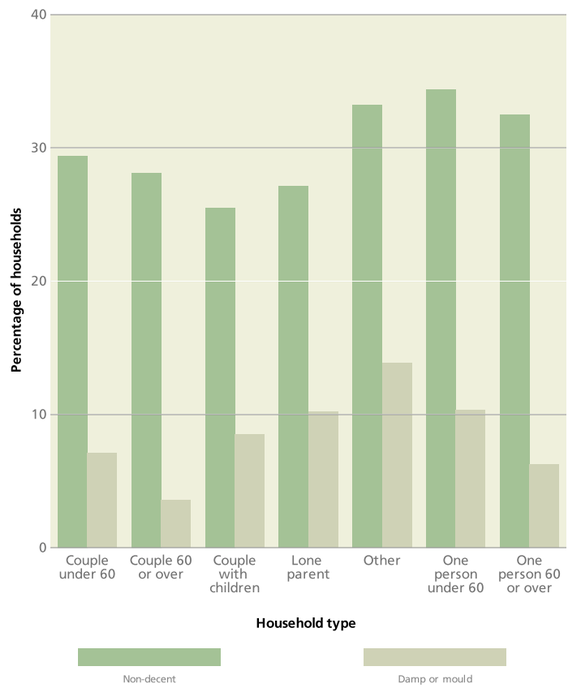
Source: English Housing Survey, full household sample. DCLG.

Proportion of non-decent and damp homes by income, England, 2009/10



Source: English Housing Survey, household sub sample, DCLG.

Proportion of non-decent and damp homes by household type, England, 2009/10



Source: English Housing Survey, household sub sample, DCLG.

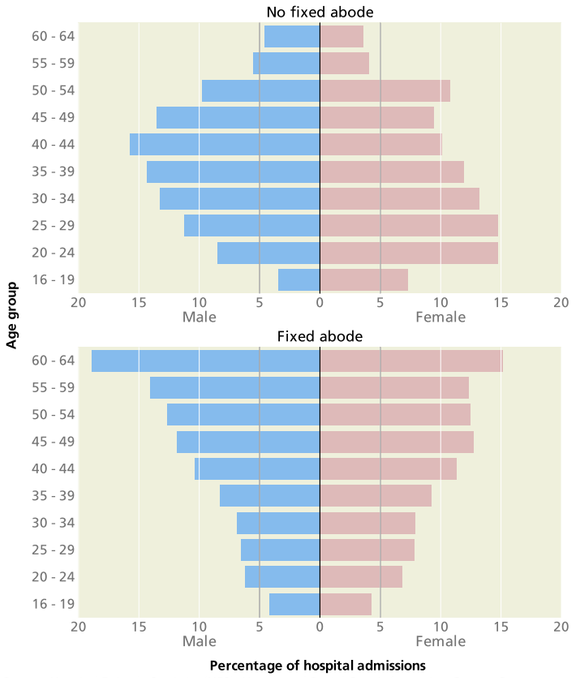
Homelessness, which includes both people living on the streets ("street homeless") and people in hostels, shelters and other temporary accommodation, creates a risk to health and shortens life expectancy.

The number of new households accepted as homeless and in priority need (per 1,000 households) in 2010/11 varied considerably by local authority. The majority of authorities with the highest rates are urban areas, particularly in London or the West Midlands. The number of households living in temporary accommodation (per 1,000 households) also varies, a large proportion of all such households are in London. The number of households in temporary accommodation in England peaked in 2004/2005 and has since halved.

The age profile of people admitted to hospital with no fixed abode, a large proportion of whom are "street homeless", is much younger than people with a fixed abode, particularly for women.

The average age of death of a homeless person is 47 years old and may be as low as 43 for homeless women[1].

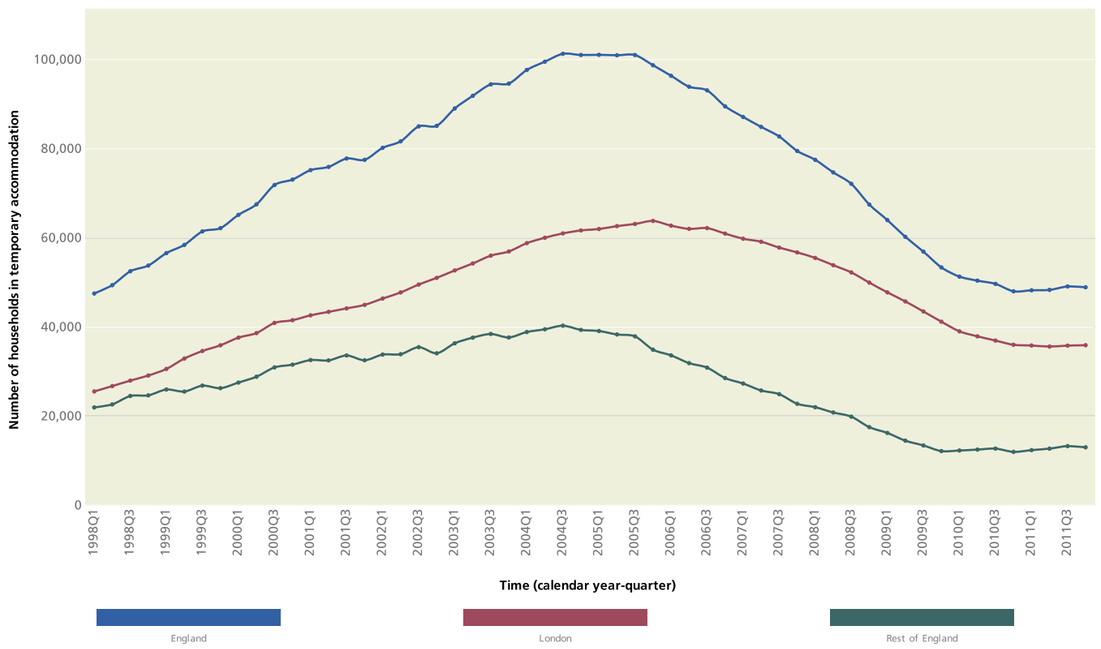
Hospital admissions for persons with no fixed abode and those with a fixed abode by age and sex, England, 2010/11



Source: Hospital Episode Statistics (HES), Health and Social Care Information Centre. Crown Copyright © 2012. 2010 population estimates supplied by ONS. (Analysis by PHOs, led by EMPHO)

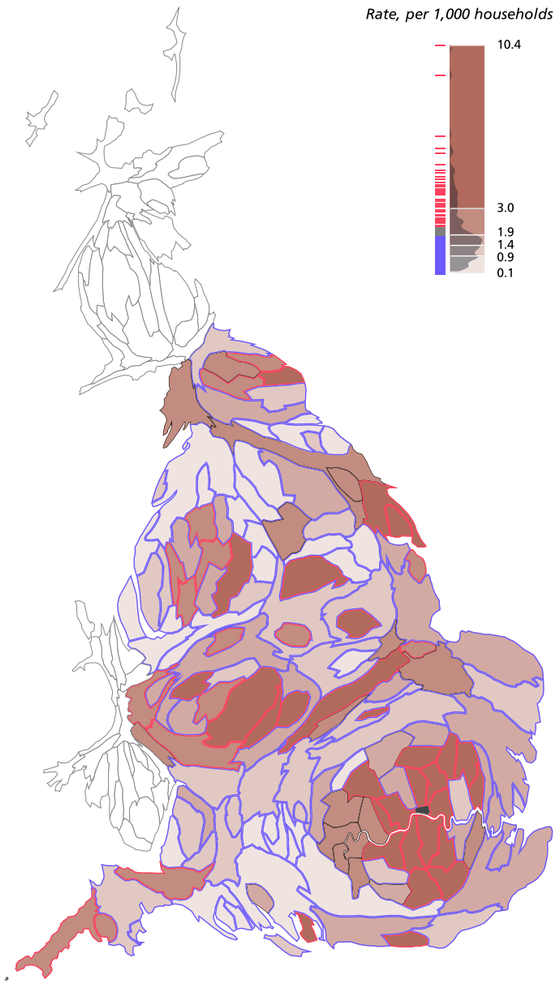
1 Crisis (2011) *Homelessness: A silent killer. A research briefing on mortality amongst homeless people*. London: Crisis.

Trend in households in temporary accommodation in London and England, at the end of each quarter 1998 to 2011



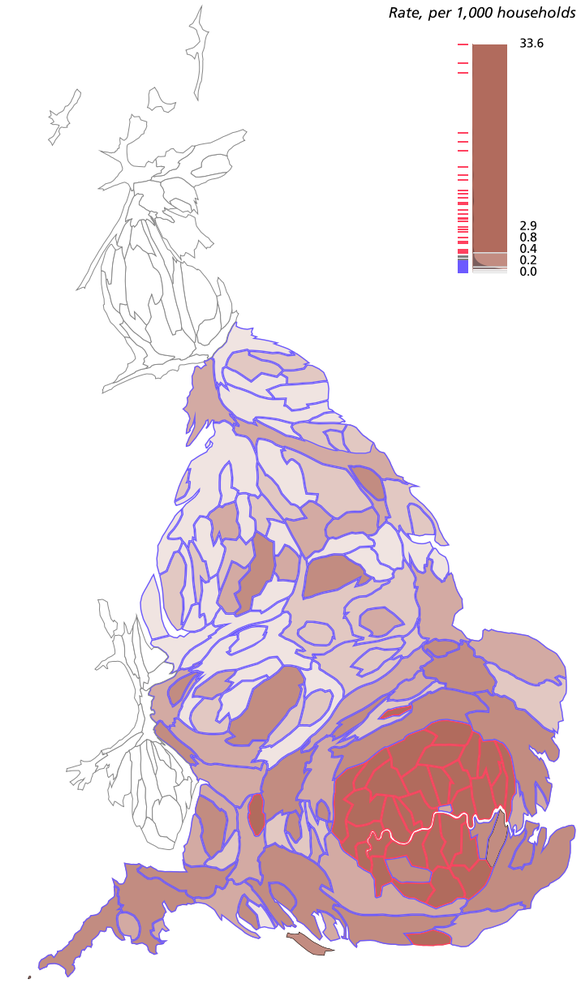
Source: DCLG.

Households accepted as homeless and in priority need by upper tier local authority, England, 2010/11



Source: DCLG. (Provided by 2012 Local Health Profiles)

Households in temporary accommodation by upper tier local authority, March 2011



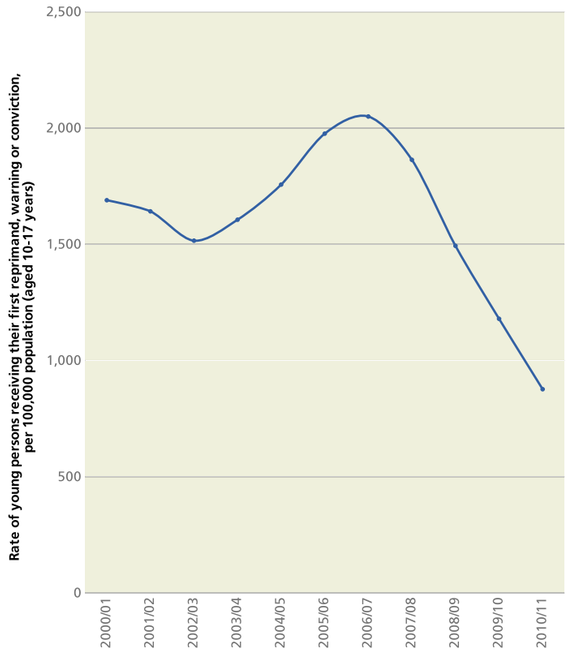
Source: Homelessness statistics, DCLG.

High rates of crime and fear of crime create a risk to health and can lead to social isolation as well as reduced physical activity.

Crime levels vary by local authority as illustrated by the rate of violent offences and are generally higher in urban areas. The percentage of adults or households who were victims of, or who worry about, particular types of crime has declined since the mid 1990s. However, inequalities in the percentage of adults who have been victims of crime remain. In 2010/11, people aged 16-24, people of mixed ethnic origin, unemployed people and students were the most likely to have been victims of both 'personal' and 'all' crime.

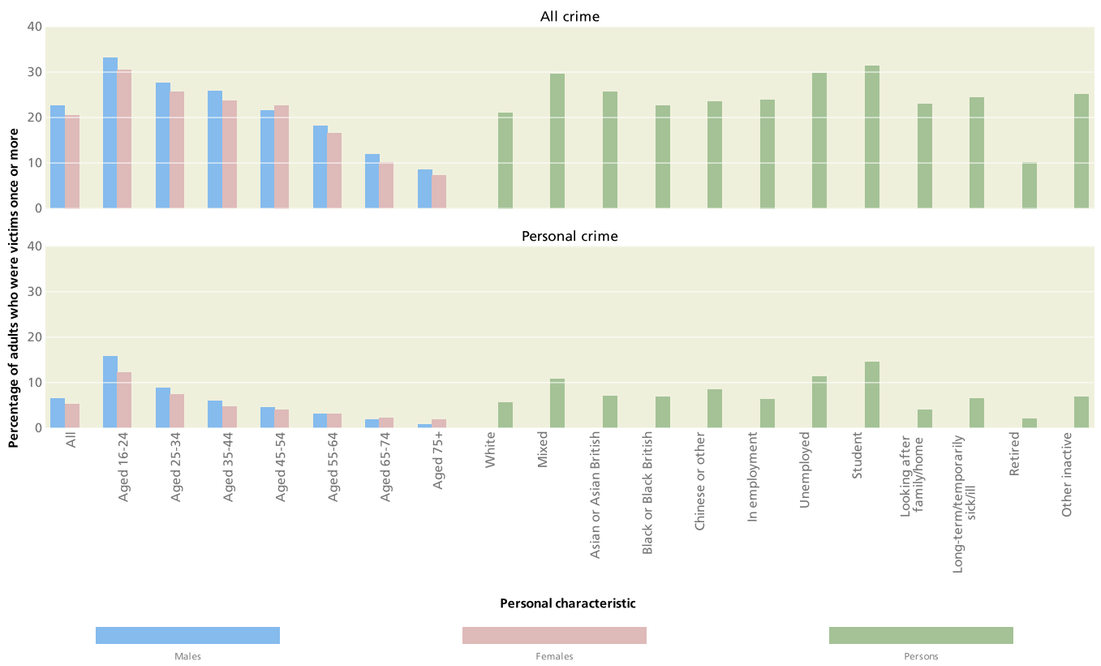
Offenders and ex-offenders are also a group of people at higher risk of certain health problems, particularly mental health and substance misuse problems. The rate of young people (aged 10-17) entering the criminal justice system increased between 2002/03 and 2006/07, but has since declined. The percentage of offenders who reoffend varies considerably by local authority, the majority of authorities with the highest percentages are in the north of England and in London.

Trend in the rate of young persons entering the criminal justice system, England, 2000/01 to 2010/2011



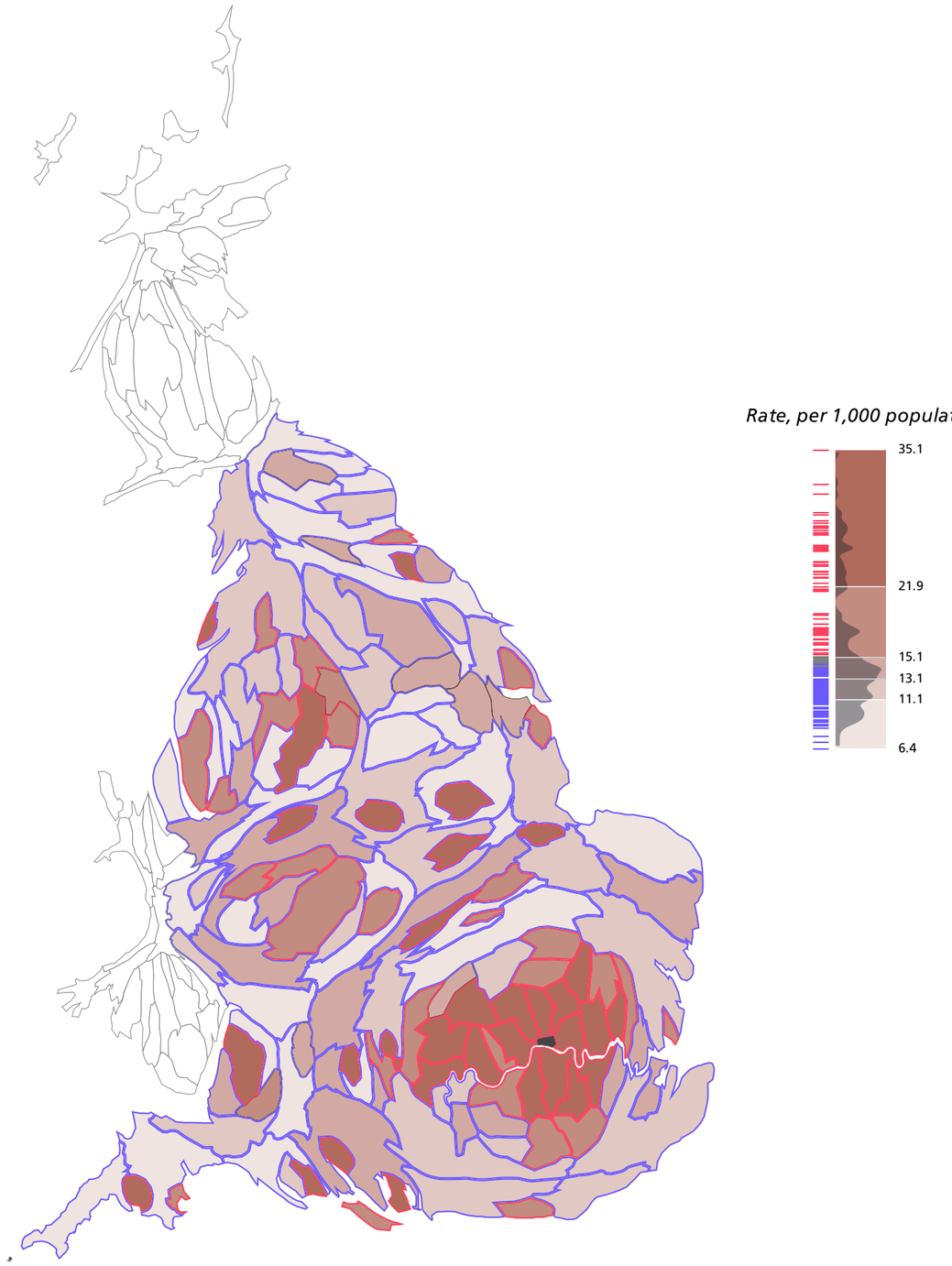
Source: MOJ.

Adults who were victims of crime by personal characteristic and crime category, England and Wales, 2010/11



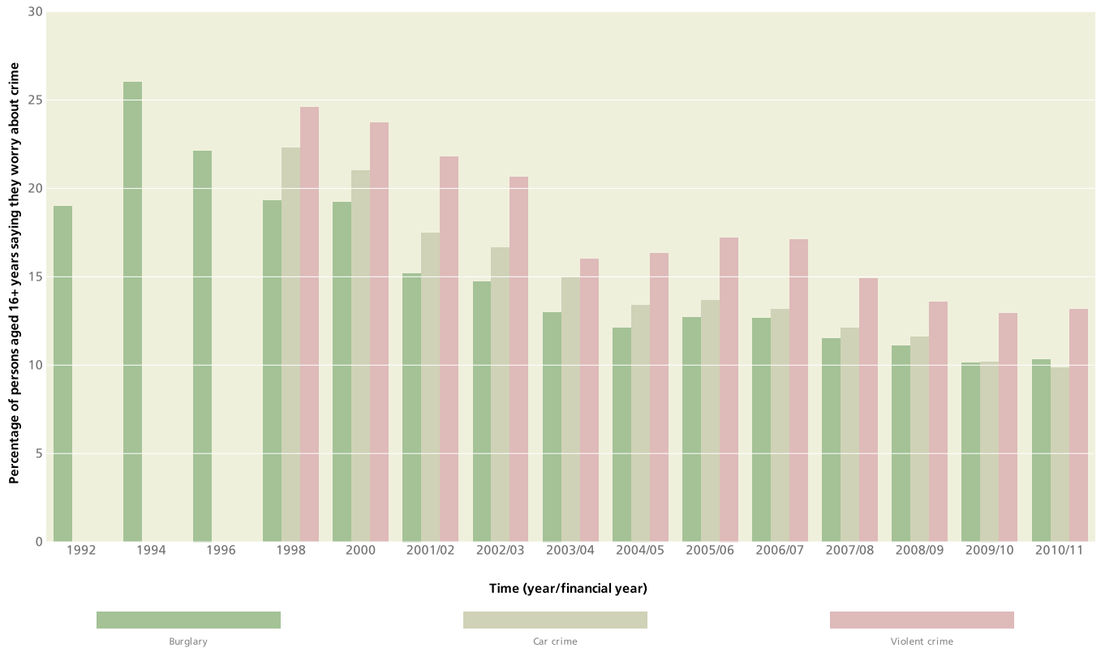
Source: British Crime Survey (BCS), HO.

Recorded violence against the person offence rates by upper tier local authority, England, 2010/11



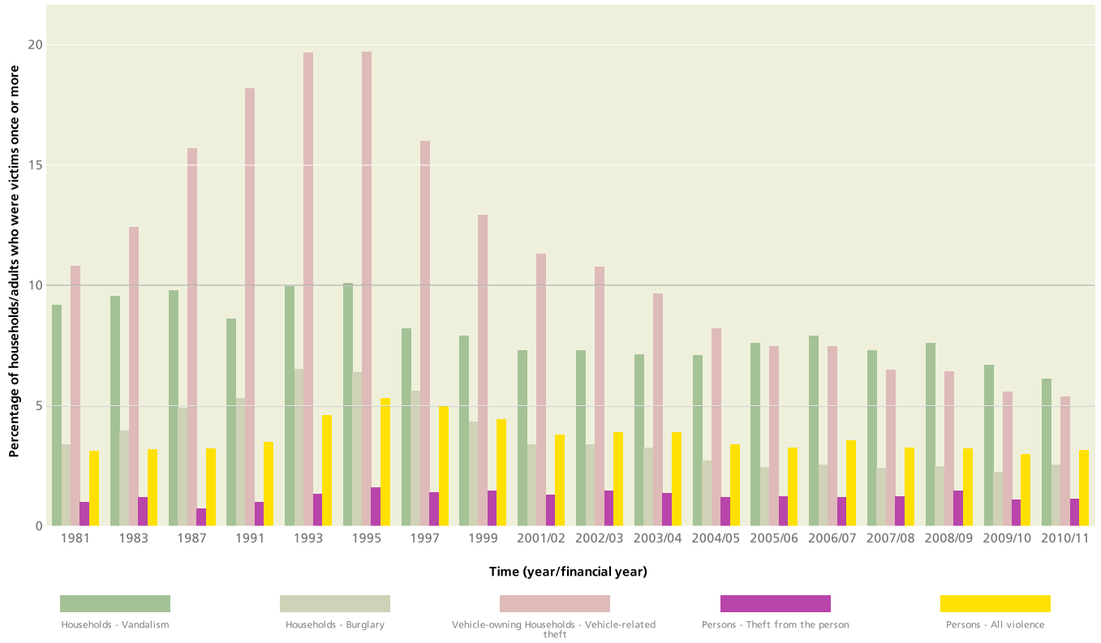
Source: HO. (Provided by 2012 Local Health Profiles)

Trend in worry about crime by crime category, England, 1992 to 2010/11



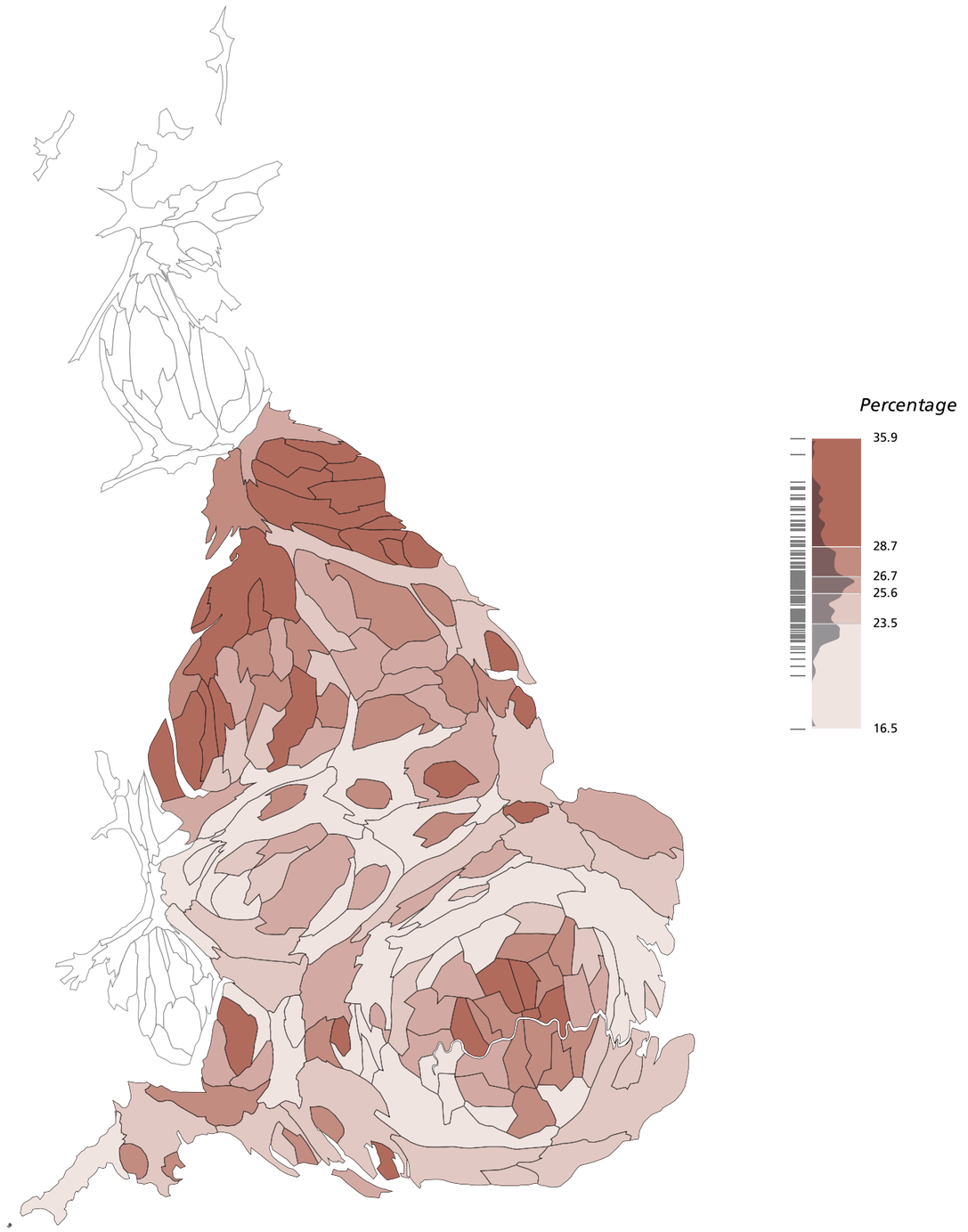
Source: British Crime Survey, HO.

Trend in victims of crime by demographic and crime category, England and Wales, 1981 to 2010/11



Source: British Crime Survey, HO.

Proportion of offenders who reoffend by upper tier local authority, England, 2009/10



Source: MOJ.

Social networks and social support can provide a buffer against the risks of poor health brought about by living in deprived areas or from other social determinants.

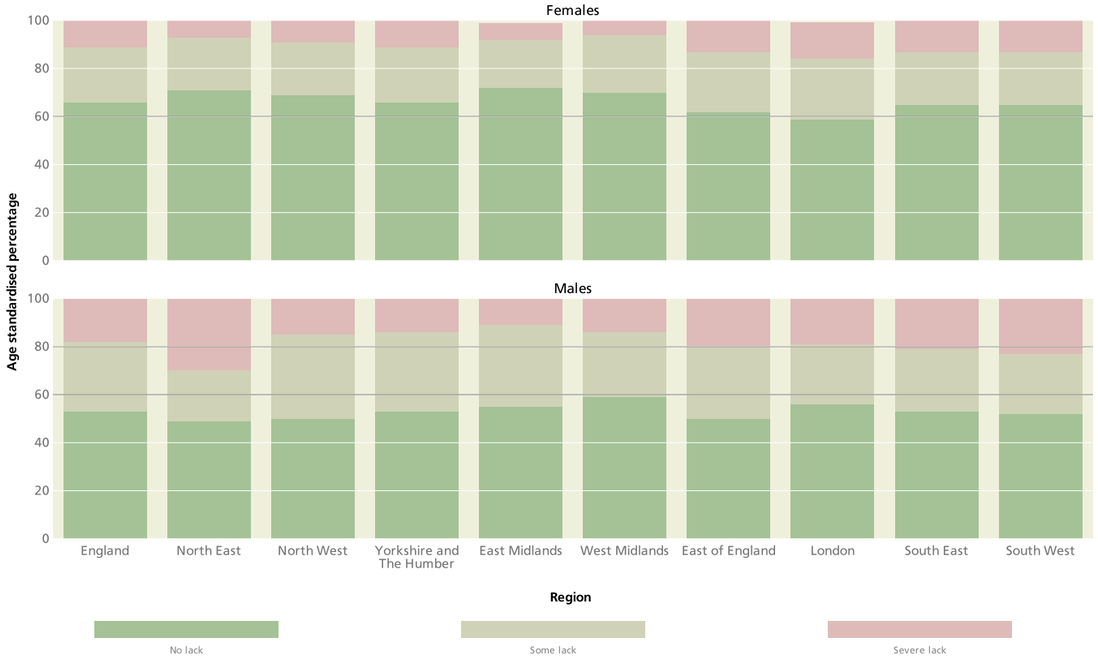
Approximately 85% of adults aged 16 and over think that some or many people in their neighbourhood can be trusted. This rises to approximately 90% in those aged over 65. Nationally, London has the lowest percentage (76%) of people who think that some or many people can be trusted. This is due to a lower proportion of people (31%) stating many people can be trusted. Compared with the national average, a similar percentage of people in London agree that people from different backgrounds in their neighbourhood get on well together, but the percentage who definitely agree is higher.

As deprivation decreases more people report that some or many people can be trusted in their neighbourhood and that people from different backgrounds in the neighbourhood get on well together.

In 2005, 47% of males and 34% of females aged 65 and over reported 'some lack' or 'a severe lack' of social support.

