How healthy are we? A high-level guide

Updated October 2014

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The Kings Fund

Ideas that change health care

This guide contains basic facts on the health of England's population

Is this for me?

- Yes, if you wish to find up-to-date high-level information on the state and drivers of England's health.

What will I find in it?

- Basic facts on the health of people in England (and sometimes the UK or devolved countries), the main drivers of health, how it varies and is expressed in inequalities, and relevant comparisons with other countries.
- You won't find detailed statistics and information on every public health issue, or our views on public health reform and policy.

This update

- We have updated this guide in October 2014 using new data and studies. Some information is no longer active and has been removed. A selected glossary of terms can be found at the end.

Sections

- **Life expectancy, mortality and recorded causes of death**
  Over time and compared to other countries

- **Illness and morbidity**
  Over time and compared to other countries

- **Not all in it together**
  Patterns of health by geography, deprivation and other measures of inequality

- **What are the main drivers of our health?**
  - Communicable disease, infection and environmental threats
  - Our lifestyles, adults and children
  - A preventive health care system
  - The wider social and economic determinants of health

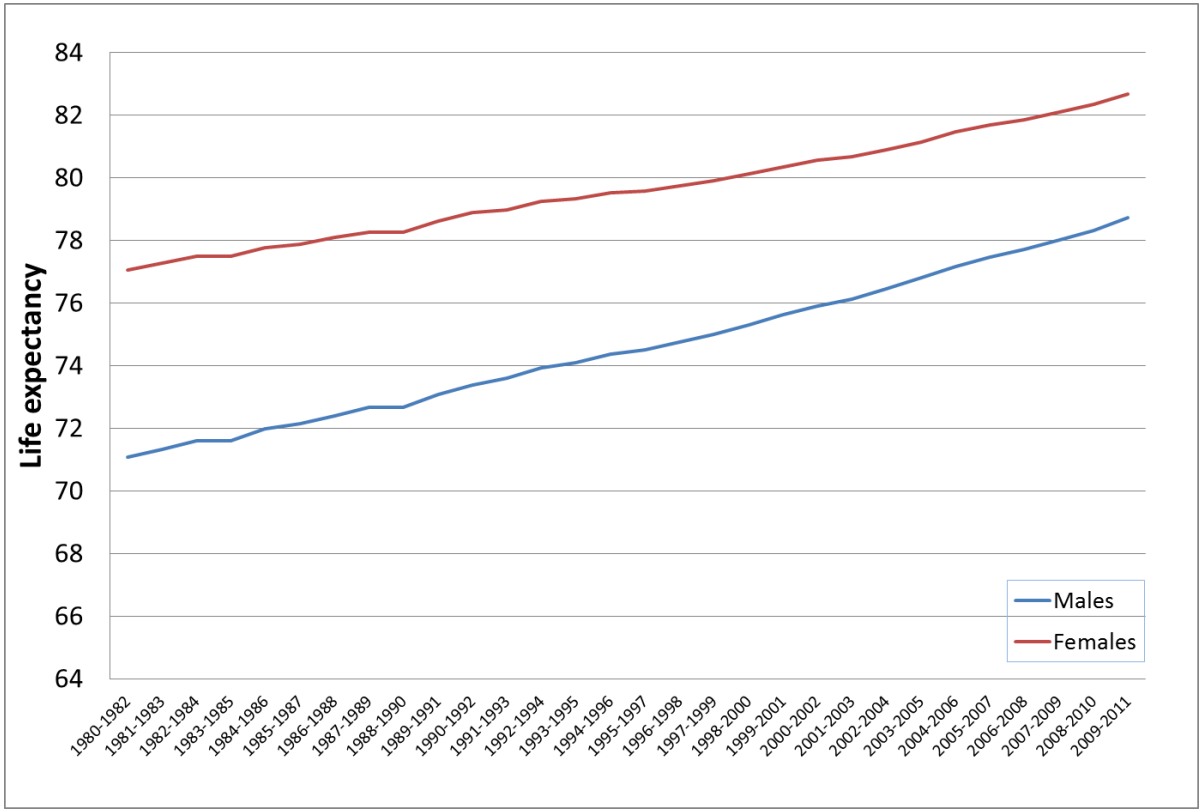
- **Conclusion and glossary**

Life expectancy, mortality and recorded causes of death

Over time and compared to other countries

Life expectancy continues to improve…

Life expectancy at birth 2009-11, males and females, England