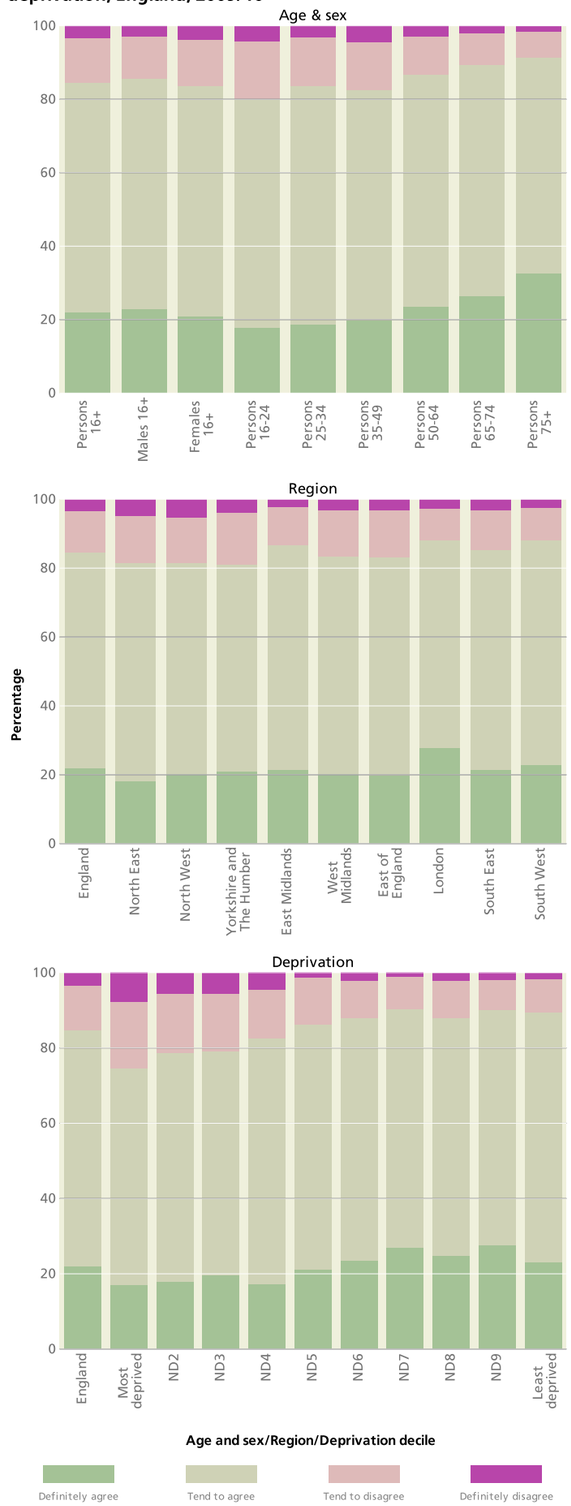
Organisations such as Southwark Circle (www.southwarkcircle.org.uk) are addressing social exclusion by providing practical help to people living in the local community.

Perceived social support, persons aged 65 and over, by region, 2005



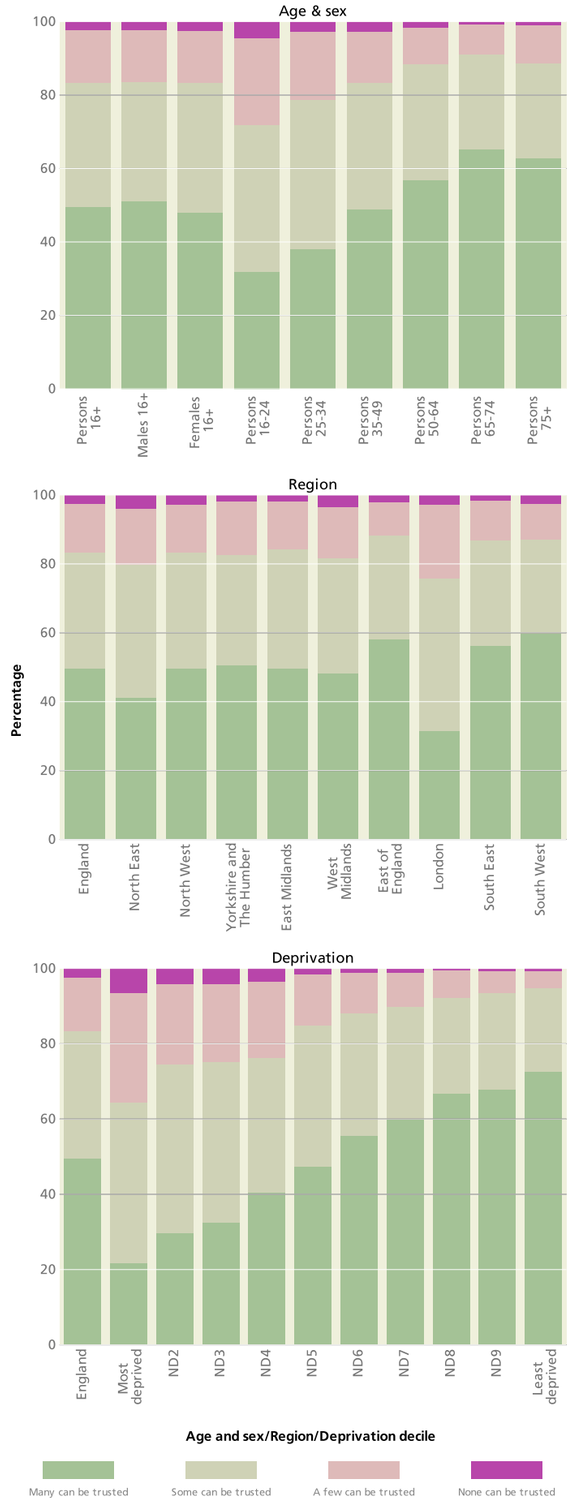
Source: Health Survey for England 2005. Copyright © 2012, re-used with the permission of The Health and Social Care Information Centre. All rights reserved.

Whether people in the neighbourhood from different backgrounds get on well together, by age and sex, region, and deprivation, England, 2009/10



Source: 2009-10 Citizenship Survey: Community Spirit Topic Report, DCLG.

Whether people in the neighbourhood can be trusted, by age and sex, region, and deprivation, England, 2009/10



Source: 2009-10 Citizenship Survey: Community Spirit Topic Report, DCLG.

Chapter 5

Healthcare

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Good population health outcomes, including reducing health inequalities, depend not only on preventing communicable disease, and improving health through promoting positive health behaviours and healthy environments, but also on the quality and accessibility of healthcare services provided by the NHS.

The NHS contribution to improving outcomes and reducing mortality comes from its role in ensuring comprehensive access to services, including early diagnosis, prompt high quality, safe effective treatment and care, and in providing effective preventive services such as screening, immunisation, and smoking cessation. The health service also has an essential role in reducing health inequalities through providing equity of access to health services on the basis of need.

Whereas most of the increase in life expectancy in the first half of the 20th century has been attributed to improved living conditions, nutrition and other public health measures, John Bunker[1] estimated that in the second half of the 20th century healthcare contributed approximately half to the increase in life expectancy.

This chapter explores the contribution health and social care make to improving the health of the population of England. The topics and indicators are chosen to reflect the role of health and social care services in improving the health of populations. While overall improvements in healthcare quality have contributed to better health and life expectancy, this chapter does not address quality issues. Rather it addresses trends in mortality that are amenable to healthcare, preventive activities that the NHS undertakes and access to health and social care, with a specific focus on equality of access by different population groups. It identifies and celebrates success but also highlights where there is unwarranted variation in access or outcome with a call for action to reduce the variation. The NHS Atlas of Variation[2] series, which explores unexplained and unwarranted variations in healthcare, in order to focus attention on the value and quality of care provided at a local level, looks in considerable depth at health service delivery and outcome for a range of conditions and is a valuable resource therefore to support and complement the topics in this chapter.

The outcome indicators reviewed in this chapter are mortality amenable to health care and cancer survival. Over the last 10 years, the avoidable mortality rate has fallen. The mortality rate for conditions amenable to healthcare has declined faster than the preventable mortality rate. Between 2001 and 2010, avoidable mortality overall decreased by 25%, mortality considered amenable to healthcare by 35% and preventable mortality by 23%. Cancer survival is an important quality marker. Survival in England has improved over the past decade for all cancers. Despite this, survival for many cancers remains poor in comparison with other developed countries, with delay in diagnosis being a key reason for poor survival rates. Lung cancer in particular has one of the poorest five year survival rates with even the best English survival rates well below the European average.

Since 2000, a number of new preventive and screening programmes have been introduced such as NHS smoking cessation services, bowel cancer screening, newborn bloodspot screening, diabetic retinopathy screening, and routine human papilloma virus (HPV) immunisation for females aged 12-13 years. The past few years have seen an improvement in coverage of routine childhood (pre-school) immunisations, particularly in London, where coverage has been lower historically. Coverage of breast and cervical screening programmes has also improved. Other successes include more than 380,000 people in England successfully quitting smoking with NHS Stop Smoking Services in 2010/11, and early access to maternity services, with over 80% of pregnant women accessing timely services in all English regions except London.

Inequality in access, which drives inequalities in outcomes, remains a major challenge. A number of indicators are explored in this chapter in relation to inequality in identification and access by geography, age, ethnicity and deprivation. There are marked geographic variations in immunisation uptake of measles, mumps and rubella (MMR) in young children, HPV in females aged 12-13 years, and influenza in older people. Access to specialist services such as alcohol treatment, drug use services, and obesity operations vary across England. For patients with long term conditions such as coronary heart disease, chronic obstructive pulmonary disease (COPD), diabetes, renal disease, and dementia, registrations in general practice, when compared with expected prevalence, show marked under diagnosis. There is considerable geographic variation in renal replacement therapy for chronic kidney disease.

Deprivation is another important factor underlying access and uptake of services. Mothers from deprived areas are less likely to breastfeed at 6 to 8 weeks. Emergency admissions show a strong relationship with deprivation, with more than a twofold difference between the most and least deprived quintiles of PCTs, and for COPD there is a fourfold difference. For people with Types 1 and 2 diabetes, achievement of target glucose control is lower with increasing social deprivation. For severe osteoarthritis, joint replacement is highly effective, but people in deprived areas benefit less, with fewer operations performed and reduced health gain from them. Even in the place of death, deprivation has an influence, with fewer people dying in their usual place of residence in deprived areas.

Improving access to, and promoting the use of, appropriate community, primary, and social care can help reduce costs associated with treating and managing long term conditions. For example, in 2009/10, almost half the people with diabetes did not receive the expected standards of care in primary care and many are not being identified early, which is essential for effective control of diabetes.

Reducing emergency admissions for long term conditions is a key outcome for the NHS, resulting in less inappropriate use of clinical resources and improving patient experience. Emergency admission rates at primary care trust level, for both chronic and acute conditions usually managed in primary care, show an approximate four-fold range. Effective management and treatment in an ambulatory care setting, particularly in primary care, will reduce emergency admissions.

Where there is variation in access or outcome between different population groups, the contributory factors include delayed presentation, delayed diagnosis, and delayed entry into care. Improvement in access to health care services and early detection and diagnosis improve outcomes, reduce unwarranted variations, and reduce costs. For example, the percentage of women who access maternity services late could be reduced through targeting vulnerable and socially excluded groups, and breastfeeding rates could be improved through peer support and education supported by health professionals. Good glucose control can be achieved in people with diabetes if everyone with diabetes is identified early and receives care to the expected standards. Monitoring and evaluation provides an assessment of the quality and performance of preventive services and healthcare and is essential to understanding the benefits and harms resulting from different rates of access and provision. Much unwarranted variation can be addressed by establishing population based systems of care, and applying evidence based patient pathways.

1 Bunker, J. P. "The role of medical care in contributing to health improvements within societies." Int.J.Epidemiol. 30 (2001): 1260-63.

2 QIPP Rightcare. The NHS Atlas of Variation in Healthcare: Reducing unwarranted variation to increase value and improve quality. London 2011 http://www.rightcare.nhs.uk/index.php/nhs-atlas/

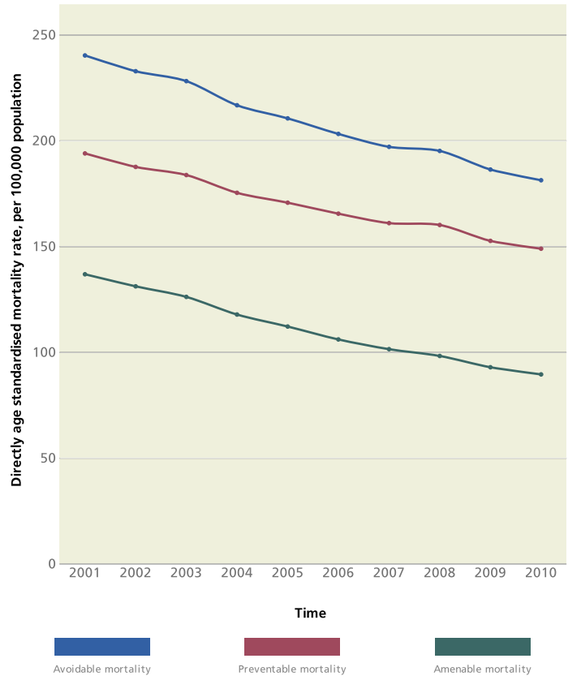
Understanding which deaths are potentially avoidable allows an assessment of the quality and performance of both healthcare and public health policies. Deaths amenable to healthcare are those that could be avoided by good healthcare, preventable deaths are those that could be avoided by public health interventions, and avoidable deaths are those that are considered either preventable or amenable.

In 2001, mortality due to causes considered avoidable represented approximately 26% of all deaths registered in England. This proportion decreased slightly over the period 2001–10 to almost 24% of all deaths in 2010.

Between 2001 and 2010, mortality considered amenable to healthcare decreased by 35%, preventable mortality by 23%, and avoidable mortality by 25%. In 2010, avoidable mortality varied between the regions of England and the rate for men and women is highest in the North West, and lowest for men in the East of England and for women in the South West.

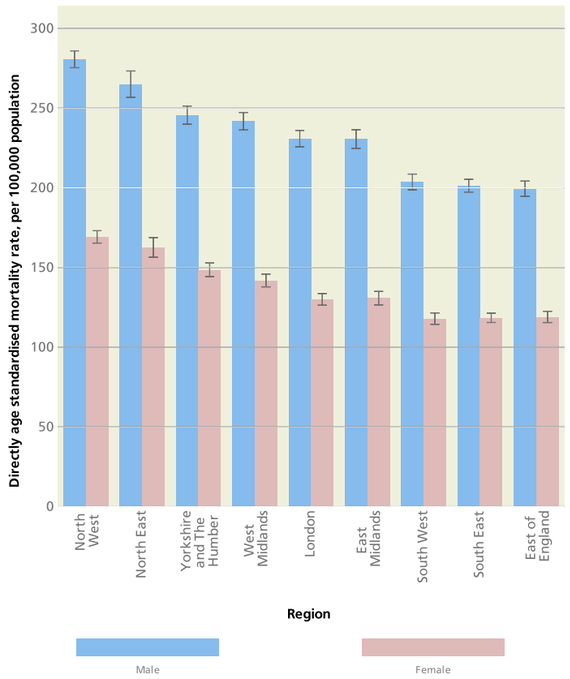
Interpretation of these statistics is not straightforward, but reduction in mortality amenable to healthcare appears to have made a contribution to the fall in overall mortality over the last decade. However in 2010 there were still 52,880 deaths amenable to healthcare that potentially could have been avoided.

Trend in mortality due to causes considered avoidable, England, 2001 to 2010



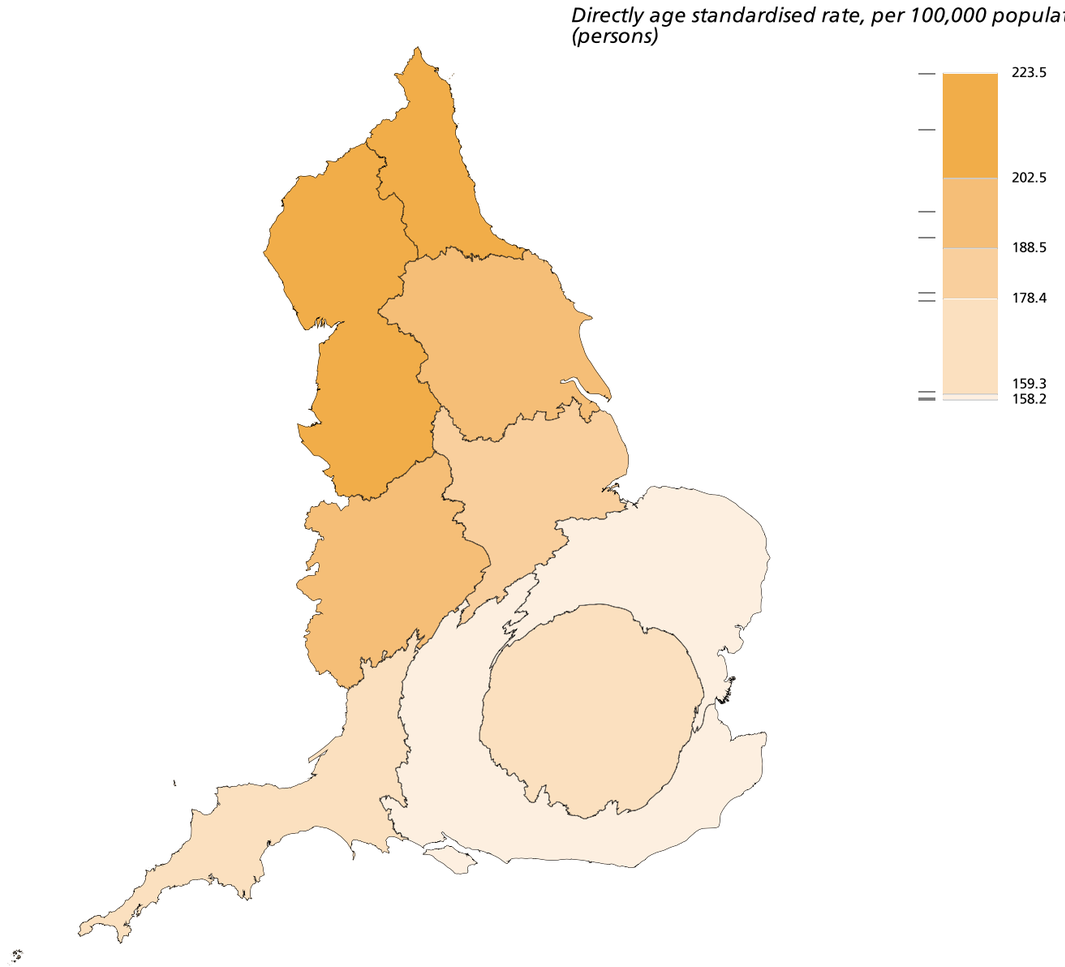
Source: Death registrations and 2001 to 2010 population estimates, ONS.

Mortality due to causes considered avoidable, by Region, England, 2010



Source: Death registrations and 2010 population estimates, ONS.

Mortality due to causes considered avoidable by Region, England, 2010



Source: Death registrations and 2010 population estimates, ONS.

Cancer survival in England has improved over the past decade. Despite this, survival for many cancers remains poor in comparison with other developed countries. Late diagnosis is the major factor underlying the poor survival rates in England.

The International Cancer Benchmarking Partnership has shown that survival improved during 1995–2007 for lung, colorectal, breast (women) and ovarian cancers in all areas, but remained higher in Australia, Canada, and Sweden, than in England.[1] This was particularly so in the first year after diagnosis and for patients aged 65 years and older. International differences narrowed at all ages for breast cancer, but less so or not at all for the other cancers.

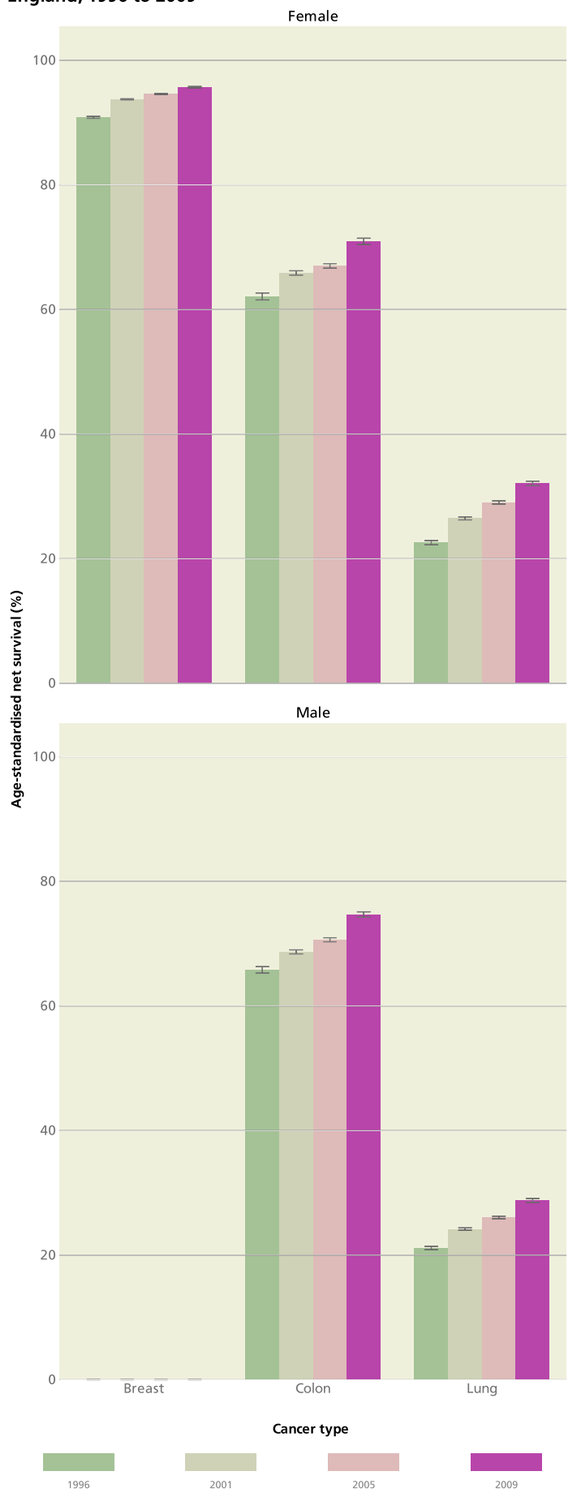
Geographic inequalities in cancer survival are also evident within England, with a clear north-south gradient in 1996 that was somewhat less marked in 2009.

One and five year survival rates have improved for cancers of the breast, colon and lung over the last decade.

Lung cancer still has one of the poorest five year survival rates (8.8% in women, 7.3% in men), with even the best English survival rates well below the European average. This is because more than two thirds of patients are still diagnosed at a late stage when curative treatment is not possible.

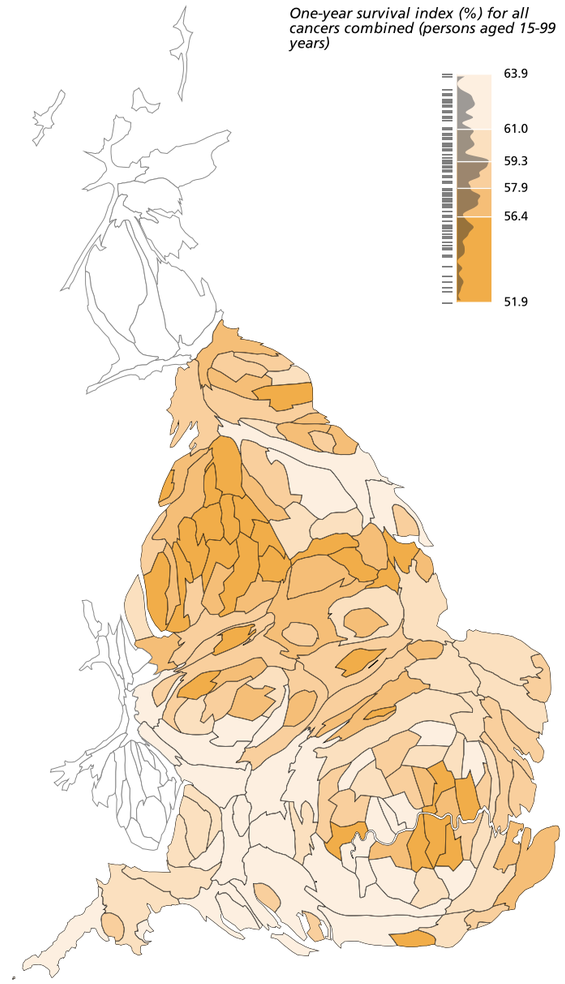
1 Coleman MP, et al, (2011). 'Cancer survival in Australia, Canada, Denmark, Norway, Sweden, and the UK, 1995–2007 (the International Cancer Benchmarking Partnership): an analysis of population-based cancer registry data'. *The Lancet*, vol 377, no 9760, pp 127–38.

Trend in one-year age-adjusted net survival for adults diagnosed with breast, colon and lung cancers by year of diagnosis and sex, England, 1996 to 2009



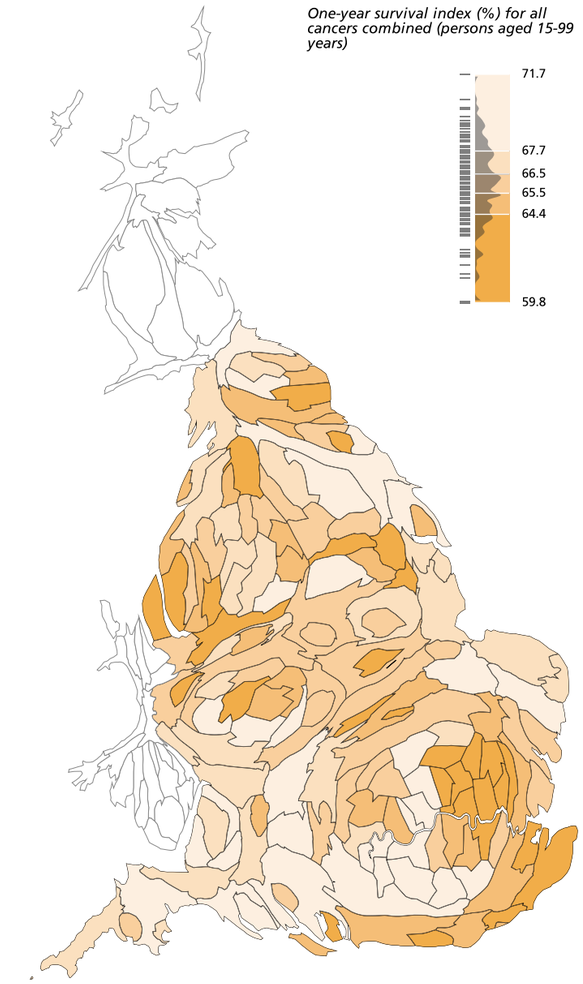
Source: ONS and the London School of Hygiene and Tropical Medicine. (Provided by NCIN & UKACR); Note data on breast cancer survival for males not shown

One-year survival index for all cancers combined by primary care trust, England, 1996



Source: ONS and the London School of Hygiene and Tropical Medicine. (Provided by NCIN & UKACR)

One-year survival index for all cancers combined by primary care trust, England, 2009



Source: ONS and the London School of Hygiene and Tropical Medicine. (Provided by NCIN & UKACR)

"Immunization is widely recognized as a proven tool for controlling and possibly eradicating disease and remains one of the most cost effective public health interventions" (World Health Organization). The national immunisation programme, which is shaped by advice from the Joint Committee on Vaccination and Immunisation, offers protection against a wide range of diseases/infections: diphtheria, tetanus, pertussis, polio and Haemophilus influenzae type b (Hib), meningococcal group C, pneumococcal disease, measles, mumps and rubella, hepatitis B, tuberculosis, cervical cancer caused by certain human papilloma viruses (HPVs) and influenza. Immunisations are targeted to specific age or clinical risk groups and success depends on high coverage in relevant groups.

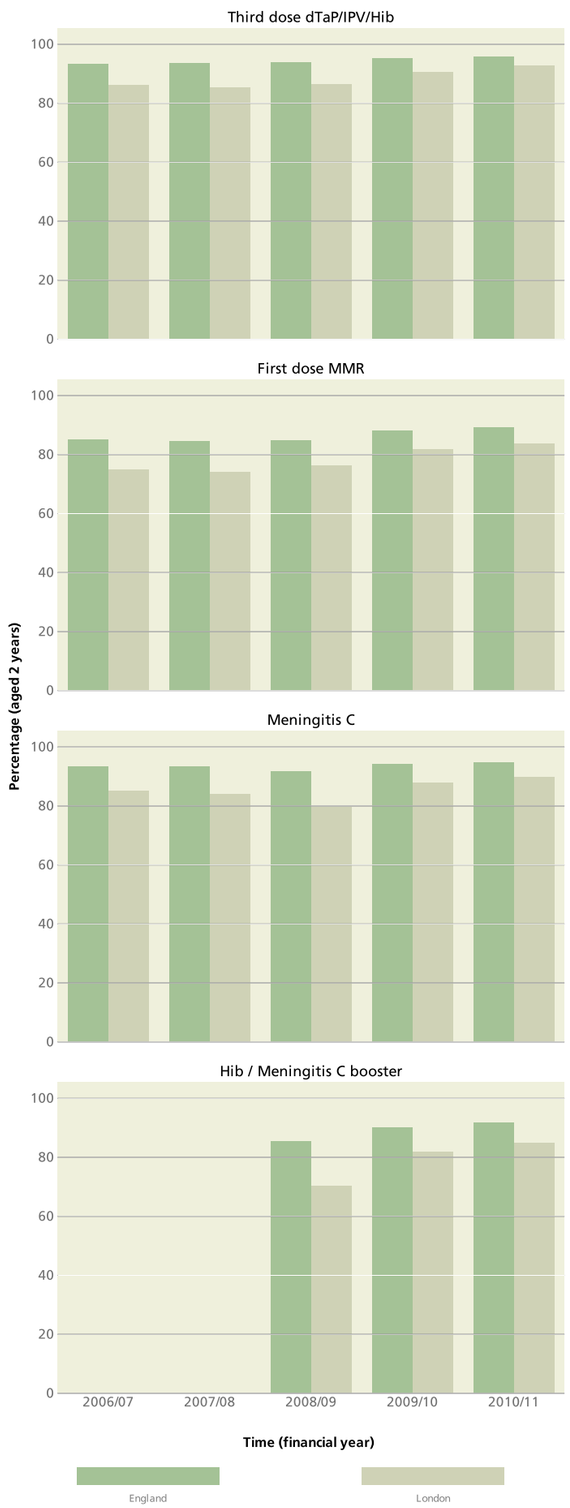
Coverage is the proportion of the target population that has been immunised. There is improving coverage of routine childhood (pre-school) immunisations, particularly in London, where coverage has been lower historically. Routine HPV immunisation for females aged 12-13 years has been successfully introduced; 80.1% coverage in the first year (2008/09), 76.4% coverage in 2009/10 and 84.2% coverage in 2010/11.

There is geographic variation in coverage as demonstrated by MMR immunisation of young children and HPV immunisation of young females. Influenza immunisations also show geographic variation in those aged 65 years and older and particularly in those aged six months to under 65 years in clinical risk groups for severe disease.

Worryingly, there is lower influenza immunisation coverage in clinical risk groups aged under 65 years compared with all those aged 65 years and older. The service has been set a challenging target of achieving 70% coverage in 2012/13, and 75% in 2013/14. It is important that we significantly increase vaccine coverage among this population. Evidence from research indicates effectiveness of ten simple steps to achieve high influenza vaccine coverage e.g. accuracy of lists of patients in risk groups, ensuring patients are contacted with an invitation to be vaccinated.[1]

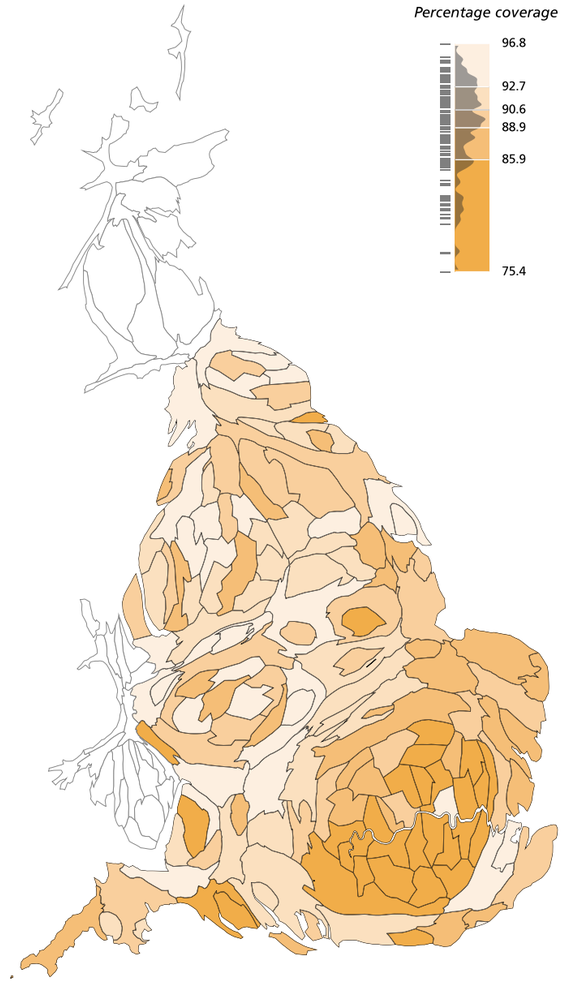
1 http://www.dh.gov.uk/health/2012/05/flu-vaccination-programme-2012-13/

Trend in childhood vaccination coverage at 2 years of age, England and London, 2006/07 to 2010/11



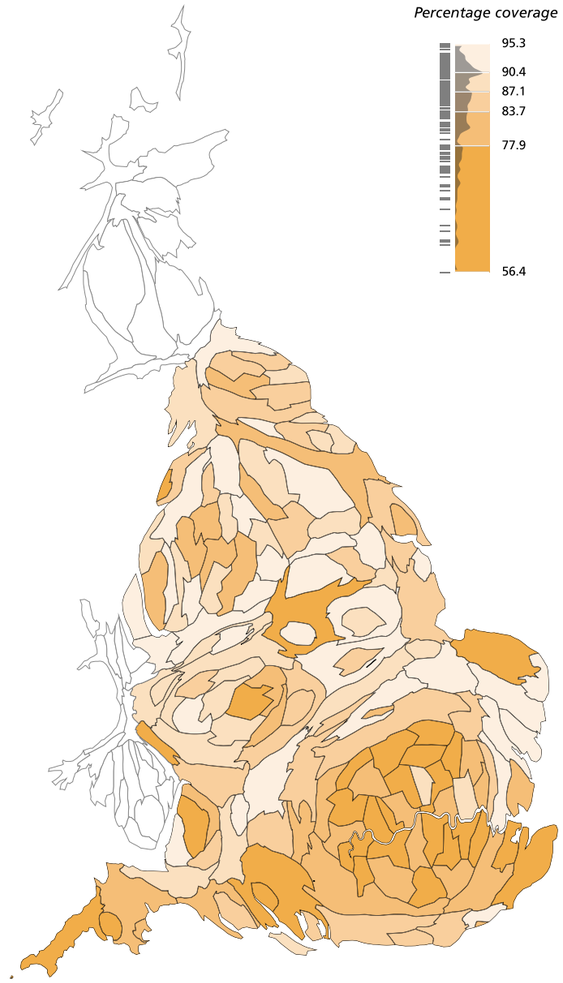
Source: COVER collection, HPA; Note: Data for Hib/MenC 2006/7 & 2007/8 unavailable

MMR vaccination coverage at two years of age by primary care trust, England, 2010/11



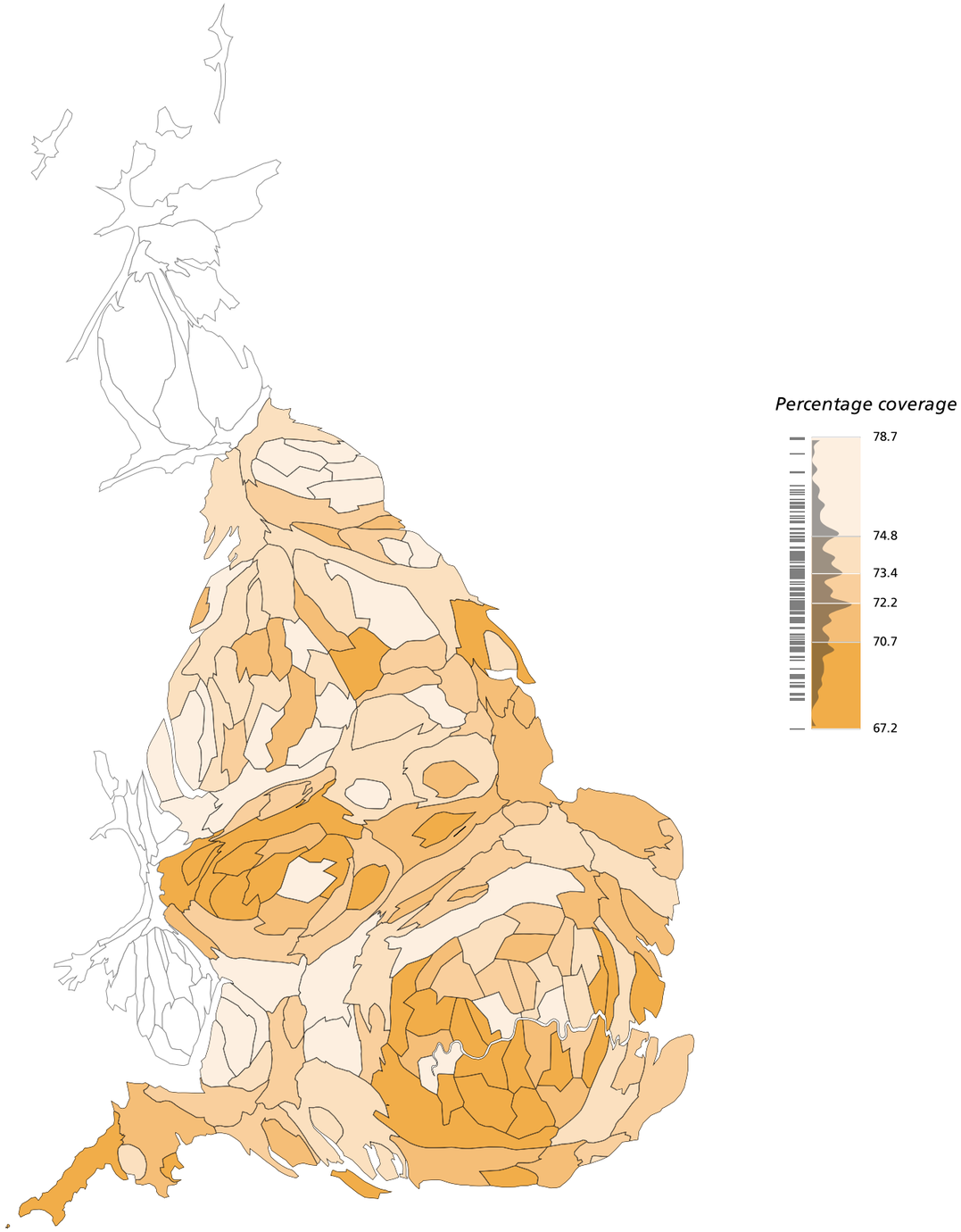
Source: COVER collection, HPA.

HPV vaccination coverage (completion of three dose course) in females aged 12 to 13 years by primary care trust, England, 2010/11



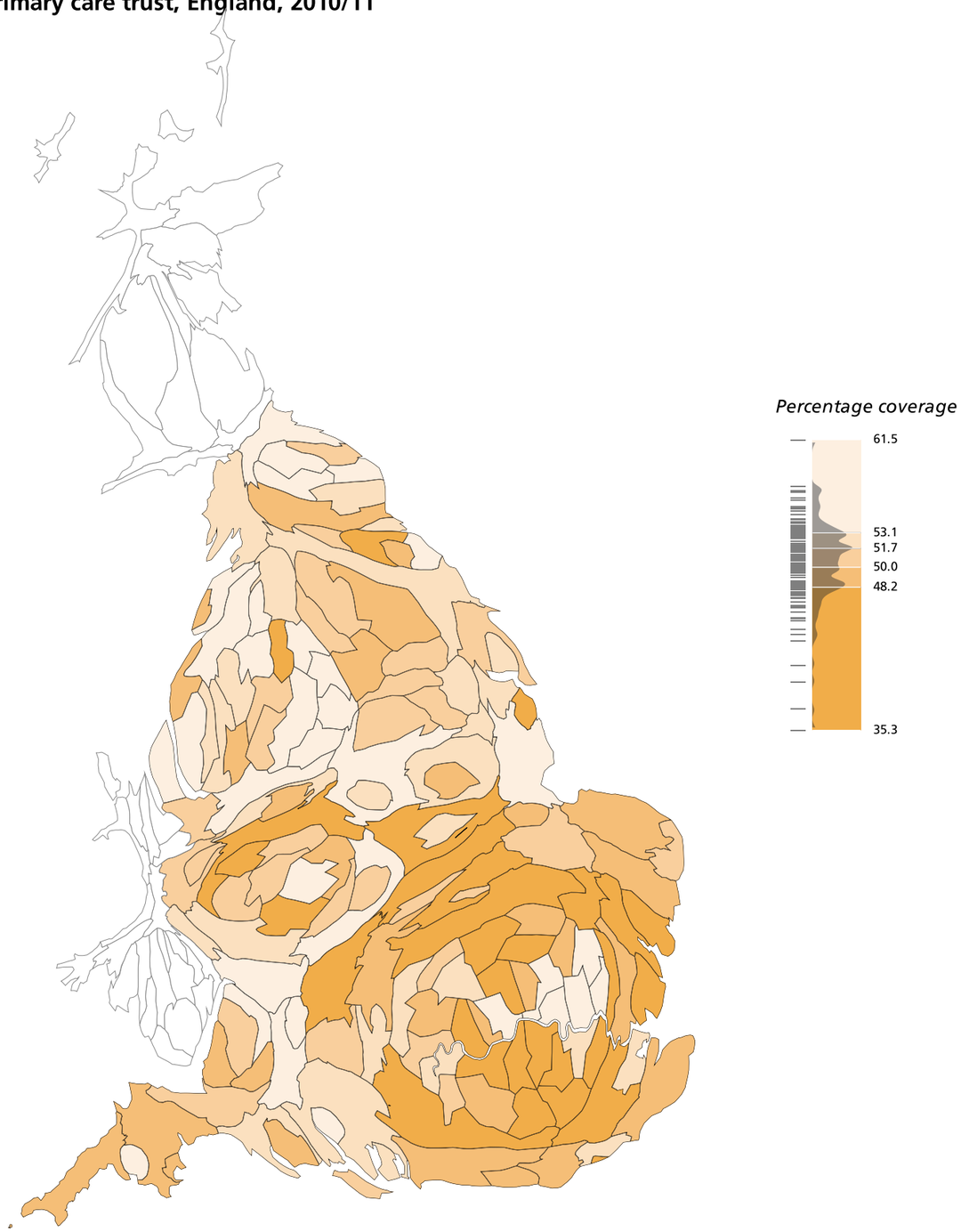
Source: ImmForm system, DH. (Provided by the HPA)

Influenza vaccine coverage in those aged 65 years and over by primary care trust, England, 2010/11



Source: ImmForm system, DH. (Provided by the HPA)

Influenza vaccine coverage in those aged under 65 in clinical risk groups (excluding pregnant women) by primary care trust, England, 2010/11



Source: ImmForm system, DH. (Provided by the HPA)

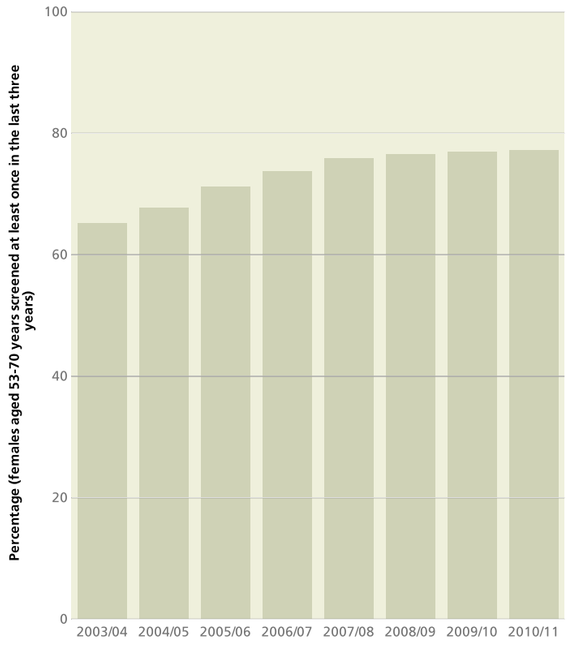
Screening is intended to detect cancers at an early stage. Under the national programme, eligible women aged 50-70 years are invited for regular breast screening and those aged 25-64 years are invited for regular cervical screening.

Breast Screening: In 2011, coverage in those aged 53-70 years was 77%. 131 PCTs reported target coverage (70%); 36 PCTs reported 80%, 20 PCTs reported less than 70%. From 2003 to 2011 coverage increased by 12%, partly due to screening programme expansion and the drive to increase uptake in the target age ranges.

Cervical Screening: In 2011, coverage in those aged 25-64 years was 79%. 149 PCTs reported target coverage (70%); 58 PCTs reported 80%, two PCTs reported less than 70%. From 2004 to 2011, coverage has improved in those aged 25-49 years by 3% and reduced in those aged 50-64 years by 3%. Changes to the screening policy in 2003 may partly explain the trends observed here. There was a marked increase in screening uptake in the younger cohort during January 2009 - June 2009 resulting from the 'Jade Goody effect'.

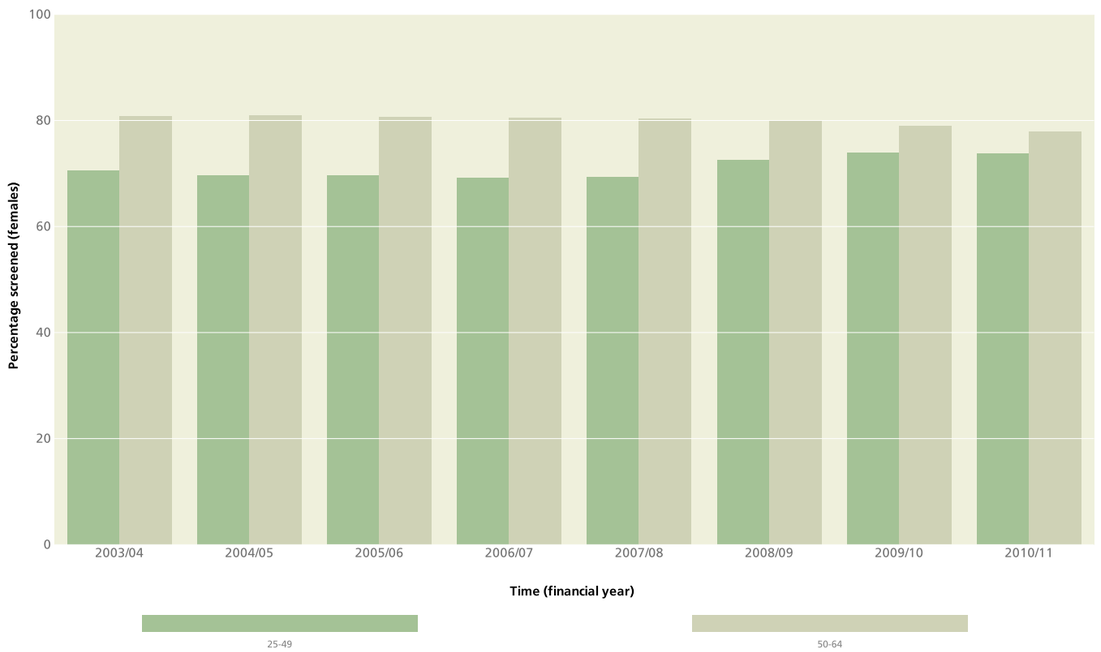
Initiatives aimed at improving screening coverage are essential to maintaining the quality and effectiveness of screening services. Information on coverage is an essential tool to monitor progress.

Trend in breast cancer screening coverage in females aged 53 to 70 years, England, 2003/04 to 2010/11



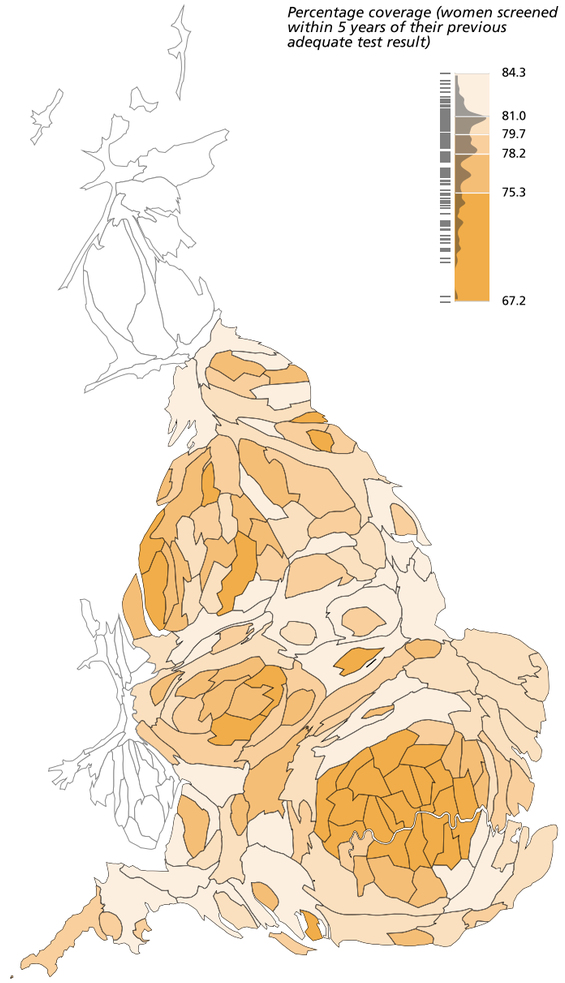
Source: KC63 statistics, DH. (Provided by the Health and Social Care Information Centre. Crown Copyright © 2012)

Trend in cervical cancer screening coverage, England, 2003/04 to 2010/11



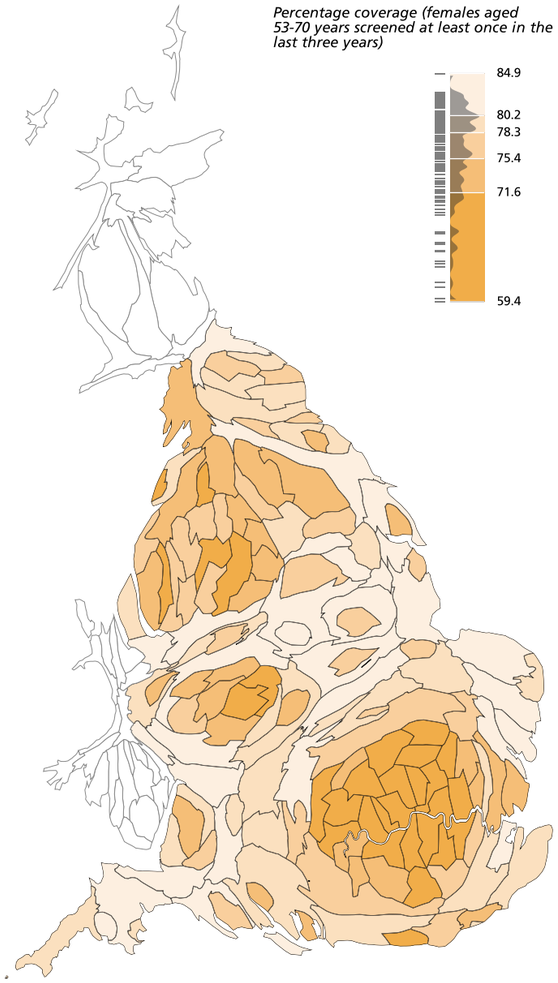
Source: KC53 statistics, DH. (Provided by the Health and Social Care Information Centre. Crown Copyright © 2012)

Cervical screening coverage of the target age group (aged 25 to 64 years), by primary care trust, England, 31st March 2011



Source: KC53 statistics, DH. (Provided by the Health and Social Care Information Centre)

Breast cancer screening coverage in females aged 53 to 70 years, by primary care trust, England, 2010/11



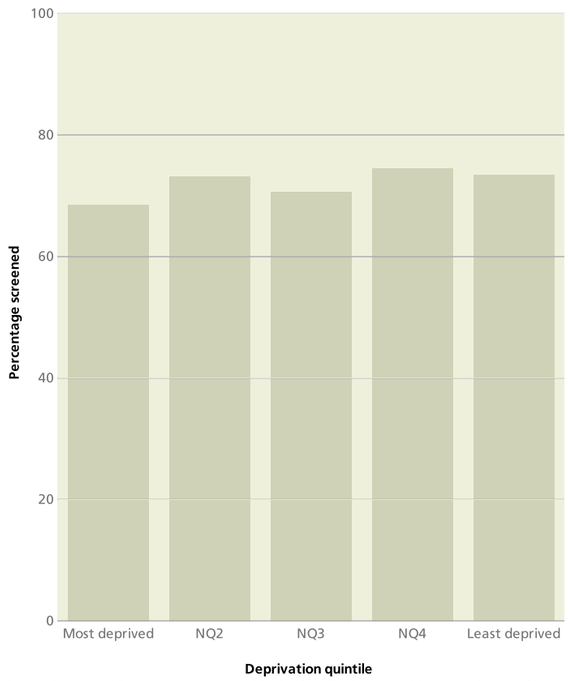
Source: KC63 statistics, DH. (Provided by The Health and Social Care Information Centre. Crown Copyright © 2012)

Diabetic retinopathy is the most common cause of blindness in adults. Early diagnosis and treatment prevents severe vision loss from diabetic retinopathy (the earlier treatment is received, the more likely it is to be effective). The National Diabetic Eye Screening Programme (DESP) offers annual screening to all those with diabetes aged 12 years and over. It is delivered by 91 local programmes, many with different service models developed according to local circumstances.

There is significant geographical variation in the uptake of screening. Uptake is measured by the percentage of the diabetic population who were offered retinopathy screening and accepted. In 2011 this ranged from 27% to 91%. The inter-quartile range was between 68% and 78%. The two PCTs with the lowest reported uptake were undergoing significant service reconfiguration during data collection. Caution is needed with interpretation due to data quality issues, leading to exclusion of data from two PCTs.

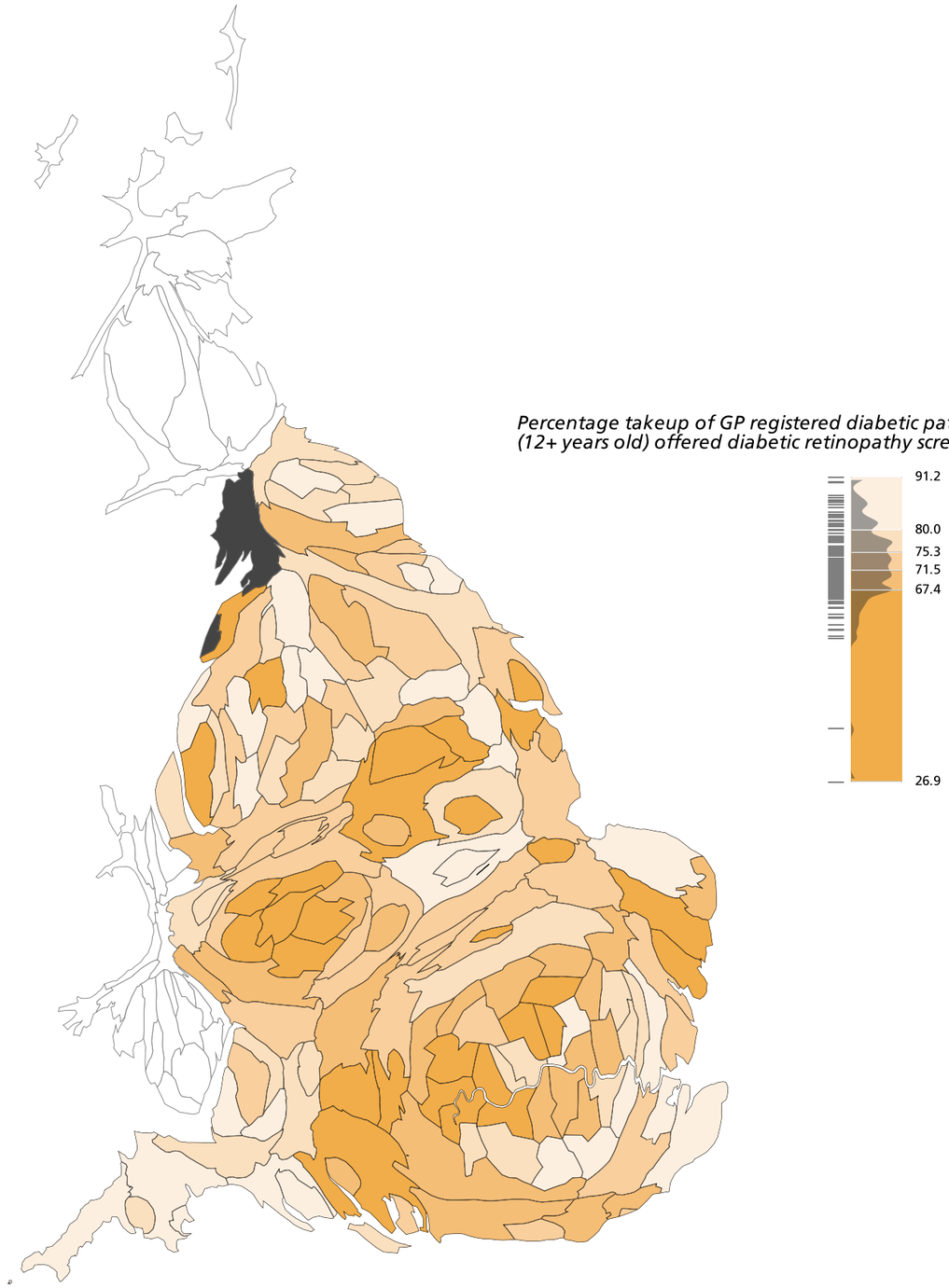
To increase rates of early detection of diabetic retinopathy, local programmes need to improve screening uptake in the diabetic population. Improvement in screening uptake, and in the quality of data collection, will ensure that all people with diabetes in England are offered high quality screening.

Diabetic retinopathy screening uptake by deprivation, England, 2010/11



Source: Integrated Performance Measures Monitoring (IPMR) return, DH. (Analysis by NHS Diabetic Eye Screening Programme)

Diabetic retinopathy screening by primary care trust, England, July - September 2011



Source: Integrated Performance Measures Monitoring (IPMR) return, DH. (Analysis by NHS Diabetic Eye Screening Programme)

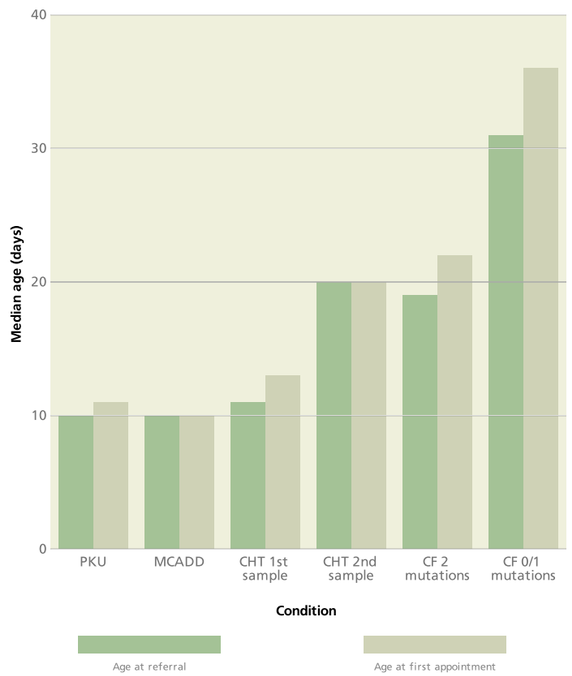
Newborn Bloodspot Screening is offered to all newborns to identify babies with rare but serious conditions. For the very small number of cases identified, early detection offers early treatment to improve health and prevent severe disability or death.

Babies are referred to specialist care directly by the laboratory and parents offered specialist appointment before the baby is 2 weeks of age (PKU, MCADD, CHT detected on 1st sample) and 4-6 weeks (CF, CHT detected on 2nd sample). All results are recorded on the Child Health System (CHS) within 6 weeks, the majority by 17 days.

Most screen positive babies are entering care in time though nationwide variation exists with some babies not accessing timely care. There is also considerable geographical variation in recording and reporting coverage, ranging from 100% to incomplete data for a number of areas. There is significant variation of Sickle Cell Disease birth prevalence by ethnicity which is consistent over time with approximately 1 in 100 Black African babies testing screen positive in the period from 2005-2011.

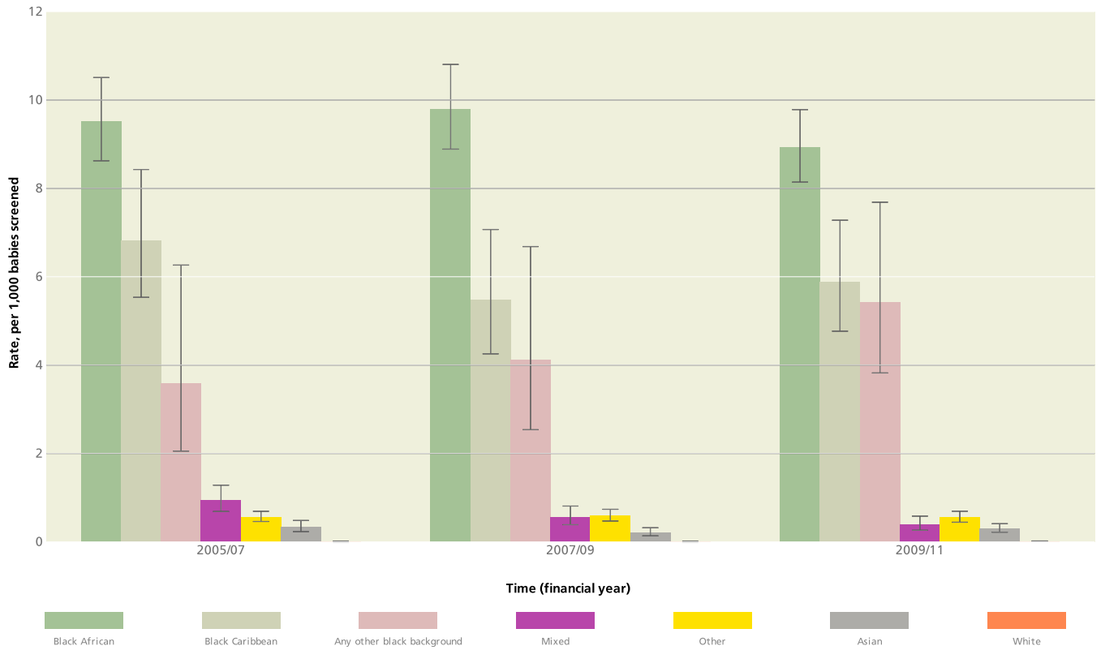
Early detection with early entry of screen positive babies into specialist care will improve outcomes. To reduce variation in coverage, there must be reduced reliance on manual data recording and manual processes.

Median age at referral and first appointment for babies screened positive for selected conditions, England, 2010/11



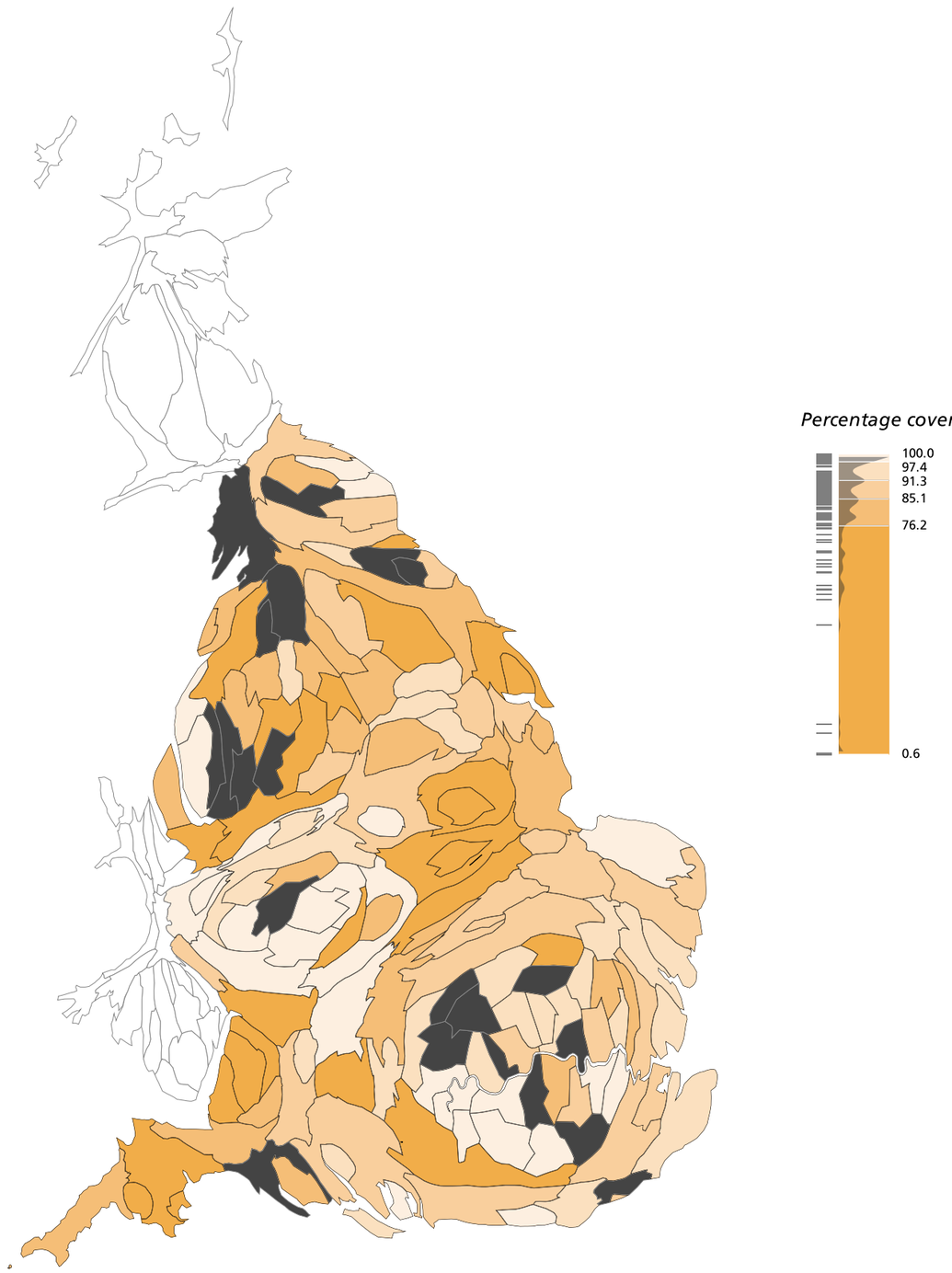
Source: Newborn Screening Laboratories. (Analysis by UK Newborn Screening Programme Centre)

Trend in rate of babies screened positive for significant sickle cell conditions by ethnic group, England, 2005/07 to 2009/11



Source: NHS Sickle Cell and Thalassaemia Screening Programme. (Data from 13 newborn screening haemoglobinopathy laboratories)

Newborn blood spot screening coverage at 17 days by primary care trust, England, 2010/11



Source: Child Health Record Departments. (Analysis by UK Newborn Screening Programme Centre)

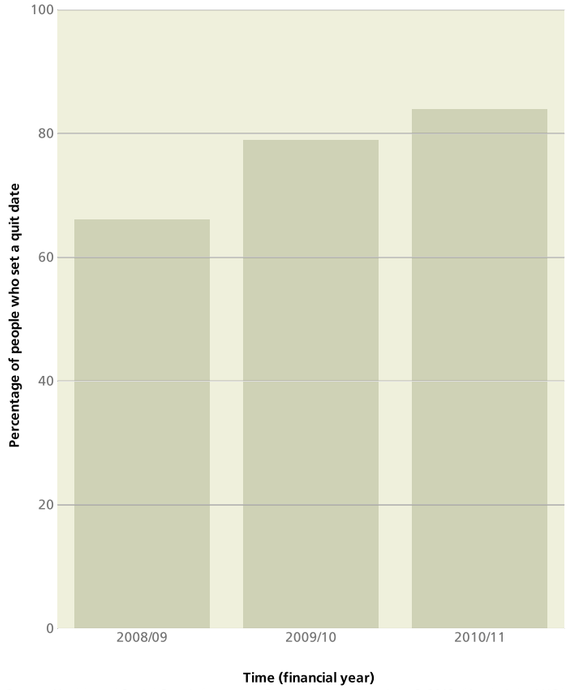
Smoking is an important cause of preventable illness and early death in England, and a major contributor to health inequalities. NHS Stop Smoking Services (NHS SSS) offer support to help people quit smoking. These services complement the use of pharmacotherapy, are provided by trained personnel and are designed to be widely accessible within the local community through group therapy and 1-1 support. Over 380,000 people in England successfully quit smoking with NHS Stop Smoking Services in 2010/11, but there was substantial variation across local areas with some of the highest rates found in the Midlands and the North.

Of those with a valid National Statistics Socio-Economic Classification (NS-SEC) record, 84% set a quit date with an NHS Stop Smoking Service in 2010/11. About 270,000 (70%) of those who quit smoking were carbon monoxide (CO) validated at 4 weeks follow-up i.e. their smoking quit status could be confirmed by the level of CO in their blood stream. This is an indication of the level of tobacco use and, where possible, is recorded for all those who self-report that they have quit smoking at 4 weeks follow-up.

The annual cost to the NHS of treating smoking related illness and disease were estimated at £5.2 billion a year in 2005/06.[1] There is clear evidence that a range of interventions in primary care, pharmacy, local authority and workplace settings are effective in reducing smoking. Improving access to, and promoting use of NHS SSS, can help prevent smoking related illnesses and associated treatment costs.

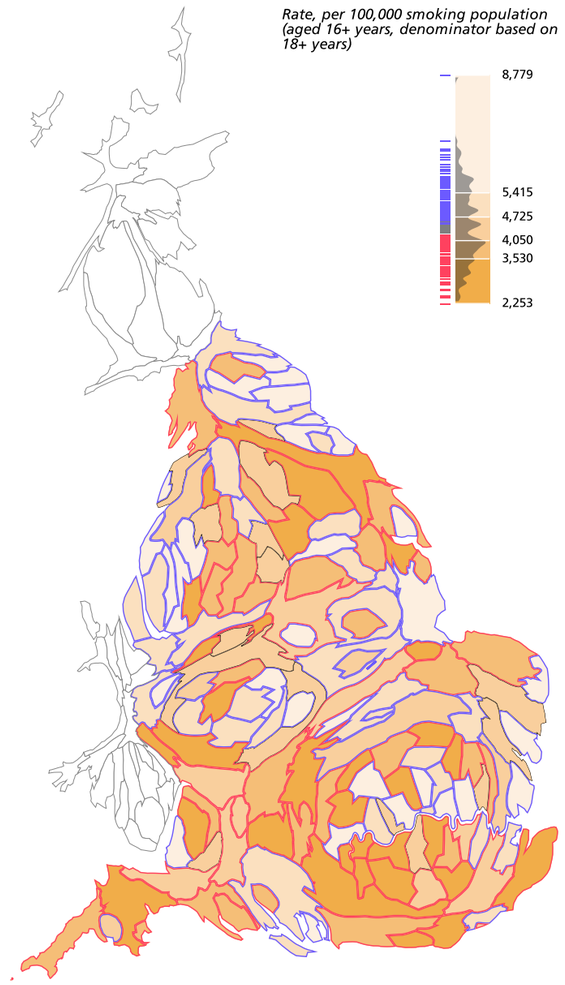
1 Allender, S. The burden of smoking-related ill health in the UK. Tobacco Control 2009;18:262-267 doi:10.1136/tc.2008.026294

Trend in percentage of persons who set a quit date with a Stop Smoking Service, England, 2008/09 to 2010/11



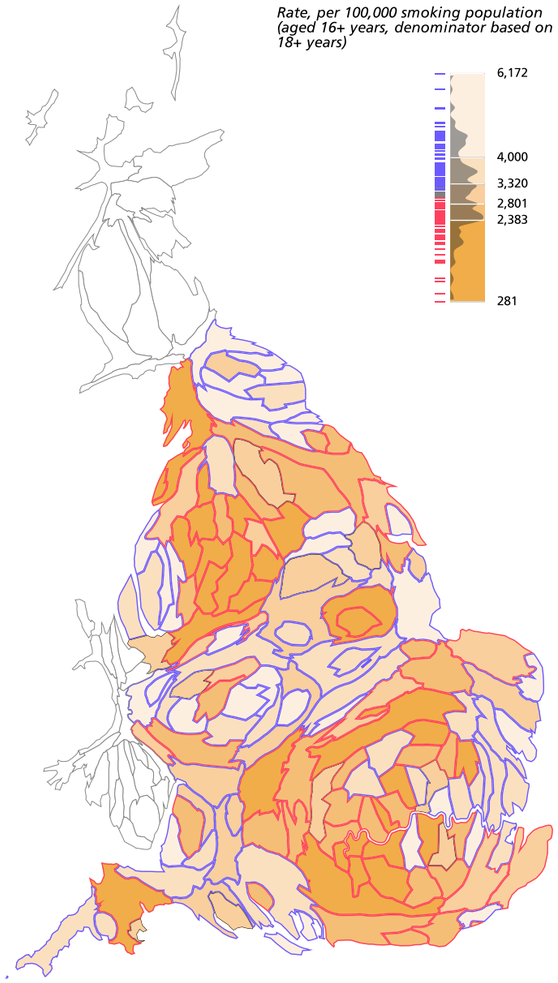
Source: Health and Social Care Information Centre, Crown Copyright © 2012. (Analysis by LHO)

Successful smoking quitter rates at 4 week follow up by primary care trust, England, 2010/11



Source: The Health and Social Care Information Centre, ONS Integrated Household Survey 2010/11. Crown Copyright © 2012. 2010 population estimates, ONS. (Analysis by LHO)

Successful smoking quitter rates (CO validated) at 4 week follow up by primary care trust, England, 2010/11



Source: The Health and Social Care Information Centre, ONS Integrated Household Survey 2010/11. Crown Copyright © 2012. 2010 population estimates, ONS. (Analysis by LHO)

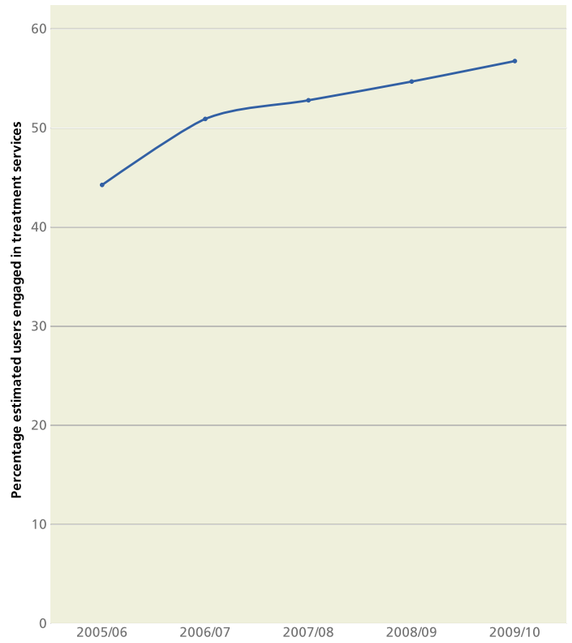
Both drug and alcohol use create huge societal costs due to their impact on individuals and their families, and on services. Treatments for drug and alcohol use are effective in reducing harmful behaviours. Healthcare workers need to identify harmful drinking and alcohol dependence, and provide structured, brief advice. The aims of specialist services are to promote recovery from addiction, minimise harm and reintegrate users into society.

Access to specialist alcohol treatment services varies across England, the highest rates of access being in urban areas. Access to drug use treatment services also shows variation and concentration in urban areas. Typically, four out of five users in treatment are heroin users.

It is estimated that 57% of opiate and/or crack users in England are in structured treatment, however there is considerable variation across local authorities from under 21% to 75%. Over the last five years users in treatment has risen from 44% to 57%, and users waiting over three weeks to get into treatment has fallen from 14% to 4%.

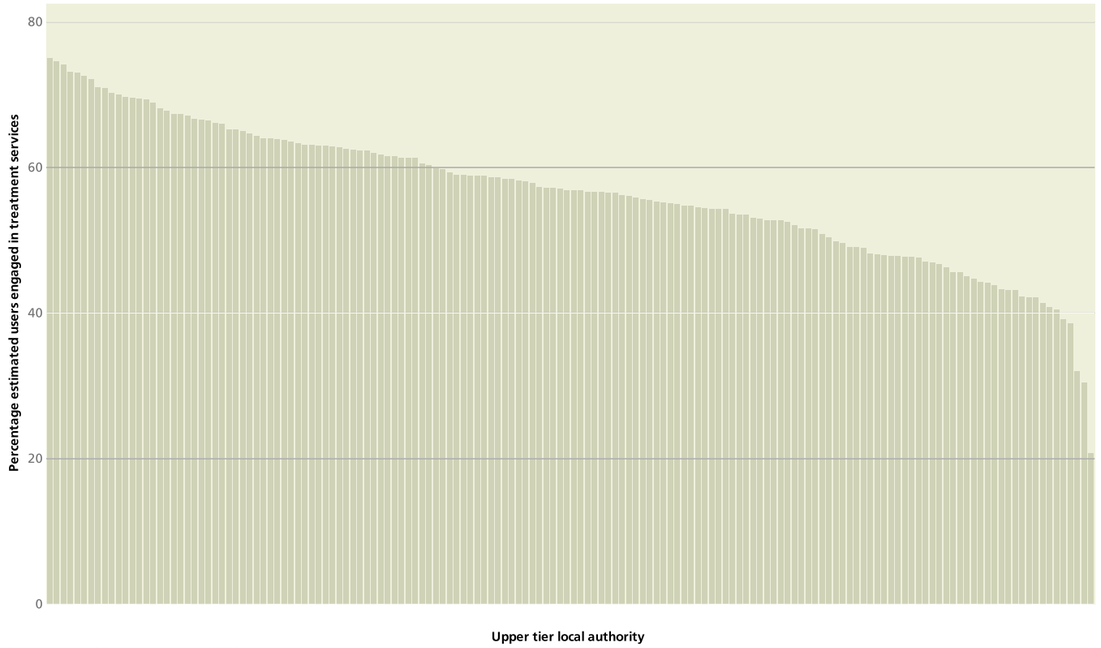
While the prevalence of alcohol dependence is much higher than drug dependence the provision of specialist alcohol treatment is less than that for drug treatment and needs to be increased. Provision should reflect need more closely for both drugs and alcohol services.

Trend in percentage of adult opiate and/or crack users engaged in treatment, England, 2005/06 to 2009/10



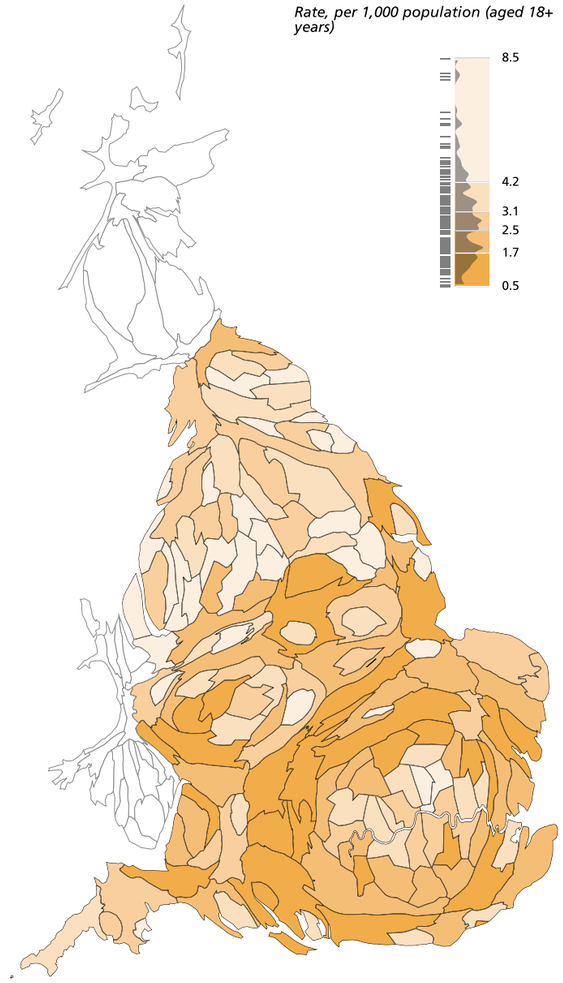
Source: National Treatment Agency (NTA)

Proportion of adult opiate and/or crack users engaged in treatment by upper tier local authority, England, 2009/10



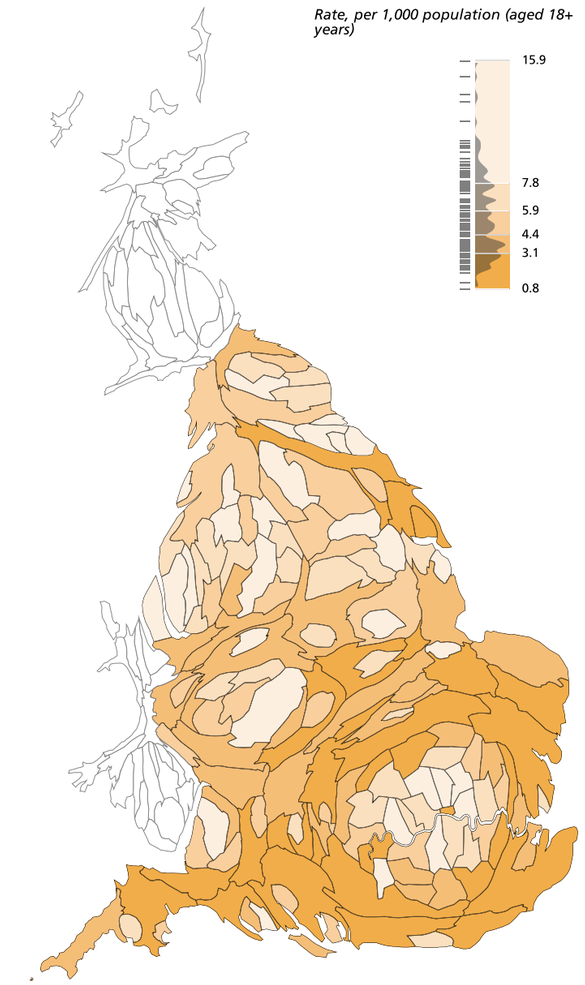
Source: National Treatment Agency (NTA).

Alcohol treatment rate in persons aged 18 years and over by primary care trust, England, 2010/11



Source: National Treatment Agency (NTA). 2010 population estimates, ONS. (Analysis by SEPHO)

Adults receiving drug treatment by upper tier local authority, England, 2010/11



Source: National Treatment Agency (NTA). 2010 population estimates, ONS. (Analysis by SEPHO)

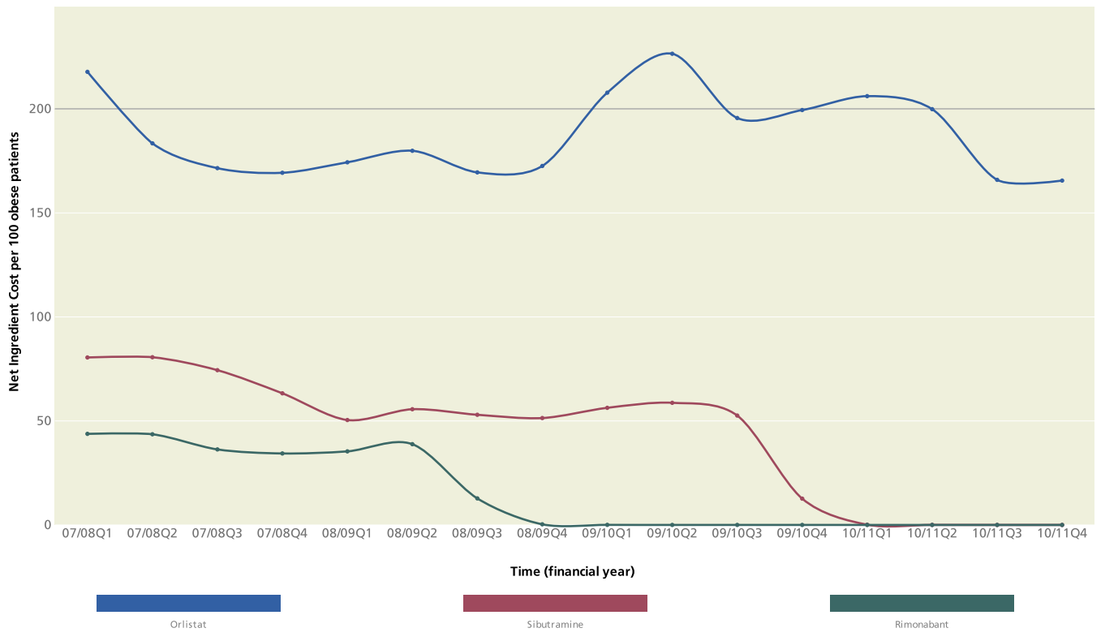
Obesity is a serious and increasing public health problem. Multi-component weight management programmes are available through the NHS, as is treatment using drugs and surgery. NICE clinical guideline 43 addresses the prevention and management of overweight and obesity in adults and children.

Drug treatment should only be prescribed for adults who have failed to achieve their target weight with lifestyle changes. Orlistat is the only licensed drug for obesity, available on prescription and over the counter. Marketing authorisation for Sibutramine and Rimonabant has been suspended due to concerns about side effects.

The prescribing data are presented as the rate of obesity drug prescribing per 100 obese patients. There is wide variation in prescribing rates, reflecting differences in clinical practice. Overall, prescribing has decreased over the last four years.

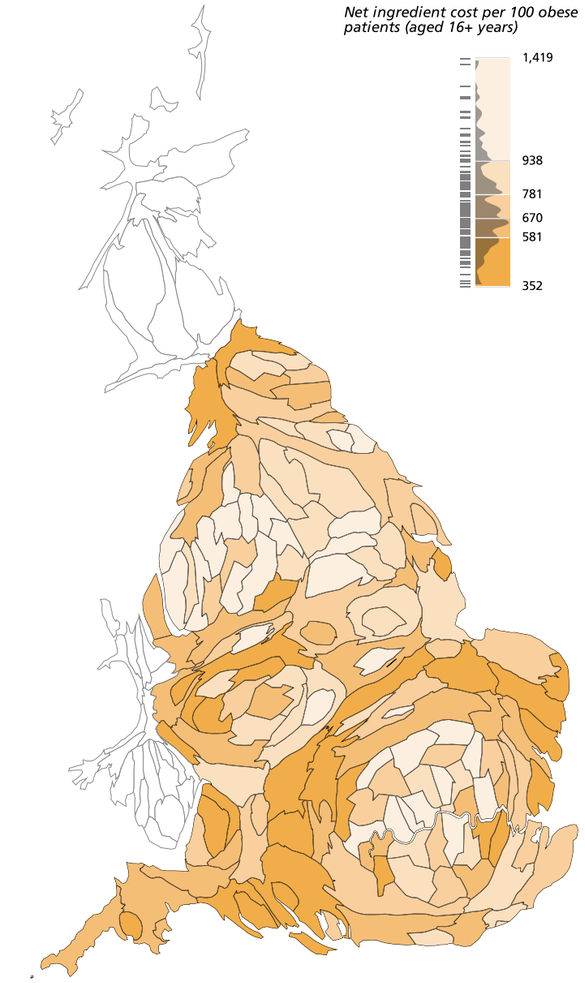
Weight loss (bariatric) surgery should be offered only when non-surgical measures have been unsuccessful. It is recommended as a treatment option for people who are morbidly obese or have significant obesity related disease. The number of NHS funded operations has increased rapidly over recent years, but the level of provision varies widely between PCTs, reflecting variations in access and prevalence of obesity. Lack of private sector data makes interpretation difficult.

Trend in prescribing for obesity drugs (Orlistat, Sibutramine & Rimonabant), England, by quarter 2007/08 to 2010/11



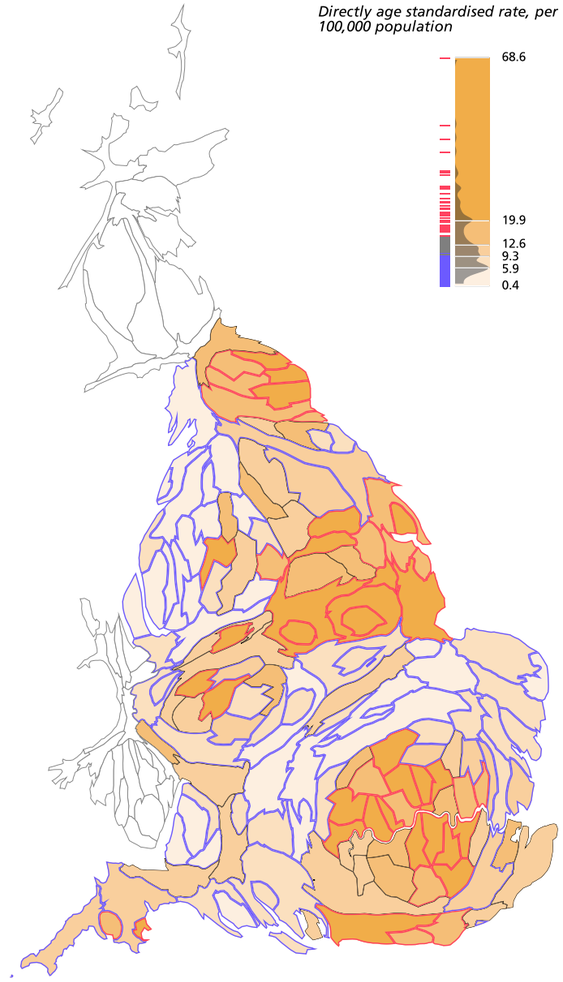
Source: NHS Prescription Services Prescribing Database via ePACT, NHS Business Services Authority. Estimated number of obese patients, Quality and Outcomes Framework (QOF), Health and Social Care Information Centre. Crown Copyright © 2012. (Analysis by SEPHO)

Obesity prescribing (Orlistat, Sibutramine & Rimonabant) by primary care trust, England, 2010/11



Source: NHS Prescription Services Prescribing Database via ePACT, NHS Business Services Authority. Estimated number of obese patients, Quality and Outcomes Framework (QOF), Health and Social Care Information Centre. Crown Copyright © 2012. (Analysis by SEPHO)

Bariatric procedure rates by primary care trust, England, 2008/09-2010/11



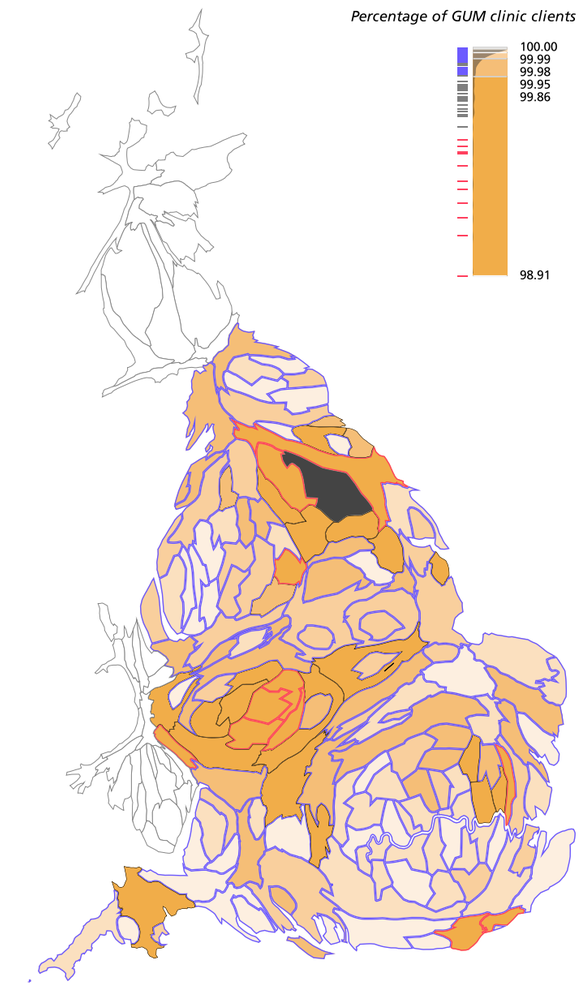
Source: Hospital Episode Statistics (HES), Health and Social Care Information Centre.Crown Copyright © 2012. 2010 Population estimates suplied by ONS. (Analysis by SEPHO)

The number of diagnoses of sexually transmitted infections (STIs) is rising. While prevention remains the highest priority, early detection and treatment prevents onward transmission and long term complications such as pelvic inflammatory disease, ectopic pregnancy, infertility, and in the case of HIV, life threatening illness.

Government policy is to ensure an integrated model of service delivery that provides easy access to confidential, non-judgmental services for STIs. Services are provided through general practice, or through sexual health or genitourinary medicine (GUM) clinics.

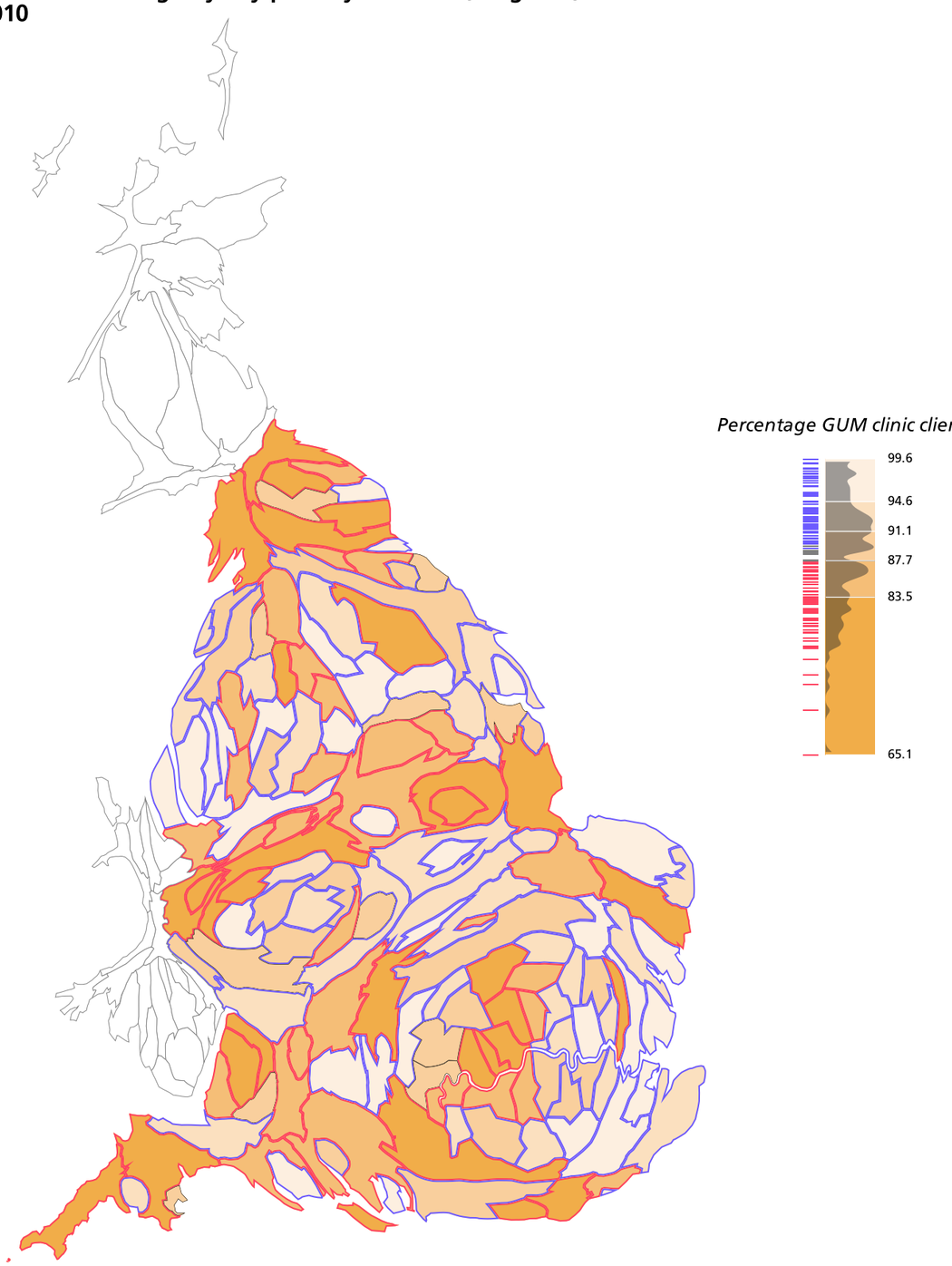
The government pledges that people can access GUM clinics within 48 hours of contacting a service, either as self referrals, or through a clinical referral. In 2010 over 99% of clients in all but two PCT areas were offered an appointment within two working days. However, not all took advantage of the offer of rapid access. The average number of clients seen within two working days was 88% but there was considerable variation from 65% to nearly 100%. Access in rural areas appears to be a particular challenge. Young people need to be continually made aware of STIs and the services available.

Proportion of genitourinary medicine clinic clients offered an appointment within 2 working days by primary care trust, England, 2010



Source: Genitourinary Medicine Access Monthly Monitoring audit (GUMAMM), DH. (Analysis provided by SWPHO). Note: Leeds PCT (percentage of GUM clinic clients offered an appointment within 2 working days = 88.9, 95%CI 88.4 to 88.4) is excluded from this map as it is an extreme outlier).

Proportion of genitourinary medicine clinic clients seen within 2 working days by primary care trust, England, 2010



Source: Genitourinary Medicine Access Monthly Monitoring audit (GUMAMM), DH. (Analysis provided by SWPHO)

Pregnant women should access maternity services before 13 weeks for assessment, information sharing and planning care. Rates of early access to maternity services are above 80% for all regions with the exception of London at 76%. Nationally, the figure is 84%. Services should aim to increase the percentage of women who access maternity services early through targeting vulnerable and socially excluded groups and focusing on reducing the health inequalities these groups face.

Currently, exclusive breastfeeding is recommended for the first 6 months, as research has shown that infants who are not breastfed are more likely to have infections. They may be more likely to develop diabetes in later life. For mothers, breastfeeding may reduce the risk of certain cancers.

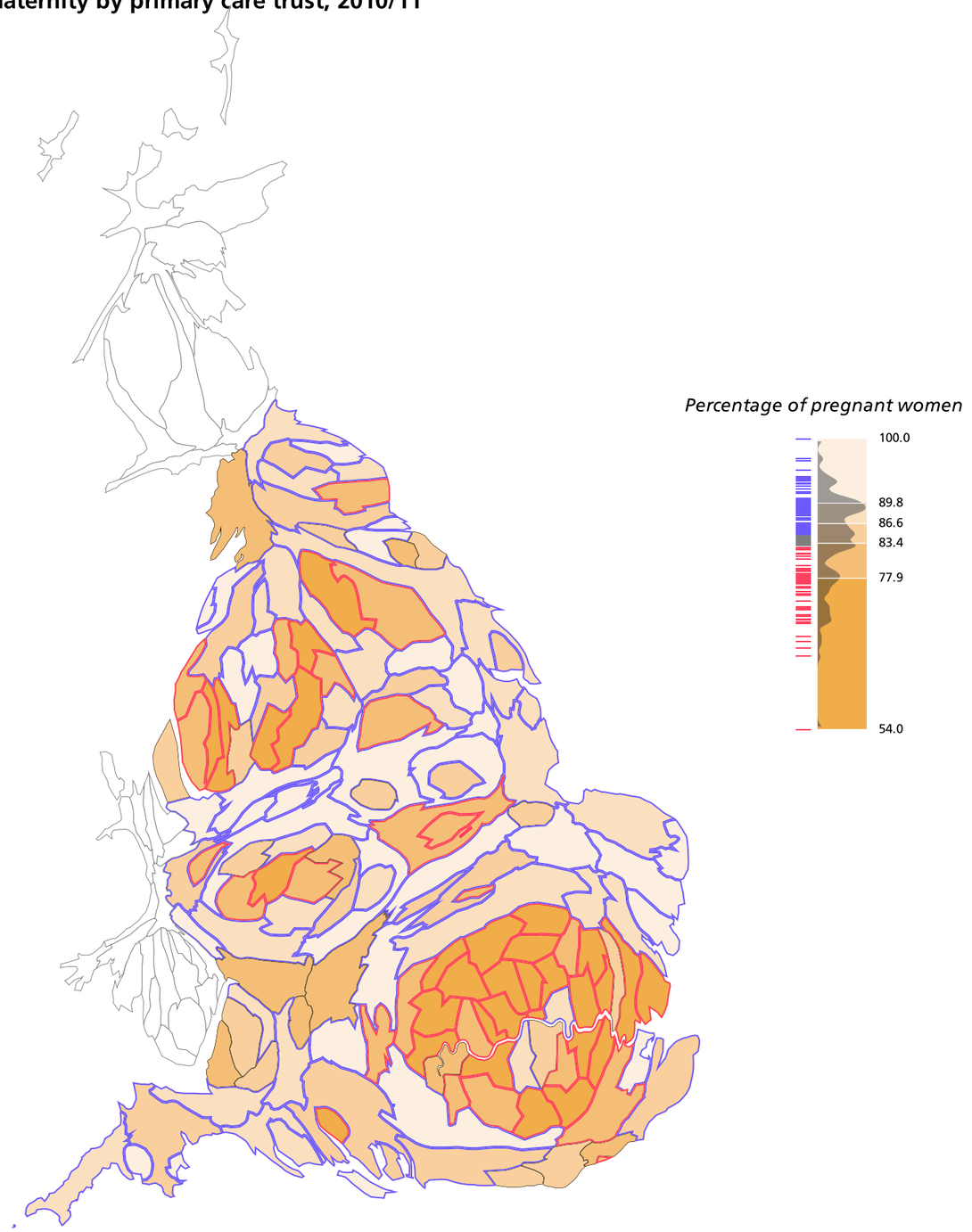
Local breastfeeding rates at 6 to 8 weeks vary greatly, ranging from 19% to 85%, with a national average of 49%. There is only a weak correlation with deprivation indicating that mothers from deprived areas are being well supported.

To improve breastfeeding rates, services should consider implementing peer support, education for health professionals, and ensuring organisational compliance with the UNICEF Baby Friendly accreditation.

Comparison of proportion of infants totally or partially breastfed and deprivation by primary care trust, England, 2010/11

Source: Integrated Performance Measures Monitoring (IPMR), DH and Indices of Deprivation 2010, DCLG. (Analysis by ChiMat)

Proportion of women seen and assessed by a healthcare professional within 12 weeks and 6 days of their maternity by primary care trust, 2010/11



Source: Integrated Performance Measures Monitoring (IPMR), DH. (Analysis by ChiMat)

Reducing unnecessary emergency admissions for children is a priority, and reduces the use of clinical resources. Evidence suggests that, even where clinicians agree on the optimal quality of a clinical service, variations in children's health services still exist.

Currently, emergency admission rates for all conditions are highest in children aged 0-4 years, and boys in general have higher admission rates than girls.

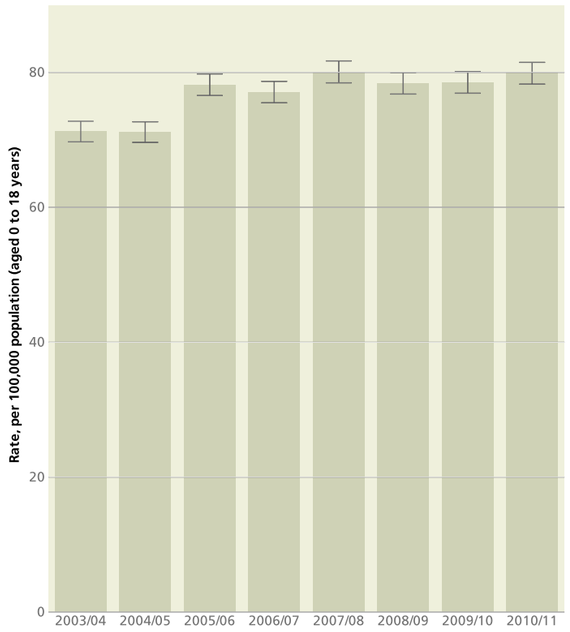
The rate of emergency admissions can be improved by reducing the number of childhood accidents. Issuing advice on safety in the home and working in partnership to improve road safety will contribute to this priority.

Since 2003/04, the national rate of emergency admission for epilepsy in children has risen. For PCTs in England, current rates range from 19.1 to 181.2 admissions per 100,000 population aged 0-18 years. These variations probably reflect differences in clinical practice and availability of specialist services.

Epilepsy is more common in deprived populations. However, deprivation alone cannot explain this degree of variation. The reasons for variation need to be investigated using a range of comparators, which will inform decisions around commissioning interventions and services such as specialist nurses and liaison with primary care and schools. This is explored in more depth in the NHS Atlas of Variation for Children and Young People[1]

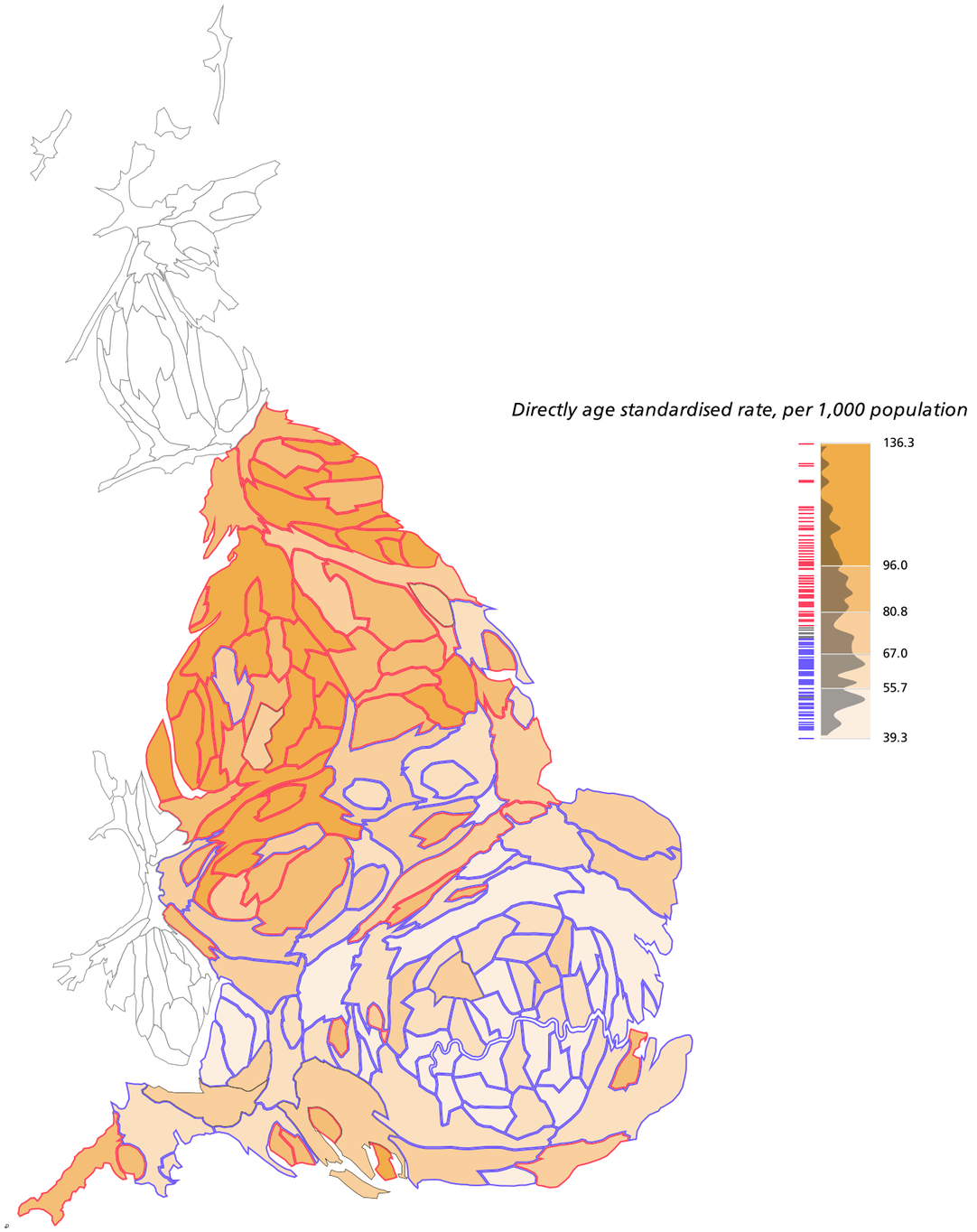
1 Right Care (2012) NHS Atlas of Variation for Children and Young People. Available at http://www.rightcare.nhs.uk/index.php/atlas/children-and-young-adults/ [Accessed 17 October 2012]

Trend in emergency admission rate for epilepsy in 0 to 18 year olds, England, 2003/04 to 2010/11



Source: Hospital Episode Statistics (HES), Health and Social Care Information Centre.Crown Copyright © 2012. 2003 to 2010 population estimates supplied by ONS. (Analysis by ChiMat)

Rate of emergency admissions in 0 to 19 year olds by upper tier local authority, England, 2010/11



Source: Hospital Episode Statistics (HES), Health and Social Care Information Centre.Crown Copyright © 2012. 2010 population estimates supplied by ONS. (Analysis by ChiMat)

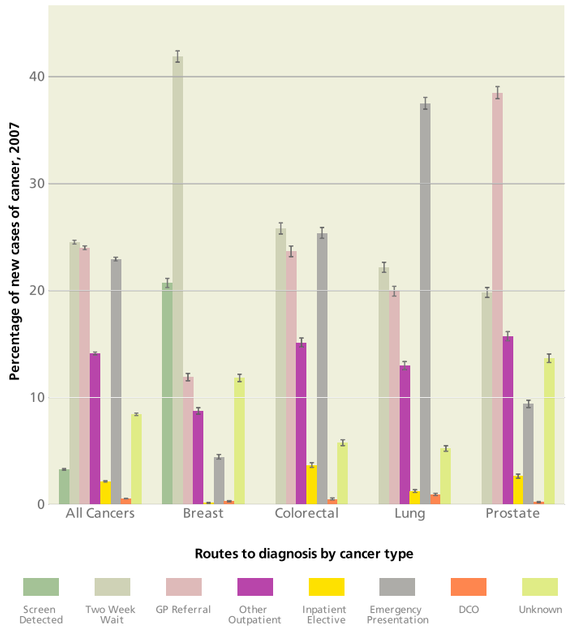
It is estimated that if cancer patients were diagnosed at the same earlier stage as they are in other countries, up to 10,000 deaths in England could be avoided every year.

Across England, there are around one million urgent GP referrals for suspected cancer each year. Of these patients, around 95% were seen within 14 days of referral. On average, a GP will make around 25 urgent referrals a year. However there is wide variation in urgent GP referrals rates across PCTs and GP practices in England.

To help promote early diagnosis of cancer a better understanding of the different routes taken by patients to their cancer diagnoses, and the effect this has on overall outcomes, is important. Across all cancers, 25% of patients are being diagnosed through the 'Two Week Wait' route, whilst 23% are presenting as emergencies.

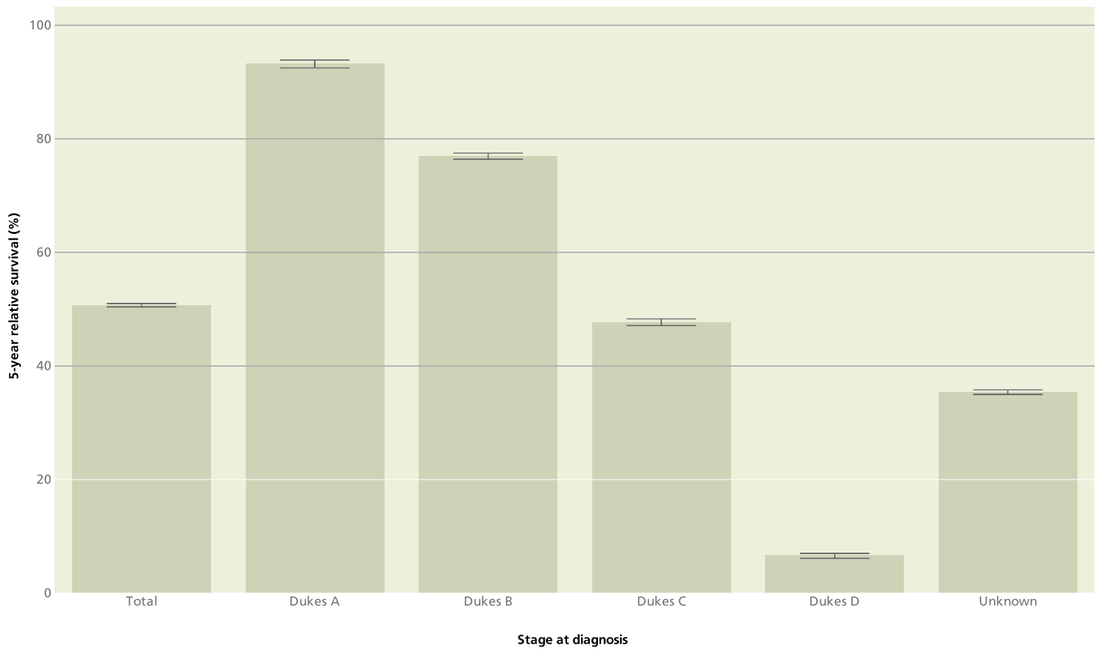
Over 90% of patients diagnosed with the earliest stage of bowel cancer (Dukes A) survived five years from diagnosis compared to only 7% of those diagnosed with advanced disease which has spread to other parts of the body (Dukes D). The introduction of the bowel screening programme for people aged 60-69 will help cancer to be detected earlier and result in improved outcomes for patients.

Routes to diagnosis by cancer type, England, 2007



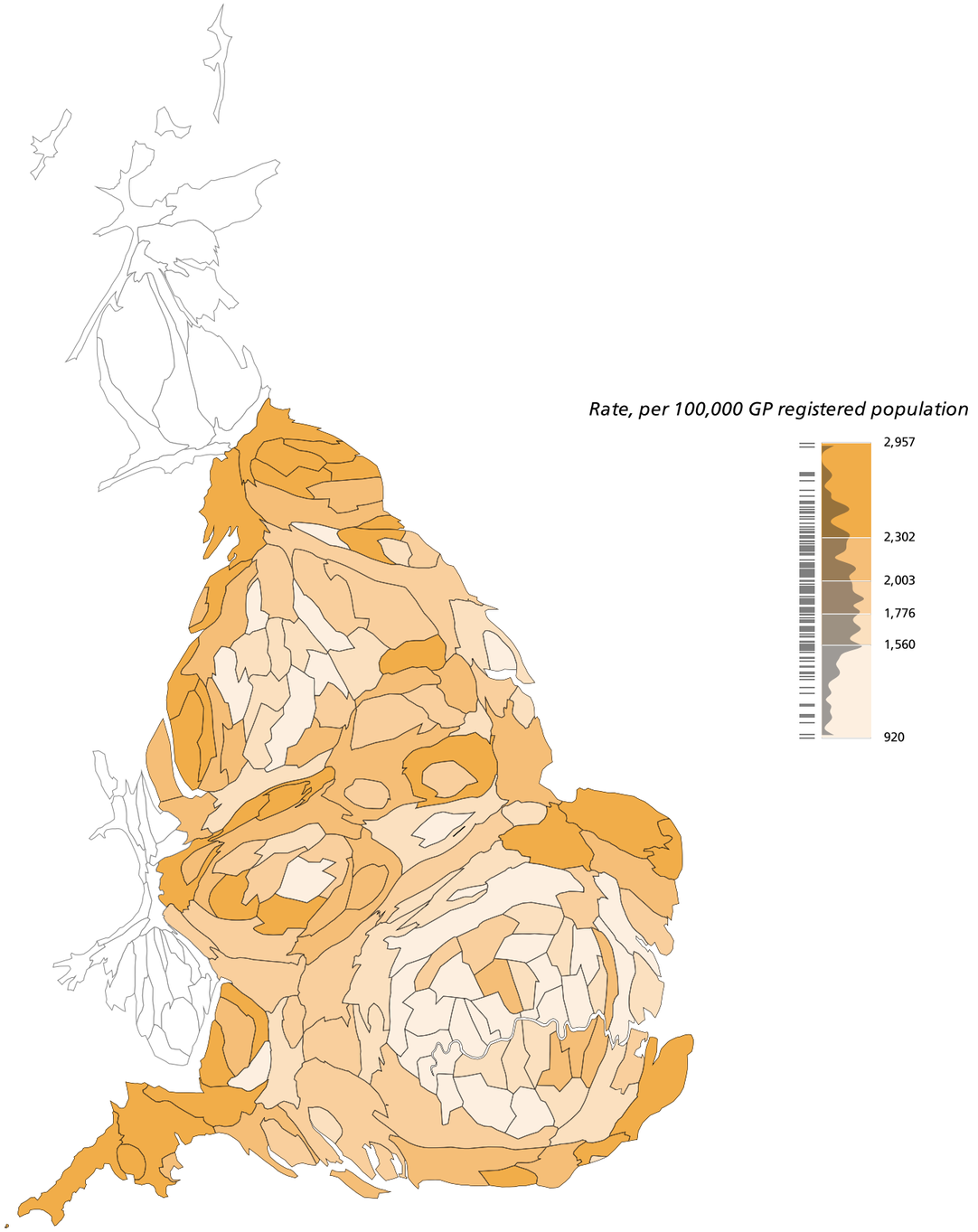
Source: National Cancer Data Repository, UKACR/NCIN, persons registered with cancer, 2007; Cancer Waiting Times, DH via Trent Cancer Registry, Two-week referrals with a suspicion of cancer, Dec 2006 to Jan 2008; Hospital Episode Statistics, Health and Social Care Information Centre, Crown Copyright © 2012 via NatCanSAT, in-patient and out-patient care episodes, Jan 2004 to Dec 2007. (Analysis by NCIN)

5-year survival for colorectal cancer patients diagnosed between 1996 and 2002 by stage at diagnosis, England



Source: National Cancer Intelligence Network (NCIN)

Rate of urgent GP referrals for suspected cancer, all cancers by primary care trust, England, 2010/11



Source: Commissioner-based cancer waiting times, April 2010 to March 2011, Cancer Waiting Times, DH. GP registered populations 2010, Attribution dataset, Health and Social Care Information Centre. Crown Copyright © 2012. (Analysis by NCIN)

In 2009/10, 50.1% of people with diabetes received all nine 'care processes', key tests for diabetes care known as 'the core bundle'[1], which means almost half of the people with diabetes did not achieve this basic standard of care. In 19 PCTs over 60% of patients received the core bundle while 2 PCTs reported ≤ 10% of patients receiving this core bundle.

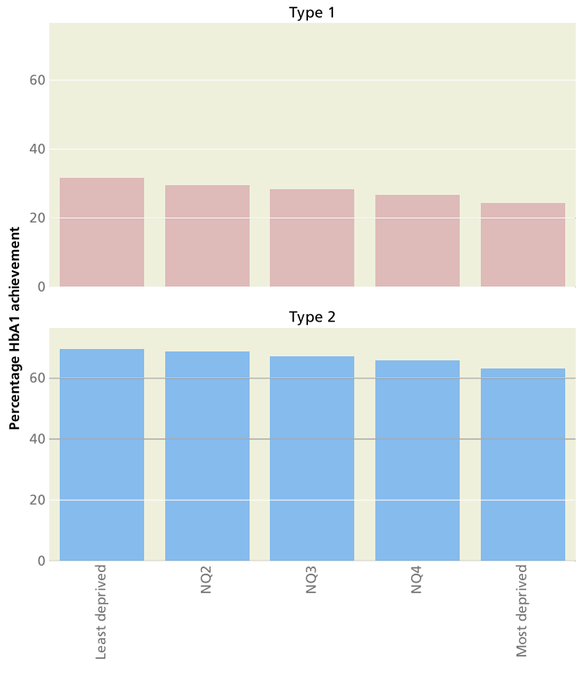
The recommended glucose control target (HbA1c ≤ 7.5%) was achieved in 66% of people with Type 2 diabetes but in only 28% of people with Type 1 diabetes. Younger people less frequently achieve the target (following the initial high achievement in children aged 0-5 years).

Achieving the target glucose control is less likely with increasing social deprivation: 32% in the least deprived compared to 24% in the most deprived (Type 1) and similarly, 70% in the least deprived compared to 63% in the most deprived (Type 2).

Variations in uptake of the 'core bundle' mean that not all diabetics are being identified early and/or not accessing the key health checks necessary for effective control of diabetes. More needs to be done, particularly in children and young people, to ensure that everyone with diabetes is identified early and receives the 'core bundle', as good glucose control will delay development and severity of diabetic complications.

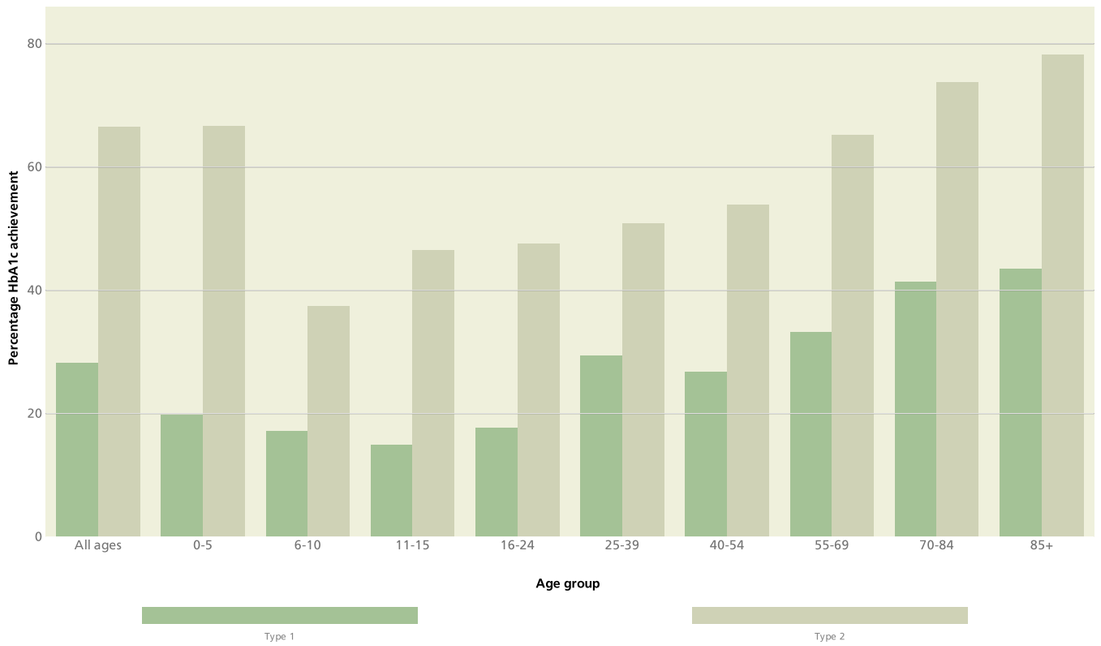
1 Diabetes - NICE Pathways http://pathways.nice.org.uk/pathways/diabetes

Percentage HbA1 achievement by type of diabetes and deprivation, England, 2009/10



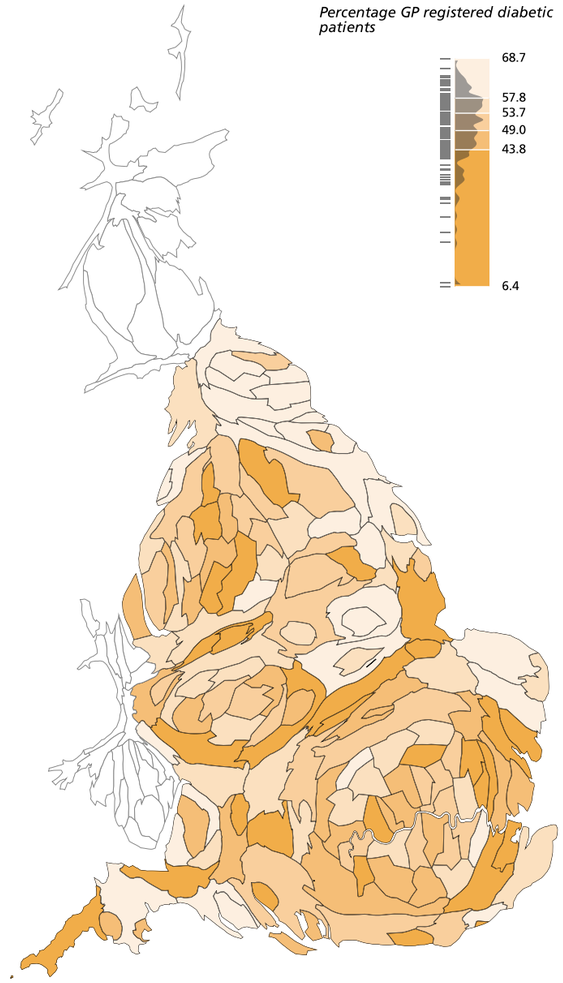
Source: National Diabetes Audit 2009/10, The NHS Information Centre for Health and Social Care. (Analysis by Diabetes Health Intelligence)

Percentage HbA1c achievement by type of diabetes and age band, England, 2009/10



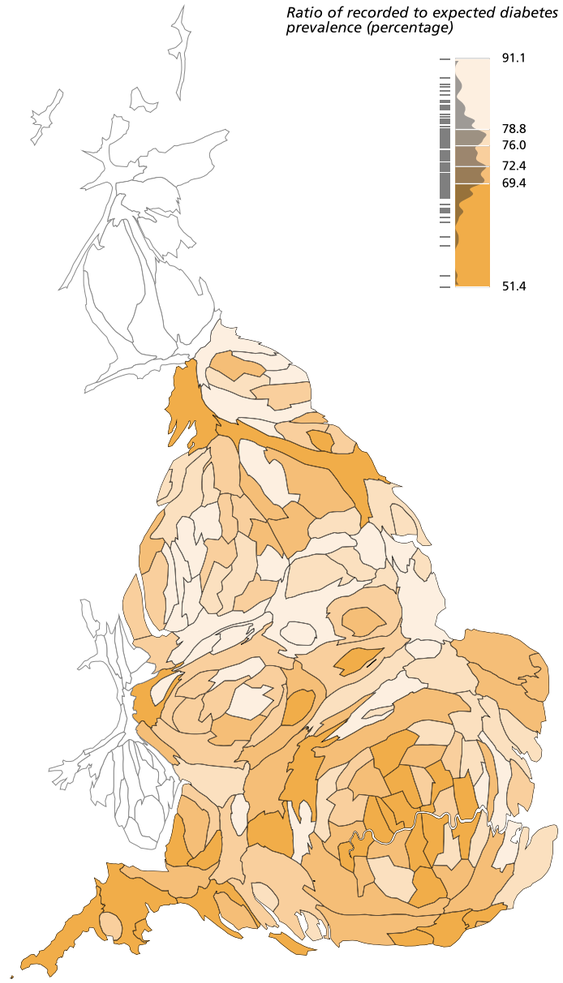
Source: National Diabetes Audit 2009/10, the Health and Social Care Information Centre. Crown Copyright © 2012. (Analysis by Diabetes Health Intelligence)

Percentage of persons with diabetes receiving all nine NICE recommended diabetes care processes by primary care trust, England, 2009/10



Source: National Diabetes Audit 2009/10, Health and Social Care Information Centre. Crown Copyright © 2012. (Analysis by Diabetes Health Intelligence)

Ratio of recorded to expected diabetes prevalence by primary care trust, England, 2011



Source: Quality and Outcomes Framework (QOF), Health and Social Care Information Centre, 2010/11. Crown Copyright © 2012; APHO Diabetes Prevalence Model. (Analysis by Diabetes Health Intelligence)

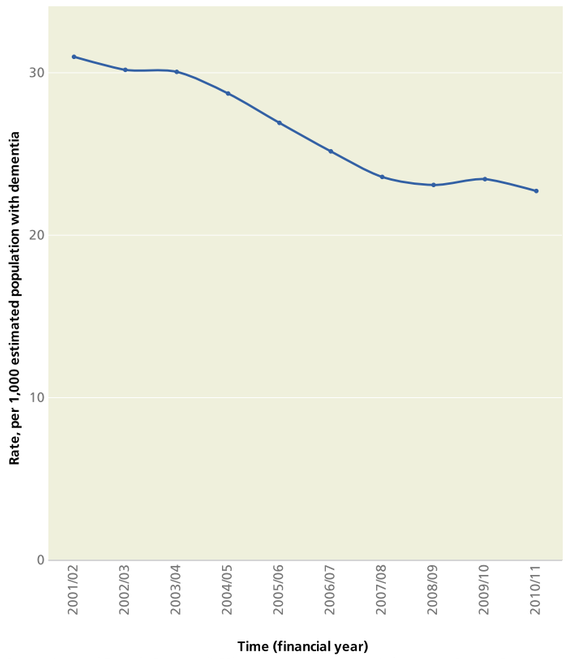
Dementia currently affects about 750,000 people in the UK and the number is increasing as the population ages (see Chapter 2 of this report). Early diagnosis is crucial to planning services, maintaining independence and starting appropriate care and treatment. People with dementia have complex needs, and high levels of dependency. Multidisciplinary care is required to support patients and carers, and avoid unnecessary hospital admissions. Those admitted to hospital need appropriate and supportive care.

At least 40% of people with dementia have not been diagnosed and there is a twofold variation in diagnosis between local authorities. This could be due to lack of awareness by clinicians, or lack of access to services.

The rate of hospital admissions shows a fivefold variation. There are particularly high rates in the North West. The rate of hospital admissions of people with dementias appears to have dropped over the last 10 years.

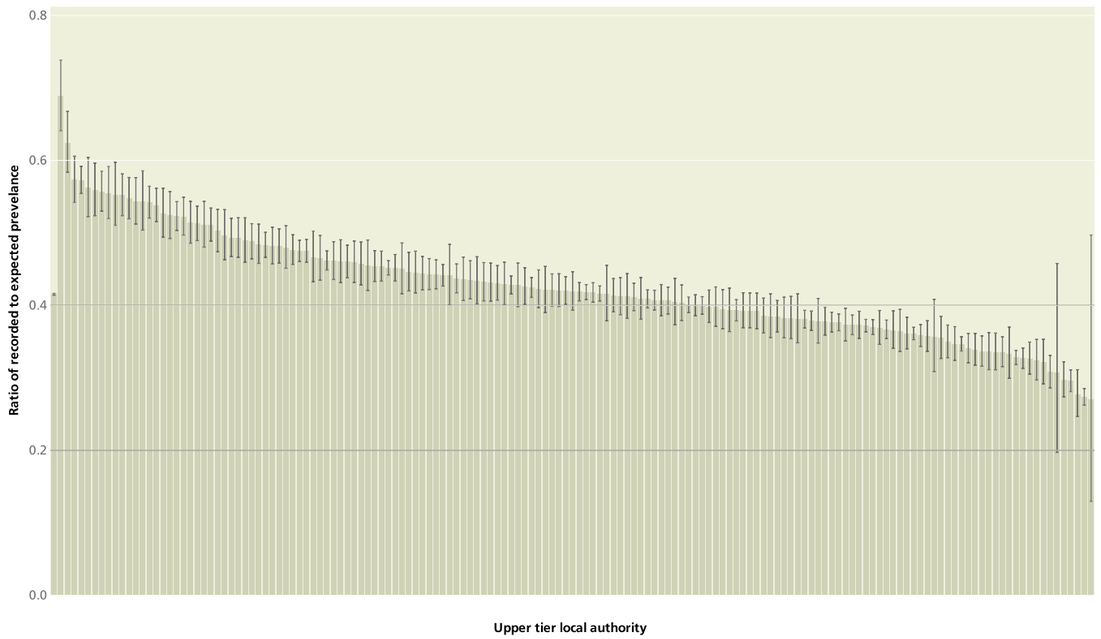
An estimated 6.1 million people suffer from anxiety and depression disorders in England. The access rate of people with anxiety and/or depression disorders to psychological therapies is 2.1%. However there is fivefold variation in access between PCTs. There is currently a phased roll-out of the Improving Access to Psychological Therapies programme, therefore some PCTs will not yet have an established programme.

Trend in hospital admission rates for alzheimers and other related dementias, England, 2001/02 to 2010/11



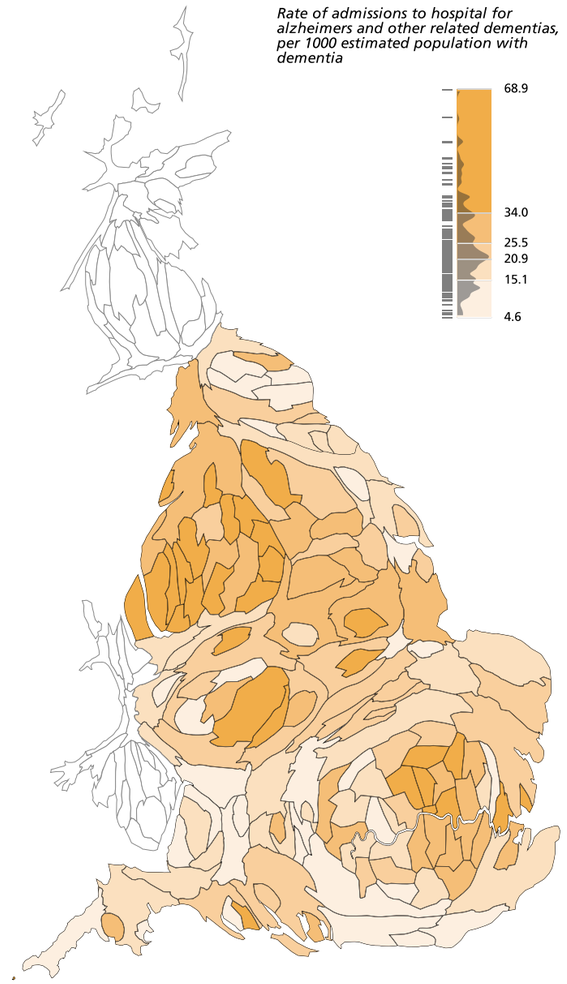
Source: Hospital Episode Statistics (HES), Health and Social Care Information Centre. Crown Copyright © 2012. Projecting Older People Population Information (POPPI) and Projecting Adult Needs and Service Information (PANSI), Institute of Public Care. (Analysis by NEPHO)

Ratio of recorded to expected dementia prevalence by upper tier local authority, England, 2010/11



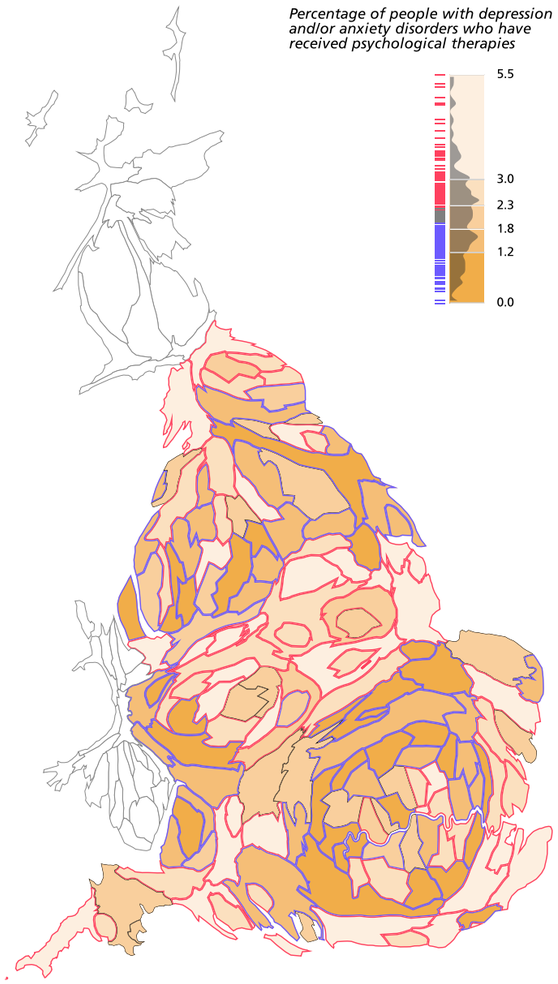
Source: Quality and Outcomes Framework (QOF), Health and Social Care Information Centre. Crown Copyright © 2012. Projecting Older People Population Information (POPPI) and Projecting Adult Needs and Service Information (PANSI), Institute of Public Care. (Analysis by NEPHO)

Rate of hospital admissions for dementia by upper tier local authority (estimated dementia population), England, 2010/11



Source: Hospital Episode Statistics (HES), Health and Social Care Information Centre.Crown Copyright © 2012. Projecting Older People Population Information (POPPI) and Projecting Adult Needs and Service Information (PANSI), Institute of Public Care. (Analysis by NEPHO)

Access to treatment for anxiety or depression by primary care trust, England, as at Quarter 2 2011/12



Source: Improving Access to Psychological Therapies (IAPT), Health and Social Care Information Centre. Crown Copyright © 2012. (Provided by NEPHO)

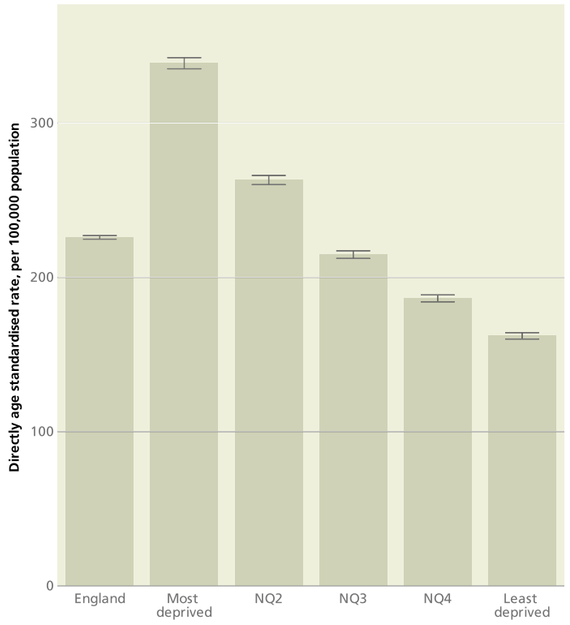
Despite reductions in mortality from coronary heart disease (CHD) over the last 30 years, CHD continues to a major cause of death in England. The identification and care of people at high risk, and with established disease, requires systematic models of care at scale through primary care teams.

Comparing the registrations of patients with CHD in general practice with expected prevalence shows considerable underdiagnosis in many areas, particularly in the south and London. Overall only 77% of expected cases are on GP registers.

Emergency admissions are higher in the north of England and in London. Emergency admissions have a strong relationship with deprivation, with a more than twofold difference between the most deprived quintile of PCTs and the least deprived. Since 2003 the emergency admissions rates have dropped for the most and least deprived population quintiles though worryingly there was an upturn in admission rates in 2010 in both quintiles and for England overall. The relative inequalities gap between the two quintiles has not changed over these years.

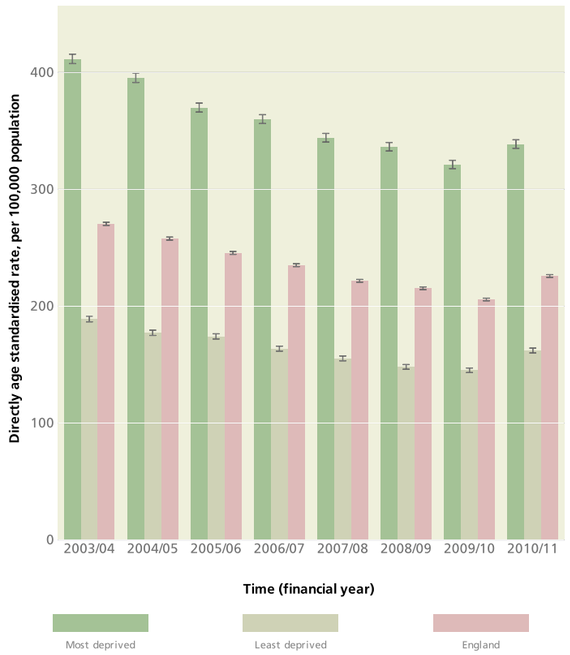
Primary care teams need to put intensive effort into identifying and managing people at high risk or with established disease. The implementation of the NHS Health Checks programme should detect the population at risk and reduce inequalities.

Emergency hospital admission rates for coronary heart disease by deprivation, England, 2010/11



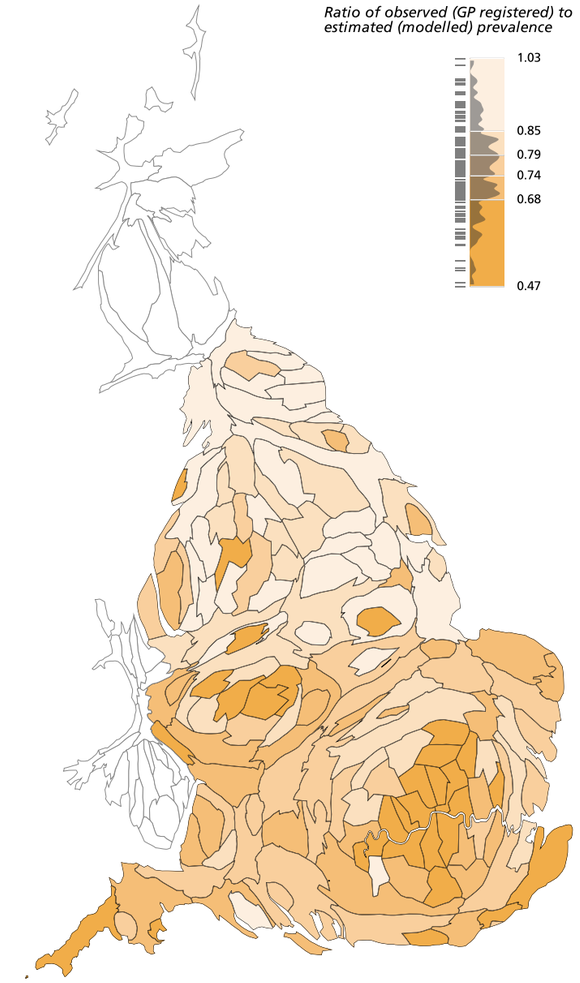
Source: Hospital Episode Statistics (HES), Health and Social Care Information Centre. Crown Copyright © 2012. 2010 population estimates supplied by ONS. (Analysis by PHOs, led by EMPHO)

Trend in emergency hospital admission rates for coronary heart disease, England, 2003/04 to 2010/11



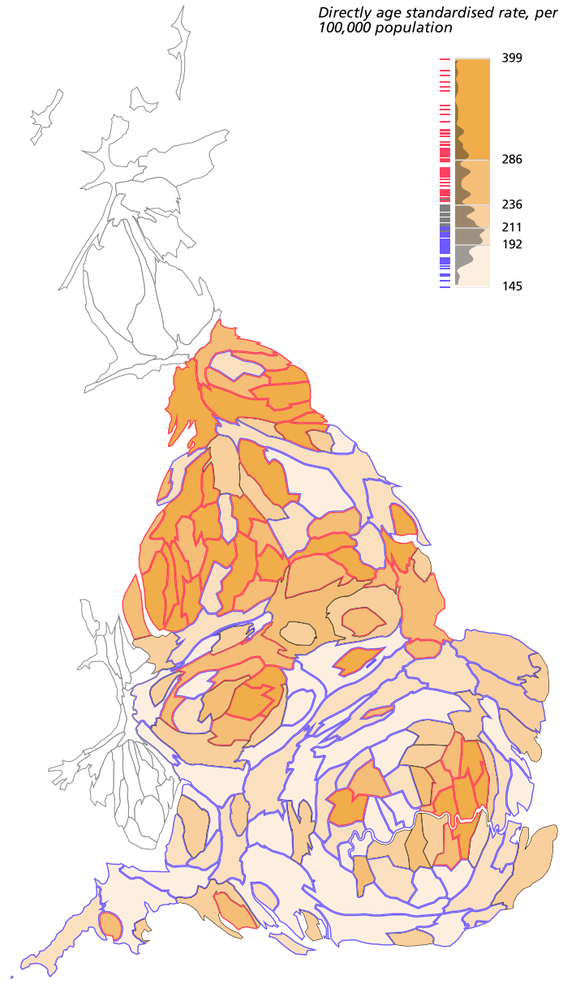
Source: Hospital Episode Statistics (HES), Health and Social Care Information Centre. Crown Copyright © 2012. 2003 to 2010 population estimates supplied by ONS. (Analysis by PHOs, led by EMPHO)

Ratio of observed to estimated prevalence of coronary heart disease by primary care trust, England, 2010/11



Source: Quality and Outcomes Framework (QOF), Health and Social Care Information Centre. Crown Copyright © 2012; and PHO modelled estimate of prevalence of CHD in England, December 2011. (Analysis by SEPHO)

Emergency hospital admission rates for coronary heart disease by primary care trust, England, 2010/11



Source: Hospital Episode Statistics (HES), Health and Social Care Information Centre. Crown Copyright © 2012. 2010 Population estimates suplied by ONS. (Analysis by PHOs, led by EMPHO)

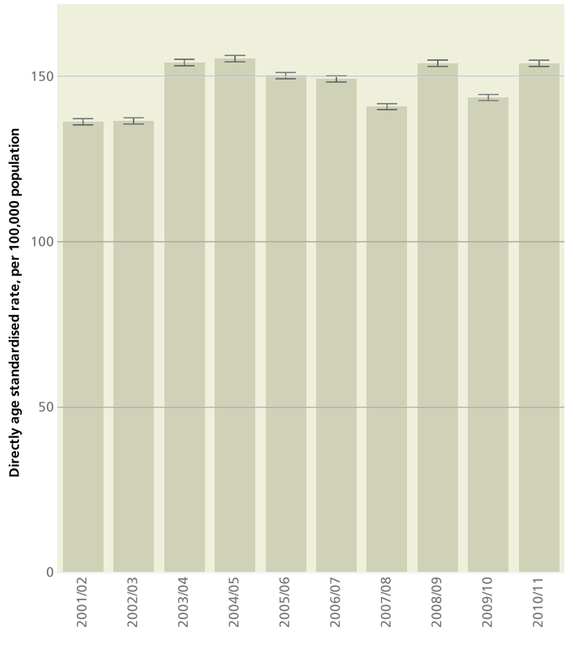
Chronic obstructive pulmonary disease (COPD) is chronic obstruction of lung airflow that interferes with normal breathing and is not fully reversible. The main cause of COPD is smoking. Early identification of COPD and treatment delays progression, improves quality of life, and reduces emergency admissions. About 30% of patients with known COPD continue to smoke.

Comparing the registrations of patients with COPD in general practice with expected prevalence shows considerable underdiagnosis in many areas, particularly in London. Registration rates are highest in the north, reflecting the higher prevalence.

Many emergency admissions for COPD can be avoided through better management in the community. Emergency admissions are higher in the north of England and in London, partly due to the higher prevalence of COPD in these areas. Admissions have a strong relationship with deprivation, with a fourfold difference between the most and least deprived quintiles of PCTs. Admission rates have remained static over 10 years.

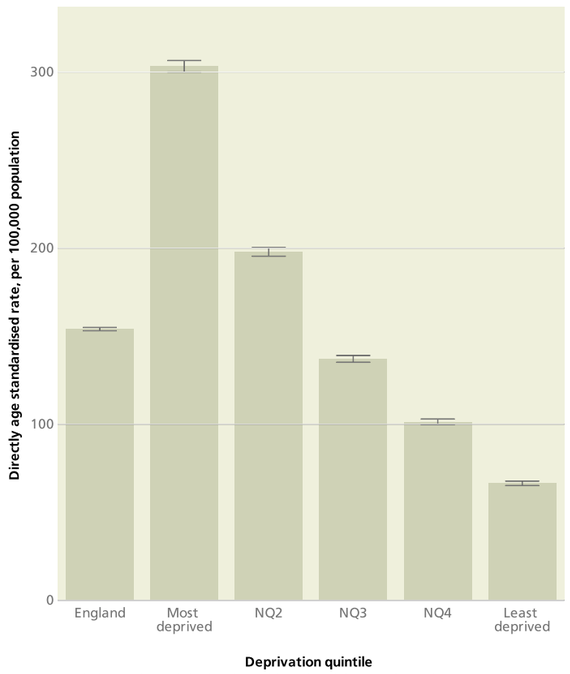
Preventing uptake of, or stopping, smoking is a high priority. Treatment of COPD requires encouraging patients to stop smoking, and effective inhaled therapy. Exacerbations and emergency admissions can be minimised by appropriate inhaled therapy and appropriate immunisation. Pulmonary rehabilitation should be made available to all who need it.

Trend in emergency hospital admission rates for chronic obstructive pulmonary disease (COPD), England, 2001/02 to 2010/11



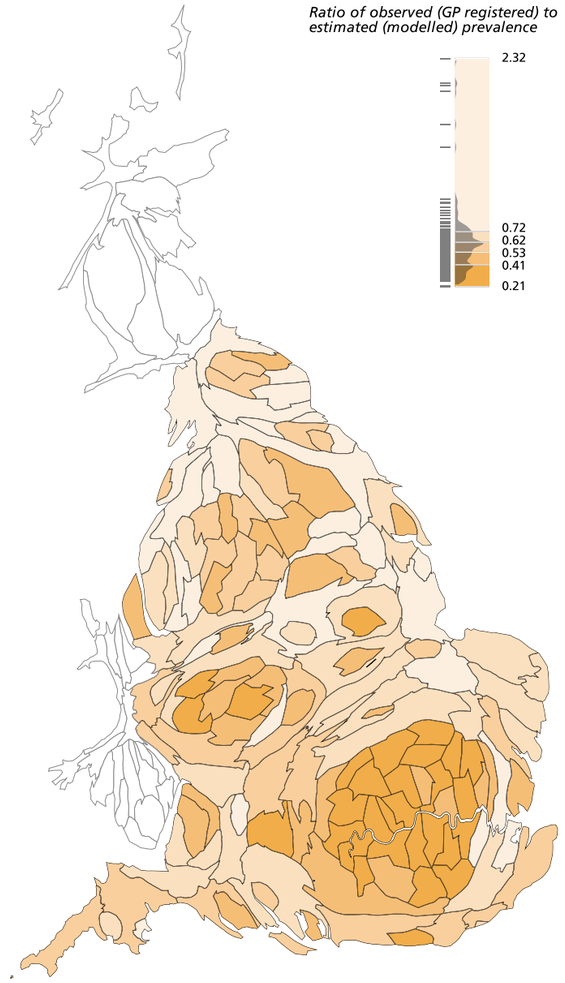
Source: Hospital Episode Statistics (HES), Health and Social Care Information Centre. Crown Copyright © 2012. 2010 population estimates supplied by ONS. (Analysis by SEPHO)

Emergency hospital admission rates for chronic obstructive pulmonary disease (COPD) by deprivation, England, 2010/11



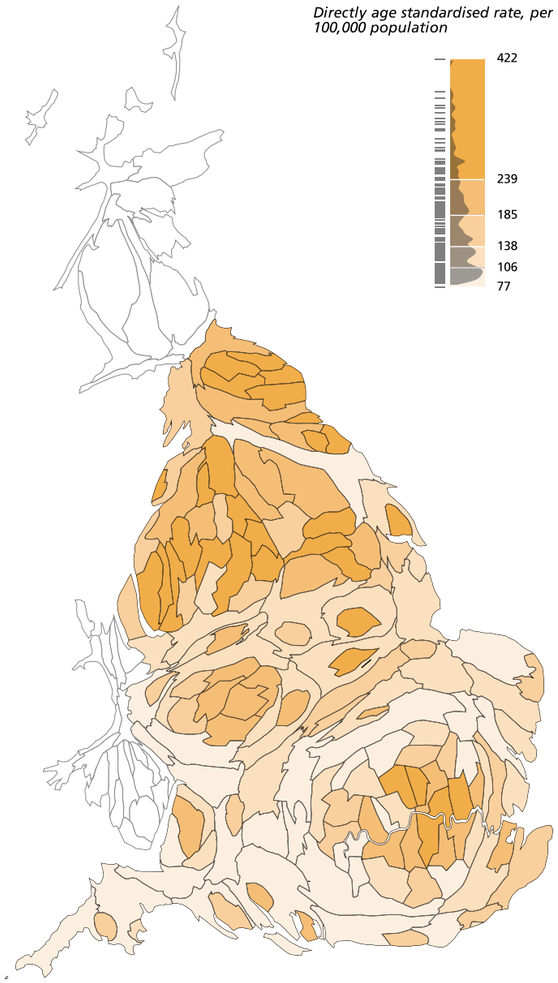
Source: Hospital Episode Statistics (HES), Health and Social Care Information Centre. Crown Copyright © 2012. 2010 population estimates supplied by ONS. (Analysis by SEPHO)

Ratio of observed to estimated prevalence of chronic obstructive pulmonary disease (COPD) by primary care trust, England, 2010/11



Source: Quality and Outcomes Framework (QOF), Health and Social Care Information Centre. Crown Copyright © 2012; and PHO modelled estimate of prevalence of COPD in England, December 2011. (Analysis by ERPHO)

Emergency hospital admission rates for chronic obstructive pulmonary disease (COPD) by primary care trust, England, 2010/11



Source: Hospital Episode Statistics (HES), Health and Social Care Information Centre. Crown Copyright © 2012. 2010 Population estimates suplied by ONS. (Analysis by SEPHO)

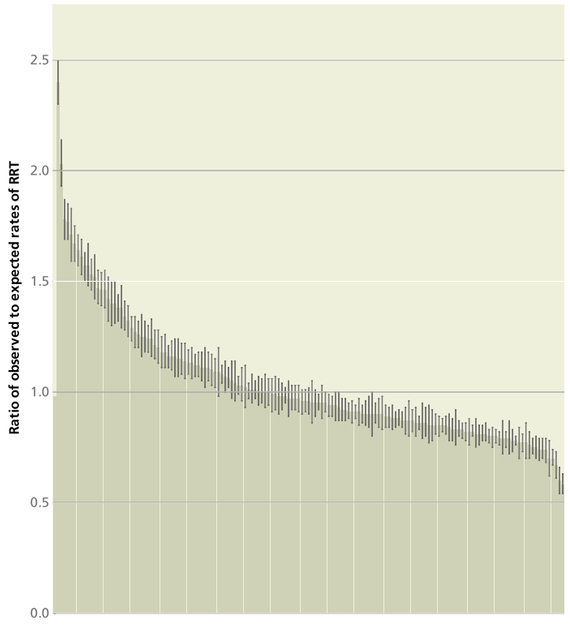
Chronic kidney disease (CKD) is a long term treatable condition affecting about three million people in England with eventual progression to end-stage renal failure which is managed with renal replacement therapy (RRT). The five stages of CKD range from normal kidney function but with other evidence of kidney disease (Stage 1) to severely reduced kidney function (stages 3-5). Diabetes is the leading cause of CKD.

There is variation across the English regions in prevalence of later stage CKD as measured by registration in primary care. Half of all PCTs identify less than 65% of their people with CKD. CKD increases with age, with over 30% of those aged 75+ affected.

There is marked geographical variation in RRT uptake rates with two thirds of areas significantly different from the England average. Uptake rates also vary significantly over time in the choice of treatment modality. In England in 2009, nearly 50,000 people were on dialysis or living with transplants. Since 1997, the numbers of renal transplants and in-centre haemodialysis have been rising steadily, in part due to increase in patient survival.

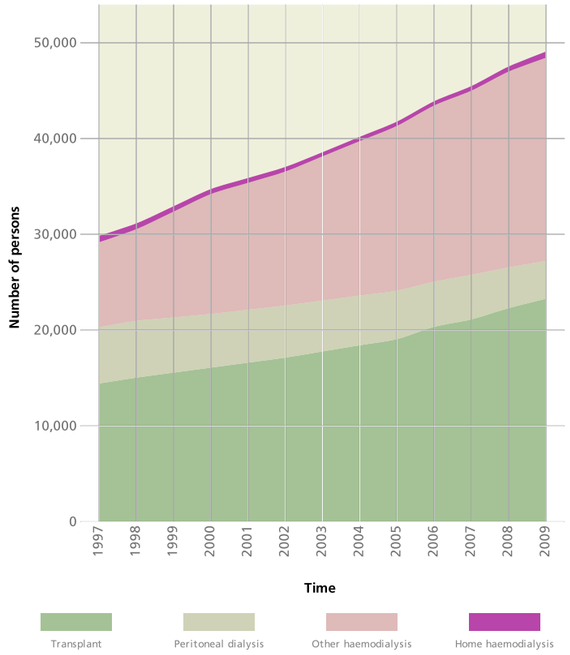
To reduce variation in CKD identification and to increase uptake of RRT, it is important to identify CKD early and ensure that access to RRT is proportional to need.

Observed Renal Replacement Therapy (RRT) compared to expected level, by primary care trust, England, 2004-09



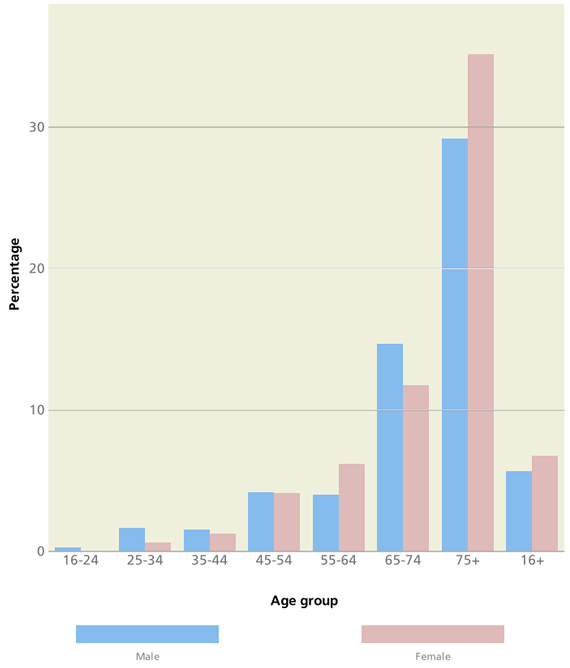
Source: UK Renal Registry, the Renal Association. (Provided by EMPHO. Analysis and interpretation should not be seen as an official policy or interpretation of the UK Renal Registry or the Renal Association)

Trend in number of persons on Renal Replacement Therapy (RRT) by modality, UK, 1997 to 2009



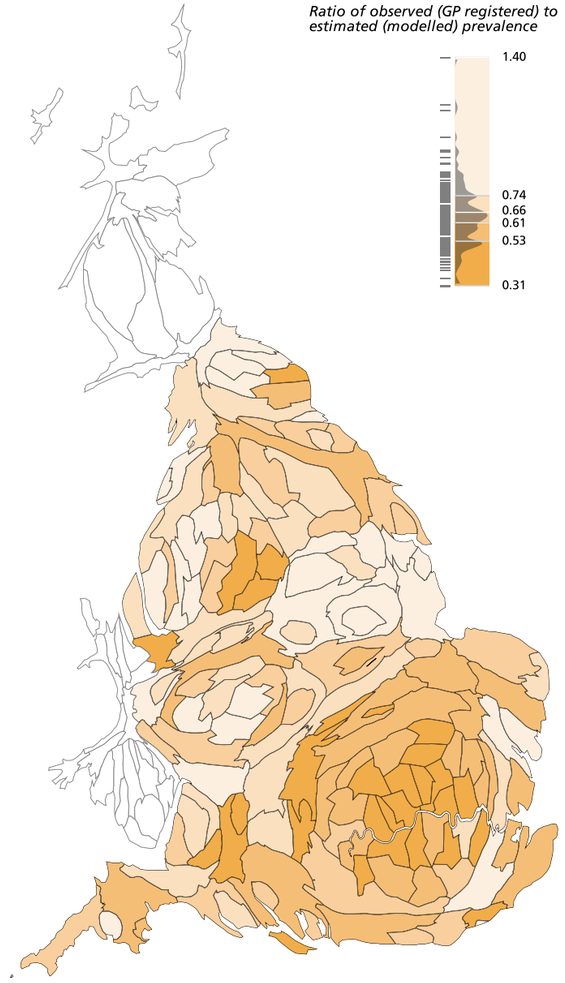
Source: UK Renal Registry, the Renal Association. (Provided by EMPHO. Analysis and interpretation should not be seen as an official policy or interpretation of the UK Renal Registry or the Renal Association)

Prevalence of chronic kidney disease (stages 3-5), by age and sex, England, 2009/10



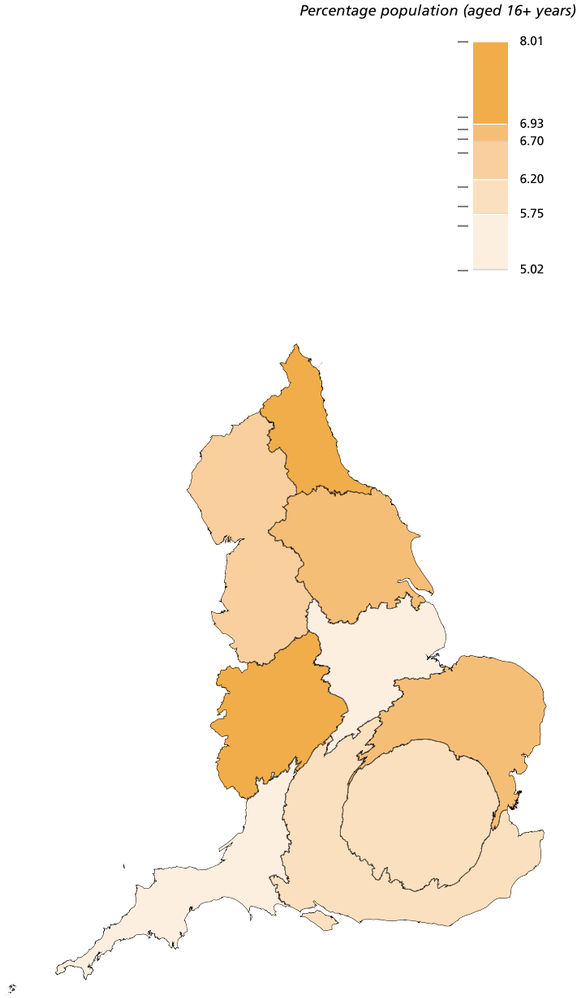
Source: Health Survey for England. Copyright © 2011. Re-used with the permission of the Health and Social Care Information Centre. All rights reserved. (Provided by EMPHO)

Ratio of observed to expected chronic kidney disease prevalence (stages 3-5) by primary care trust, England, 2010/11



Source: Observed prevalence from Quality and Outcomes Framework (QOF), Health and Social Care Information Centre, 2010/11. Crown Copyright © 2012; expected prevalence from Health Survey for England 2010. © Crown Copyright 2012 and 2010 Attribution dataset, DH. (Analysis by EMPHO)

Prevalence of survey defined chronic kidney disease (stages 3-5) by region, England, 2009/10



Source: Observed prevalence from Quality and Outcomes Framework (QOF), Health and Social Care Information Centre, 2010/11. Crown Copyright © 2012; expected prevalence from Health Survey for England 2010. © Crown Copyright 2012 and 2010 Attribution dataset, DH. (Analysis by EMPHO)

The impact of osteoporosis is highlighted in Chapter 2 of this report. However, fractures due to this silent condition are not inevitable. Early diagnosis and treatment, including prevention of falls, reduces fractures, pain, loss of independence and early mortality. After controlling for age and sex, the large variation seen in access to diagnostic bone-density scanning is unexpected. The recent decrease in treatments prescribed is unexplained.

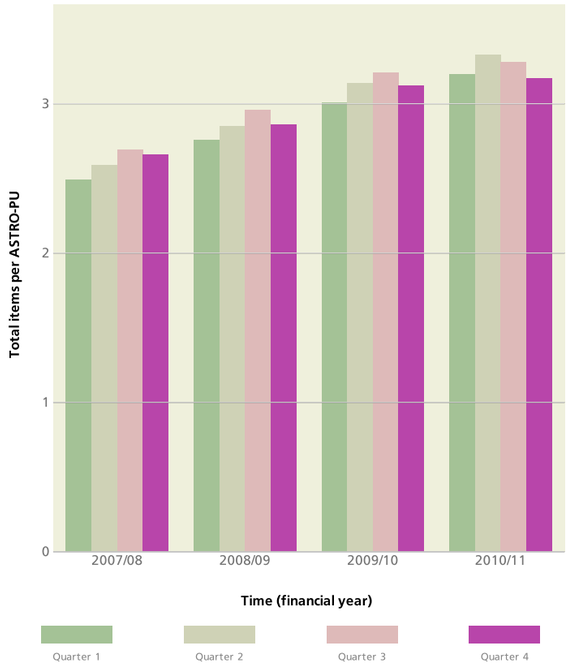
Osteoarthritis, a painful, degenerative condition of joints, affects 8 million people nationwide. Though the single largest cause of pain and disability in this country[1], it is a generally unrecognised public health priority. It is difficult to obtain accurate data on prevalence.

Joint replacement is a highly effective treatment for severe osteoarthritis. However, people in deprived areas benefit less, with fewer operations performed, and reduced associated health gain. Variation in access is not likely to be due to differences in disease prevalence, as need is generally greater in deprived areas.

The incidence of these conditions is expected to increase in our ageing society. Improved data on population prevalence and on non-surgical treatments is needed to drive better services and outcomes.

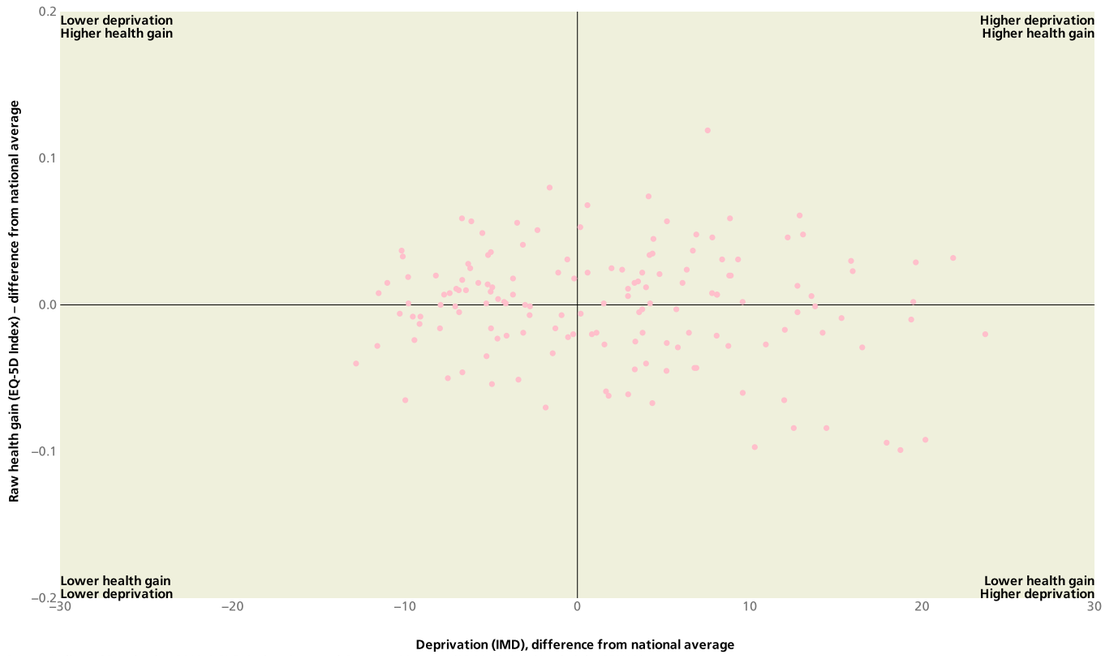
1 "Bajekal M, Primatesta P, Prior G, editors. Health Survey for England 2001: Disability. London: The Stationery Office; 2003."

Trend in prescribing for drugs used in the treatment of osteoporosis, England, 2007/08 to 2010/11



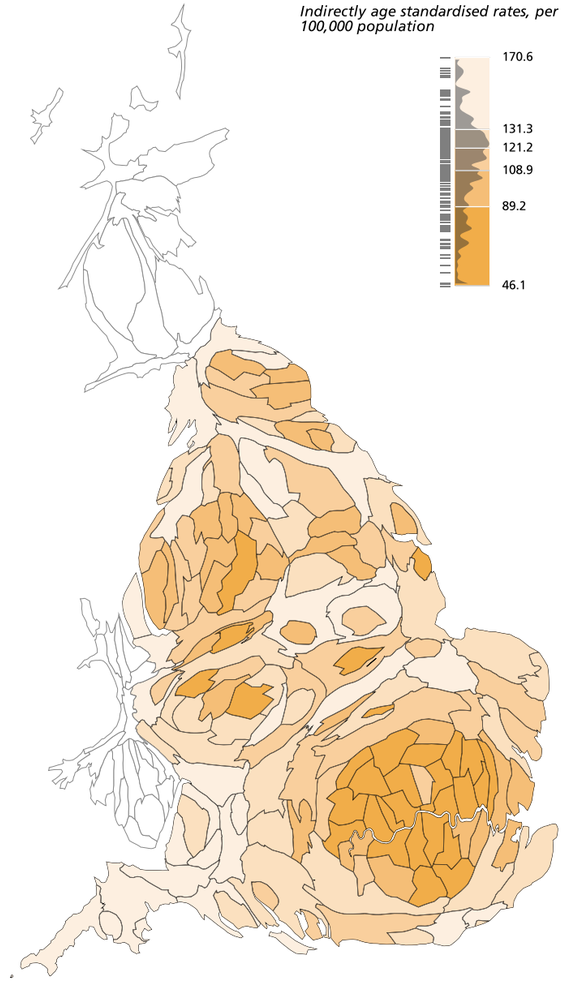
Source: NHS Prescription Services Prescribing Database via ePACT, NHS Business Services Authority. (Analysis by SEPHO)

Comparison of health gain per primary hip replacement and deprivation by primary care trust, 2010/2011



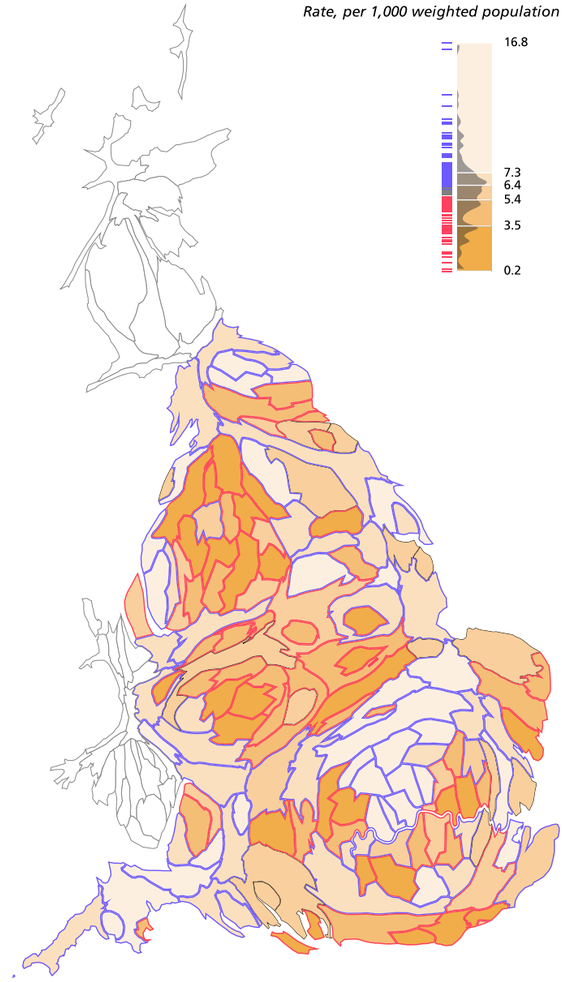
Source: Indices of Deprivation 2010, DCLG. Patient Reported Outcome Measures (PROMS), DH. (Analysis by SEPHO)

Hospital admission rate for uncemented and cemented primary hip replacements by primary care trust, England, 2010/11



Source: Hospital Episode Statistics (HES), Health and Social Care Information Centre.Crown Copyright © 2012. Population data, Attribution Data Set 2010, DH. (Analysis by DH)

Dual-energy X-ray (DEXA) scan activity rate by primary care trust, England, 2010/11



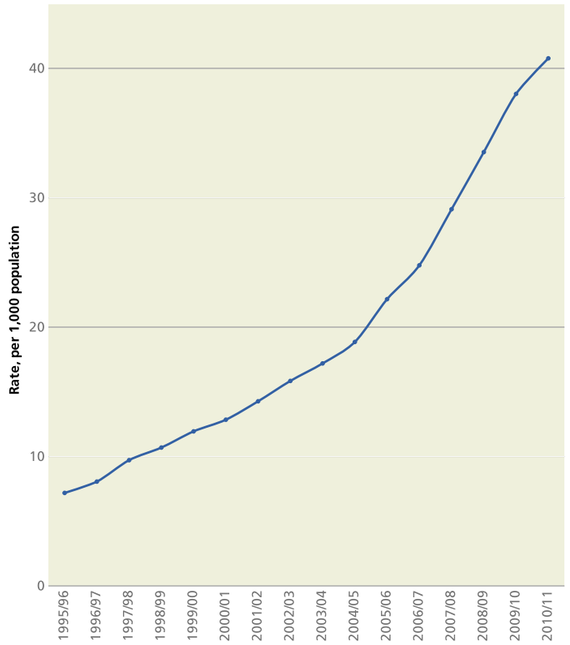
Source: DM01 monthly diagnostics return and weighted populations, DH. (Analysis by SEPHO)

Magnetic Resonance Imaging (MRI) has the potential to reduce the number of other diagnostic procedures that need to be performed. Understanding variation in its utilisation gives an assessment of the quality and performance of healthcare provision.

In 2010/11, in England, the average rate of MRI activity per 1,000 weighted population was 40.1. For PCTs, the rate ranged from 18.1 to 76.5 (4.2-fold variation). Some of this variation can be attributed to the availability of both equipment and workforce. Much of the variation could be due to local clinical practices that have evolved over time, which need re-assessing.

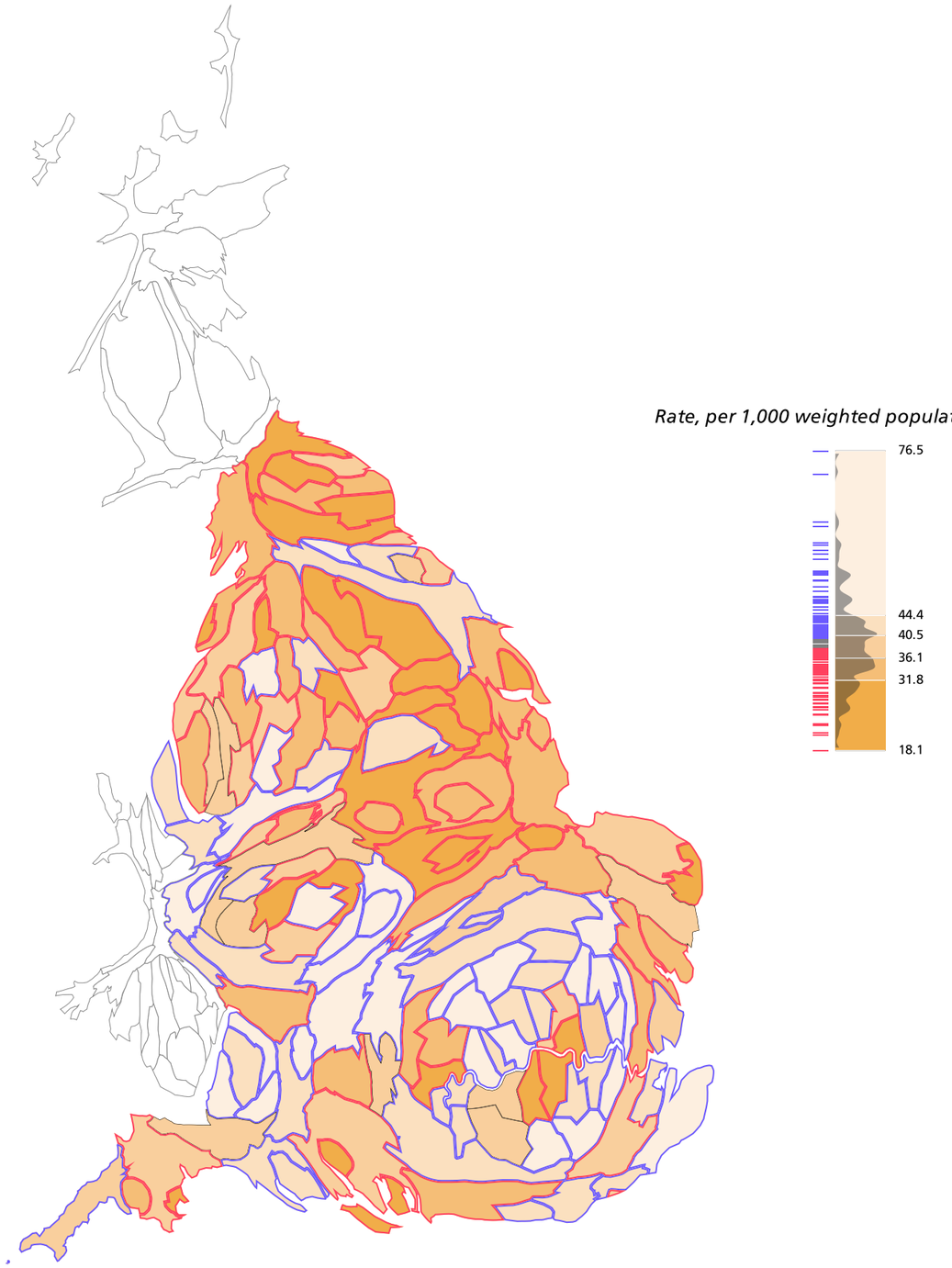
The rate of MRI activity has steadily increased over time from from 7.2 per 1,000 in 1995/6 to 40.8 per 1,000 in 2010/11. There is concern among clinicians about the increasing use of MRI because of incidental findings which can lead to unnecessary investigation and anxiety. Reviewing rates of MRI activity in the local areas will identify under and over-use with the consequent need for education and skills development. To address unwarranted variation, it is important to apply evidence based patient pathways for diagnostics, to promote evaluation to understand the benefits and harms resulting from different rates of MRI investigation.

Trend in rate of MRI activity, England, 1995/96 to 2010/11



Source: KH12 return, DH. (Analysis by SEPHO)

Access to diagnostic services, rate of MRI activity by primary care trust, England, 2010/11



Source: DM01 monthly diagnostics return and weighted populations, DH. (Analysis by SEPHO)

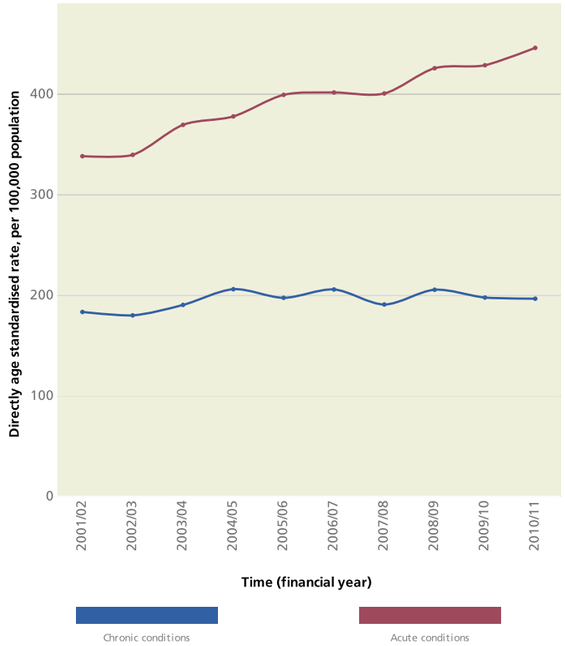
Reducing emergency admissions for long term conditions is a key outcome for the NHS. Effective management and treatment of acute and chronic conditions should be provided in an ambulatory care setting, particularly in primary care. Monitoring potentially avoidable emergency admissions provides an assessment of the quality and performance of preventive services and healthcare.

Within England, there is wide variation in PCT emergency admission rates. In 2010, the emergency admission rate for both chronic and acute conditions had an approximate fourfold range.

The reasons for this variation include differences in prevalence and severity of the conditions, the social circumstances of some patients, poorer access to primary care, diagnostic and preventive services, and the quality of services. Over 10 years the rate for acute conditions has increased by 32%. In comparison, chronic conditions showed a small change over time.

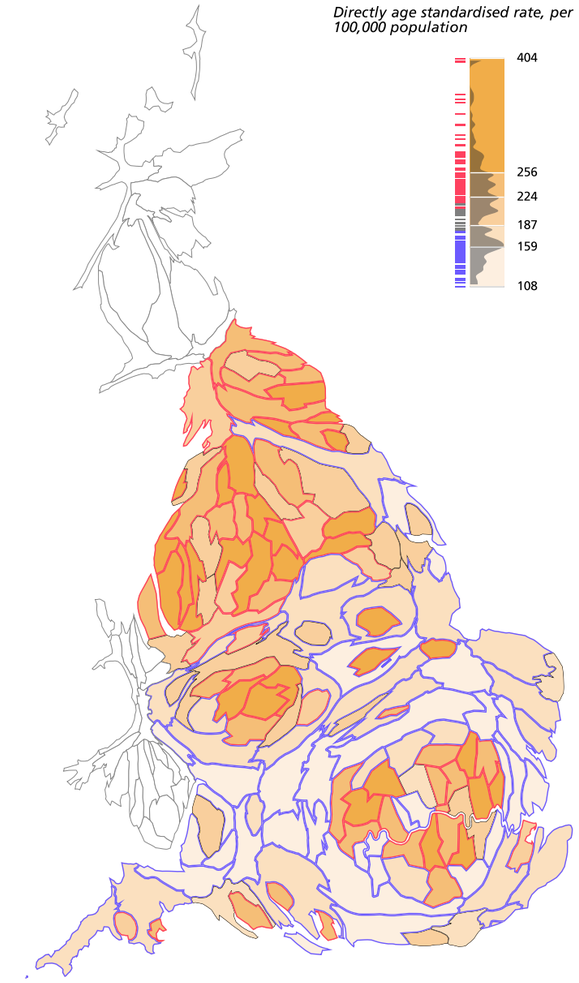
Emergency hospital admissions are costly and frequently preventable. High rates of admission could indicate poor coordination between primary and secondary care, and inadequacy of preventive services. Commissioners and providers need to address pathways of care for the target conditions. There needs to be a focus on the integration of services, as well as the skill mix of clinical staff, and this should form a part of their audit and evaluation of services.

Trend in emergency admission rates due to chronic and acute conditions usually managed in Primary Care, England, 2001/02 to 2010/11



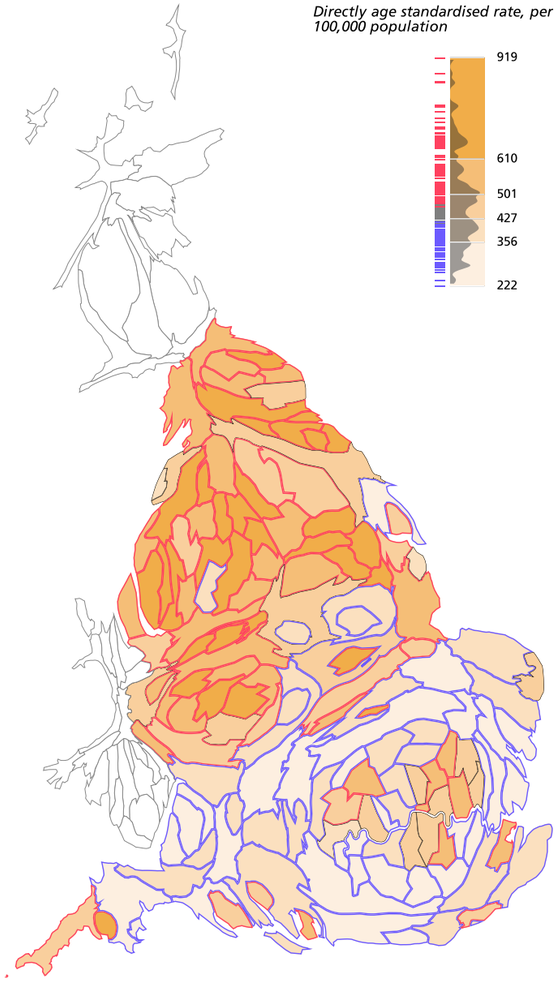
Source: Hospital Episode Statistics (HES), Health and Social Care Information Centre. Crown Copyright © 2012. 2003 to 2010 population estimates supplied by ONS. (Analysis by PHOs, led by EMPHO)

Emergency admission rates for chronic conditions (usually managed in primary care) by primary care trust, England, 2010/11



Source: Hospital Episode Statistics (HES), Health and Social Care Information Centre.Crown Copyright © 2012. 2010 population estimates suplied by ONS. (Analysis by PHOs, led by EMPHO)

Emergency admission rates for acute conditions (usually managed in primary care) by primary care trust, England, 2010/11



Source: Hospital Episode Statistics (HES), Health and Social Care Information Centre. Crown Copyright © 2012. 2010 population estimates suplied by ONS. (Analysis by PHOs, led by EMPHO)

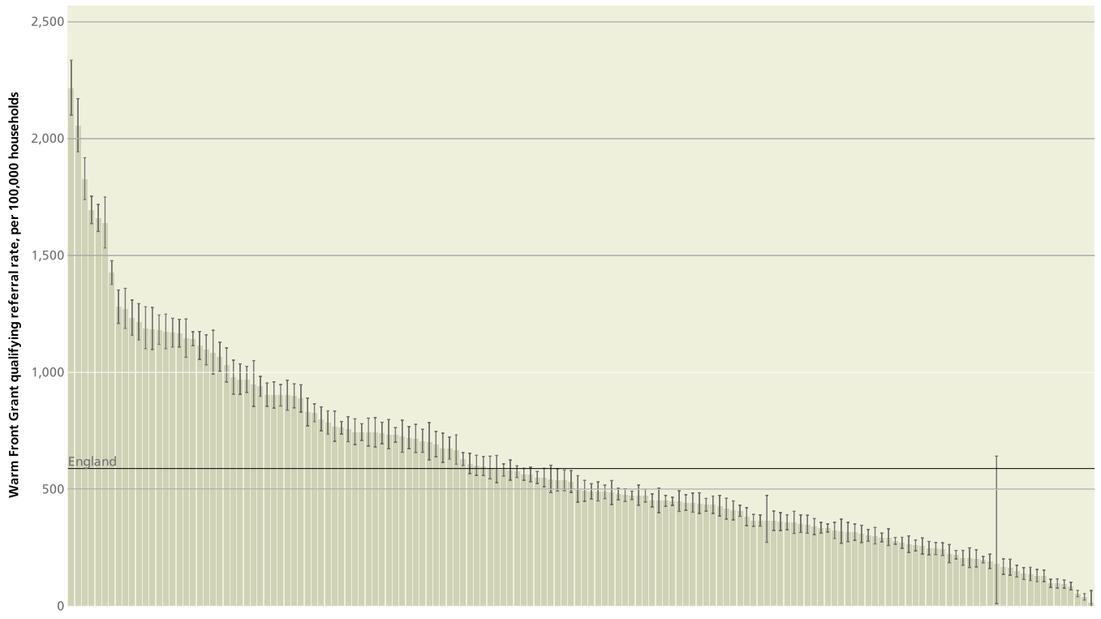
The majority of people would like to stay living in their own home, and social care performs a vital function in helping vulnerable people to live independently. Funding is available to people assessed as being in need of support and not able to pay for their own care.

There is a more than threefold variation between local authorities in the proportion of adults being supported to live independently. This variation can be attributed to differing population needs, to different assessment processes in different authorities, and to availability of residential care. Local authorities should aim to deliver more care within people's own homes.

Excess winter deaths (see Chapter 2) are preventable. One initiative aimed at reducing winter deaths is the Warm Front scheme which installs insulation and heating improvements to make homes warmer, and more energy efficient. The scheme is available to households on income-related benefits living in properties that are poorly insulated and/or do not have central heating.

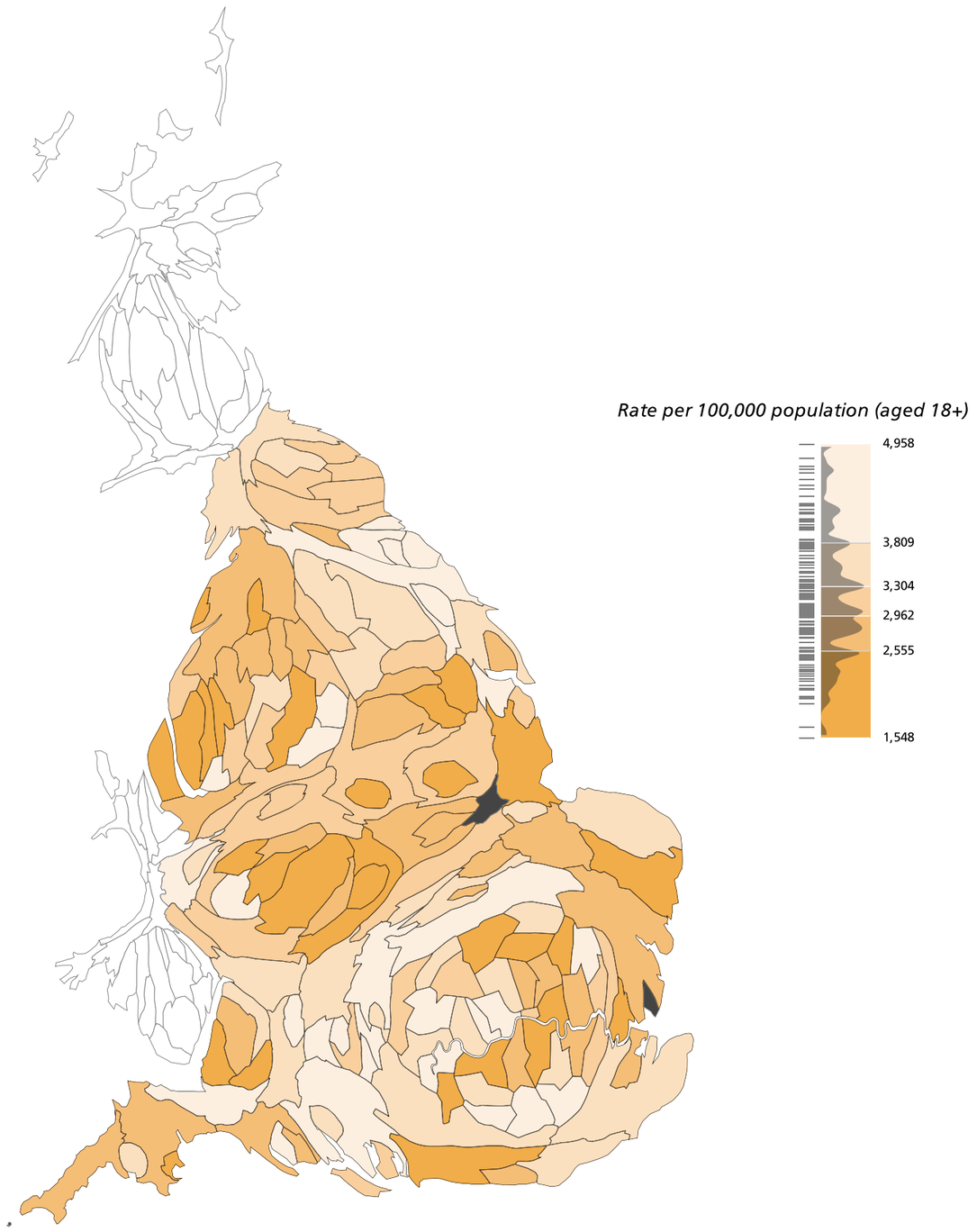
The uptake of grants for the scheme shows substantial variation across England ranging from under 100 to over 2,000 per 100,000 households. This degree of variation cannot be explained by need alone, though low uptake areas may have had higher uptake in previous years.

Rate of Warm Front Grant qualifying referrals by upper tier local authority, England, 2010/11



Source: Warm Front Grant qualifying referrals, Carillion Energy Services. Estimated number of households 2008, DCLG. (Analysis by EMPHO)

Rate of adults supported to live independently by upper tier local authority, England, 2009/10



Source: Referrals, Assessment and Packages of Care Data (RAP) and Grant Funded Services (GFS1) data, Health and Social Care Information Centre. Crown Copyright © 2012. 2009 population estimates, ONS. (Analysis by WMPHO)

End of life care involves support for the dying patient, relatives and carers. This includes respecting the patient's wishes, preventing unnecessary emergency admission to hospital and good pain relief.

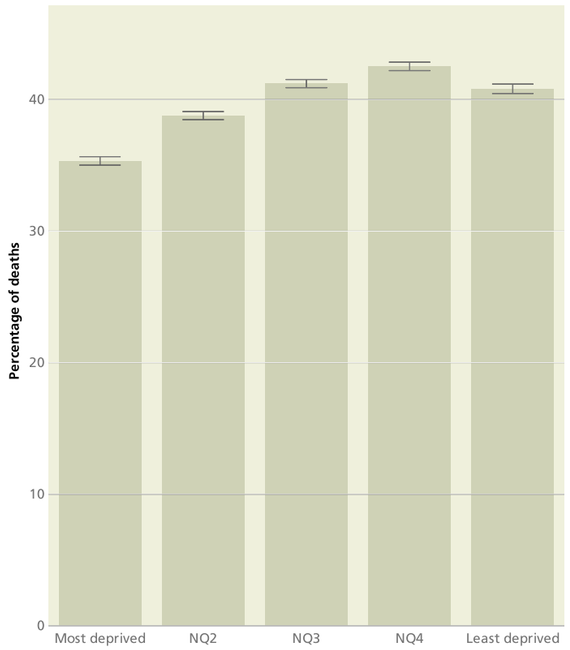
Over 450,000 people die in England each year. Two thirds are aged over 75. In 2010 the majority of deaths (53%) occurred in hospitals, 39% in the usual place of residence (21% home, 18% care homes), and 5% in hospices. A majority of people, when asked, would prefer to die in their usual place of residence.

The percentage of all deaths in the usual place of residence ranged from 23% to 51% across local authorities, a 2.2 fold difference. Those with the lowest percentages are in conurbations.

35.3% of people from the most deprived quintile in England die in their usual place of residence compared to 40.8% from the least deprived quintile. Cause of and age of death, as well as access to services, living arrangements and the availability of family or other local support may be factors.

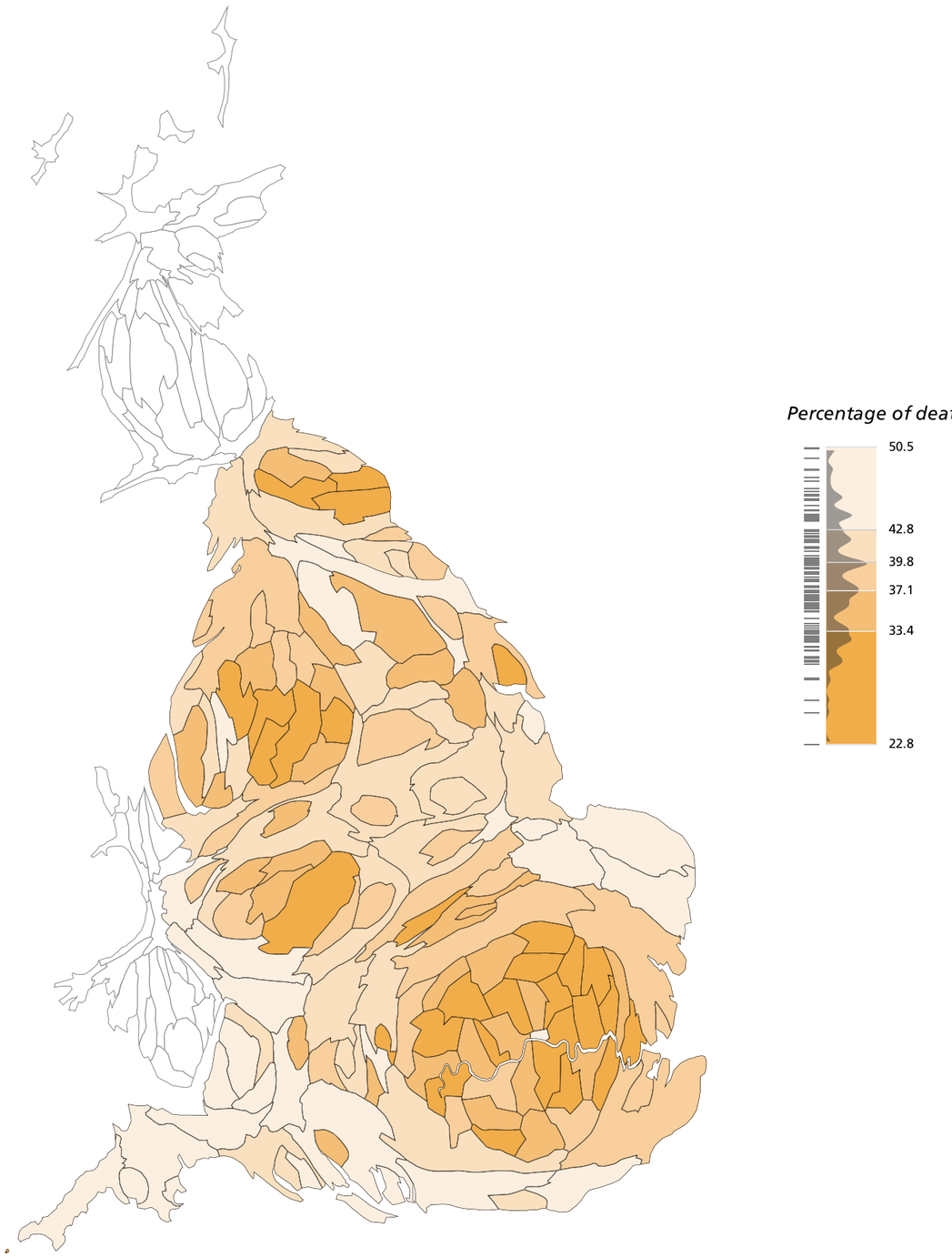
There is substantial variation in place of death. Emergency hospital care is expensive and can result in poorer experiences for patients and families. Good practice requires clear end of life plans to respect and facilitate patients' preferences.

Proportion of deaths in usual place of residence by deprivation, England, 2010



Source: Annual Mortality Extract 2010, ONS . (Analysis by SWPHO)

Proportion of deaths in usual place of residence by upper tier local authority, England, 2010



Source: Deaths registrations, ONS. (Analysis by SWPHO)

Postscript

Public health research NIHR

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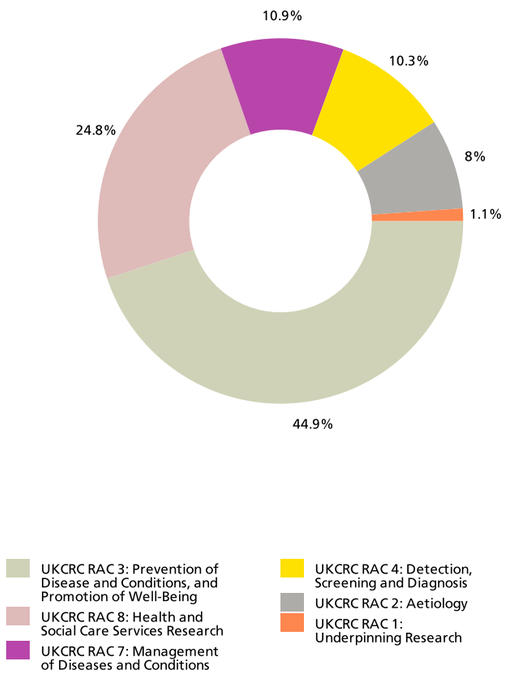
Public health research funded by the Department of Health

Under the leadership of Dame Sally C. Davies, the Department of Health (Research and Development Directorate) funds public health research through the National Institute for Health Research (NIHR) and the Policy Research Programme. Since the NIHR was established in 2006, funding for research activity relating to public health has undergone a step change with the introduction of a number of new funding streams designed to increase the evidence for public health practice. Public health evaluation and research are critical in enabling public health practice to develop in the future and address key challenges and opportunities.

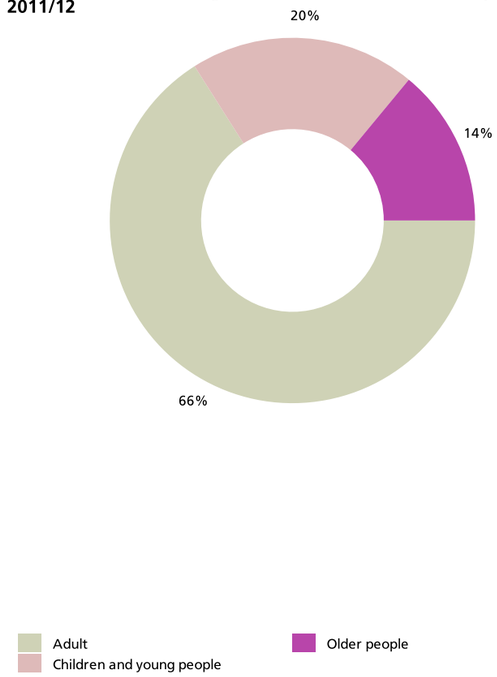
DH Policy Research Programme (PRP) The PRP commissions high quality, research-based evidence to meet DH Ministers' and policymakers' needs with respect to public health. The PRP commissions both project-based research and programmes of work at twelve Policy Research Units at universities across the UK. Examples of Policy Research Units include the Public Health Research Consortium, established in 2005, and the Policy Research Unit on Behaviour and Health, established in 2011.

Proportion of public health research activity, by UKCRC Research Activity Codes, for NIHR Programmes and fellowships – 2011/12



Source: NIHR coordinating centres, activity included: HS&DR, HTA, PHR, PGfAR, RfPB, School for Primary Care Research, School for Social Care Research and fellowships.

Proportion of public health research activity, by stage in life-course, for NIHR Programmes, Schools and fellowships, 2011/12



Source: NIHR coordinating centres, activity included: HS&DR, HTA, PHR, PGfAR, RfPB and fellowships. Adult was the default option when unspecified.

The Centre for Health Protection Research (CHPR) provided the Health Protection Agency with £10.5 million in 2011/12 to conduct health protection research in the areas of infectious diseases, immunisation, environmental hazards and emergency preparedness.

NIHR Schools – School for Public Health Research (launched in 2012) has a budget of £20 million over five years, and is a partnership between eight leading academic centres in applied public health research in England. The School will place an emphasis on what works practically, can be applied across the country and better meets the needs of policy makers, practitioners and the public.

NIHR Schools – Schools for Primary Care Research and Social Care Research (launched in 2006 and 2009) are also funded to improve the evidence base and undertake high quality research for primary care and social care practice.

NIHR Programme

The Public Health Research programme (launched in 2008) funds evaluation of non-NHS public health interventions intended to improve the health of the public and reduce inequalities in health. It provides knowledge on the benefits, costs, acceptability and wider impacts of interventions. Funding is up to £10 million a year.

The Health Services and Delivery Research programme (established in 2012) includes funding research into public health and preventive services to lead to improvements in health and services, with over 30 projects active in 2011/12 relevant to public health.

The Health Technology Assessment programme (launched in 1993) funds the evaluation of public health interventions delivered by the NHS. It includes the **Disease Prevention Panel** (launched in 2005) which funds a portfolio of research into the value of health technologies designed to promote health, prevent disease and reduce health inequalities.

Programme Grants for Applied Research (launched in 2006) funds leading researchers with up to £2 million. In public health, researchers are working in areas such as promotion of health and prevention of ill health.

Research for Patient Benefit (launched in 2006) allocates up to £25 million a year to support projects in the NHS addressing issues of importance related to health services and public health. Research includes studying the provision and use of services, evaluating interventions and examining delivery.

NIHR Faculty

The NIHR supports a range of research training fellowships across all stages of a research career. Over 50 of the fellowships active in 2011/12 were relevant to public health, at a cost of over £6 million.

NIHR Infrastructure

Biomedical Research Units (BRU) and Centres (BRC) bring together leading academics and clinicians to undertake translational clinical research in priority areas of high disease burden and clinical need. The first round of BRCs and BRUs were launched in 2007 for five years; the second round of eleven BRCs and twenty BRUs, with funding of up to £800 million over five years, began operating on 1 April 2012. Many of the research themes within BRCs and BRUs are relevant to public health, including BRUs focussing on nutrition, lifestyle and physical activity.

Collaborations for Leadership in Applied Health Research and Care (CLAHRCs) (launched in 2008) receive total funding of £82 million, including for research on obesity, housing and health, maternal health services and reducing health inequalities.

NIHR Collaborations

National Prevention Research Initiative is a consortium of sixteen funders to fund research into the development and implementation of successful, cost-effective interventions that reduce people's risk of developing disease.

UKCRC Public Health Research Centres of Excellence are collaborations between eight UK public health research funders. The five centres aim to build academic capacity, increase infrastructure and promote multi-disciplinary working in public health research.

UKCRC Translational Infection Research Initiative is funded by seven research funders. Four Consortium Grants have been awarded to public health related research programmes at the University of Oxford, Imperial College London, University of Cambridge and St George's, University of London.

Case studies

Case Study 1

Policy Research Unit on Behaviour and Health – 'Altering choice architecture to change population behaviour to improve health outcomes: a conceptual and empirical review'. This is a scoping review mapping literature on physical activity, alcohol and tobacco related behaviours, categorising interventions focusing on product properties, placement, proximity and availability.

Case Study 2

School for Social Care Research – The Bristol TARA project (Dr Emma Williamson, University of Bristol). A longitudinal study following homeless women over an 18 month period to establish their service use and need, and how housing, social care and health services can work together more effectively to meet those needs.

Case Study 3

Health Services and Delivery Research programme – Multi-site implementation of a promising innovation in low income communities: support for childbearing women (Professor Spiby, University of Nottingham). This study will evaluate the impact of trained volunteer doula support provided to a woman during pregnancy, labour and the period after birth, particularly in low income communities.

Case Study 4

Health Technology Assessment programme – A peer-support weight management programme to supplement brief advice in general practice for obese adults from deprived communities (Dr Hayden McRobbie, Wolfson Institute of Preventive Medicine, Barts and The London). This trial has been designed to establish whether the programme maintains its effects long term, and whether it helps people more than current best-practice GP advice.

Case Study 5

Research for Patient Benefit – Hands up for Max! Hand Hygiene study in Primary Schools (Professor Campbell, University Hospitals Bristol NHS Foundation Trust). This is a cluster randomised controlled trial to test the effectiveness of an educational intervention to promote hand washing in reducing absenteeism in primary schools.

Postscript

Abbreviations and links to data resources

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£PW	Pounds per week
95%CI	95% Confidence Interval
AML	Acute Myeloid Leukemia
APHO	Association of Public Health Observatories
APS	Annual Population Survey
BINOCAR	British Isles Network of Congenital Anomaly Registers
BME	Black and Minority Ethnic
BRC	Biomedical research centre
CBVT	Cerebrovascular diseases
CF	Cystic fibrosis
CHD	Coronary heart disease
Chimat	Child and Maternal Health Observatory
CHS	Child Health System
CHT	congenital hypothyroidism
CKD	Chronic kidney disease
CMACE	Centre for Maternal and Child Enquiries
COPD	Chronic Obstructive Pulmonary Disease
CSO	Chief Scientific Officer
CVD	Cardiovascular disease
CVI	Certificate of vision impairment
DCLG	Department for Communities and Local Government
DECC	Department of Energy and Climate Change
DEXA Scan	Dual energy X-ray absorptiometry scan
DFLE	Disability Free Life Expectancy
DFT	Department for Transport
DH	Department of Health
DMTF	Decayed, missing or filled tooth
DWP	Department of Work and Pensions
E.Coli	Escherichia coli
EMPHO	East Midlands Public Health Observatory
ERPHO	Eastern Region Public Health Observatory
EU	European Union
EU-04-07 countries	European Union members since 2004
EU-15 countries	European Union members before 2004
EWDI	Excess Winter Death Survey
FSM	Free school meals
GB	Great Britain
GBD study	Global Burden of Disease Study

GCSE	General certificate in secondary education
GI	Gastrointestinal
GPRD	General Practice Research Database
GUM	Genitourinary medicine
GUMAMM	Genitourinary Medicine Access Monthly Monitoring
GUMCAD	Genitourinary Medicine Clinic Activity Dataset
HES	Hospital Episode Statistics
HESA	Higher Education Statistics Agency
HM Government	Her Majesty's Government
HO	Home Office
HPA	Health Protection Agency
HPV	Human papillomavirus
HSCIC	Health and Social Care Information Centre
HSE	Health Survey for England
HSE	Health and Safety Executive
ICD10	Tenth revision of the International Classification of Diseases
IMD	Index of Multiple Deprivation
IPMR	Integrated performance measures monitoring
JSNA	Joint Strategic Needs Assessment
LE	Life expectancy
LHO	London Health Observatory
LRTI	Lower respiratory tract infections
MCADD	Medium-chain acyl-CoA dehydrogenase deficiency
MDR TB	Multi-drug-resistant tuberculosis
MMR vaccine	Measles, mumps, and rubella vaccine
MOJ	Ministry of Justice
MRI	Magnetic resonance imaging
MRSA	Methicillin-resistant Staphylococcus aureus
MSM	Men who have sex with men
NCIN	National Cancer Intelligence Network
NDA	National Diabetes Audit
NDSCR	National Down Syndrome Cytogenetic Register
NEET	Not in education, employment, or training
NEPHO	North East Public Health Observatory
NHL	Non-Hodgkin lymphoma
NHS DEP for England	NHS Dental Epidemiology Programme for England

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NIHR	National Institute for Health Research
NMSC	Non-melanoma skin cancers
NOIDs	Notifications of Infectious Diseases
NOO	National Obesity Observatory
NWPHO	North West Public Health Observatory
ONS	Office for National Statistics
PCT	Primary Care Trust
PHO	Public Health Observatory
PKU	Phenylketonuria
PSA	Prostate-specific antigen
PYLL	Potential Years of Life Lost
QOF	Quality Outcomes Framework
RCGP	Royal College of General Practitioners
RCOpth	The Royal College of Ophthalmologists
RNIB	Royal National Institute of Blind People
RRT	Renal replacement therapy
SCD	Sickle cell disease
SEPHO	South West Public Health Observatory
SII	Slope Index of Inequality
STI	Sexually transmitted disease
SWPHO	South West Public Health Observatory
TB	Tuberculosis
TDO	The Dental Observatory
UK	United Kingdom
UKACR	United Kingdom Association of Cancer Registries
UNICEF	United Nations Children's Fund
URTI	Upper respiratory tract infections
USA	United States of America
WEMWBS	Warwick-Edinburgh Mental Well-being Scale
WHO	World Health Organisation
WMPHO	West Midlands Public Health Observatory
XDR TB	Extensively drug-resistant tuberculosis

Evidence and intelligence resources

1 Health intelligence resources

1.1 The NHS Information Centre for Health and Social Care

The NHS Information Centre for Health and Social Care www.ic.nhs.uk is the main provider of data and information for the NHS. The indicator portal https://indicators.ic.nhs.uk/webview/ provides a range of health and social care indicators, including

■ Compendium of Population Health Indicators

A wide-ranging collection of over 1,000 indicators designed to provide a comprehensive overview of population health at a national, regional and local level. These indicators were previously available on the Clinical and Health Outcomes Knowledge Base website (also known as NCHOD).

■ GP Practice data

This is a collection of practice level data and is designed to improve healthcare and support patients in making better, informed choices about the practice they choose to register with.

■ Local Basket of Inequalities Indicators (LBOI)

This collection of 60 indicators helps organisations to measure health and other factors which influence health inequalities such as unemployment, poverty, crime and education.

■ NHS Outcomes Framework

The NHS Outcomes Framework indicators will be used by the Secretary of State to hold the NHS Commissioning Board to account.

■ Social Care

The first figures for the new Adult Social Care Outcomes Framework (ASCOF). They include data for 14 measures which are designed to enable users to compare the effectiveness of care delivered by councils responsible for adult social care services.

1.2 The English Public Health Observatories

The English Public Health Observatories http://www.apho.org.uk/ provide a range of public health data and intelligence. A new Public Health England portal to public health evidence and intelligence will be launched in 2013.

The wealth of resources produced by the observatories can be found at: http://www.apho.org.uk/default.aspx?RID=39403.

1.2.1 English health profiling products, atlases, scorecards and tools

- **Health Profiles for English Local Authorities**
  These annual profiles comprising 37 indicators, provide a snapshot of health in each upper and lower tier local authority in England. They provide summary health information to support local authority elected members and community partners to plan for health improvement. The information is presented as a four page document and there is also an interactive atlas. These have been produced since 2006. See www.healthprofiles.info.

- **Local Health**
  This provides a range of health indicators at the level of Middle Super Output Areas, wards (these are estimated), and local authorities. The indicators are drawn from the small areas indicators for Joint Strategic Needs Assessment http://www.apho.org.uk/resource/view.aspx?RID=87735 . They are displayed as interactive maps and reports. It is possible to combine areas to create a user-defined geography. It allows the user to compare any selected area to the England average for a range of indicators. See www.localhealth.org.uk

- **2012 Cardiovascular Disease Profiles for England**
  http://www.sepho.org.uk/CVDprofiles.aspx

- **Community Mental Health Profiles**
  http://www.nepho.org.uk/cmhp/

- **End of Life Care Local Authority Profiles 2012**
  http://www.endoflifecare-intelligence.org.uk/end_of_life_care_profiles/default.aspx

- **Excess Winter Deaths**
  http://www.wmpho.org.uk/excesswinterdeathsinEnglandatlas/

- **Health inequality indicators for local authorities and primary care organizations**
  http://www.apho.org.uk/resource/view.aspx?RID=110504

- **Local Alcohol Profiles for England (LAPE)**
  http://www.lape.org.uk/

- **Local Authority Child Health Profiles 2012**
  http://www.chimat.org.uk/profiles

- **Local Tobacco Control Profiles**
  http://www.lho.org.uk/lho_topics/analytic_tools/tobaccocontrolprofiles.aspx

- **National General Practice Profiles**
  http://www.apho.org.uk/pracprof/

- **Sexual Health Balanced Scorecard 2012 update**
  http://www.apho.org.uk/default.aspx?QN=SBS_DEFAULT

- **Teenage Pregnancy Atlases, Forecasts and other Resources**
  http://www.apho.org.uk/resource/view.aspx?RID=116350

- **Spend and Outcomes Factsheets and Tool**
  http://www.yhpho.org.uk/default.aspx?RID=49488

- **Disease Prevalence Estimates**
  http://www.apho.org.uk/diseaseprevalencemodels

1.2.2 Topic-based collections

- **Child and Maternal Health Observatory (ChiMat)**
  The national Child and Maternal Health Observatory (ChiMat) provides information and intelligence to improve decision making for high quality, cost effective services. It supports policy makers, commissioners, managers, regulators, and other health stakeholders working on children's, young people's and maternal health. http://www.chimat.org.uk/

- **Diabetes Health Intelligence**
  Diabetes Health Intelligence is run by Yorkshire and the Humber Public Health Observatory to provide timely, quality assured national diabetes health intelligence working in partnership with a number of organisations. http://www.yhpho.org.uk/default.aspx?RID=8467

  The PHO also provides the National Diabetes Information Service (NDIS). NDIS is a partnership of leading diabetes organisations, funded by NHS Diabetes, which provides free access for the NHS to a comprehensive suite of diabetes information products, datasets and tools, through a single web portal www.diabetes-ndis.org.

- **End of Life Care Intelligence Network**
  The National End of Life Care Intelligence Network (NEoLCIN) aims to improve the collection and analysis of information related to the quality, volume and costs of care provided by the NHS, social services and the third sector, to adults approaching the end of life. This intelligence will help drive improvements in the quality and productivity of services. The network is part of the National End of Life Care Programme. http://www.endoflifecare-intelligence.org.uk/home.aspx

- **Improving Health and Lives: Learning Disability Observatory**
  The Improving Health and Lives Learning Disabilities Observatory keeps watch on the health of people with learning disabilities and the health care they receive. It provides a range of tools, resources and reports. http://www.improvinghealthandlives.org.uk/

- **Kidney diseases and services**
  The East Midlands Public Health Observatory (EMPHO) produces information resources on kidney disease, giving useful resources and links both from Public Health Observatories and other sources. This is a joint work programme with NHS Kidney Care. http://www.empho.org.uk/Themes/renal/renal1.aspx

- **National Obesity Observatory**
  The National Obesity Observatory provides a single point of contact for wide-ranging authoritative information on data, evaluation and evidence related to weight status and its determinants. NOO works closely with a wide range of organisations and provides support to policy makers and practitioners involved in obesity and related issues. www.noo.org.uk

1.3 National Cancer Intelligence Network

The NCIN provides a range of information for the general public or those with a particular interest in cancer or cancer services. They are free to access and each tool provides instructions on its use and details of the data included. These can be found at http://www.ncin.org.uk/cancer_information_tools/default.aspx (accessed 17th October 2012).

- **Cancer e-Atlas**

The aim of the Cancer e-Atlas is to provide the public, health care professionals, commissioners and health service managers with basic information on incidence, mortality and survival for the main types of cancers in males and females.

- **GP Practice Cancer Profiles**

The GP Practice Profiles bring together a range of outcomes and process information relevant to cancer in primary care. They provide readily available and comparative information for benchmarking and reviewing variations at a general practice level. GP Practice Profiles are currently available only to authorised users via the Cancer Commissioning Toolkit.

- **Cancer Mortality Profiles**

The mortality profiles are interactive spreadsheets showing trends in cancer mortality rates in England for under 75 year olds by different levels of geography. This tool has been developed to support the monitoring, commissioning and planning of local cancer services. Produced by the South West Public Health Observatory on behalf of the National Cancer Action Team and National Cancer Intelligence Network.

- **Prevalence e-Atlas**

The Prevalence e-Atlas is an interactive tool which uses maps, charts and data tables to display cancer prevalence data by cancer network for the UK. The data displayed are those published in the NCIN report One, Five and Ten-year Cancer Prevalence.

1.4 QIPP RightCare NHS Atlas of Variation in Healthcare series

The NHS Atlas of Variation series http://www.rightcare.nhs.uk/index.php/nhs-atlas/ (accessed 17th October 2012) supports the search for unexplained variations, the identification and attention to unwarranted variation, helping clinicians to understand what is going on in their area and where to focus attention to improve the care they provide. The first NHS Atlas of Variation was published in November 2010. In December 2011 a second and expanded version of the Atlas, consisting of 71 maps, was published.

Work is now underway to develop a series of themed atlases focusing on specific conditions or populations in more depth. The first themed atlases include:

- Children and Young People
- Diabetes
- Kidney Disease
- Respiratory Disease

2 Evidence-based public health and health care resources

2.1 NICE Pathways

An online tool which provides access, topic by topic, to the range of guidance from NICE, including quality standards, technology appraisals, clinical and public health guidance and NICE implementation tools. This enables users to explore, in increasing detail, up-to-date NICE recommendations and advice http://pathways.nice.org.uk/

2.2 NHS Evidence

http://www.evidence.nhs.uk/ NHS Evidence provides free access to public health, clinical and non-clinical information. Information includes evidence, guidance and government policy. There is a collection of resources on public health topics. NHS staff who have an Athens account can also get free access to paid for journals.

2.3 Cochrane Library

Cochrane Reviews are systematic reviews of primary research in human health care and health policy, and are internationally recognised as the highest standard in evidence-based health care. They investigate the effects of interventions for prevention, treatment and rehabilitation. They also assess the accuracy of a diagnostic test for a given condition in a specific patient group and setting. They are published online in The Cochrane Library http://www.cochrane.org/cochrane-reviews/about-cochrane-library

Postscript

Acknowledgments

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Acknowledgements

The production of this report has been led by the Chief Medical Officer, the Editor in Chief, the Project Manager and the Chapter Editors. It has been a collaborative process and we have canvassed opinions from a variety of organisations, national experts and national policy leads to inform the content.

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Professor John Newton, Chief Knowledge Officer (designate) Public Health England
Ms Clara Swinson, Director of Health Protection, Department of Health

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Yorkshire and Humber Public Health Observatory - Professor Brian Ferguson

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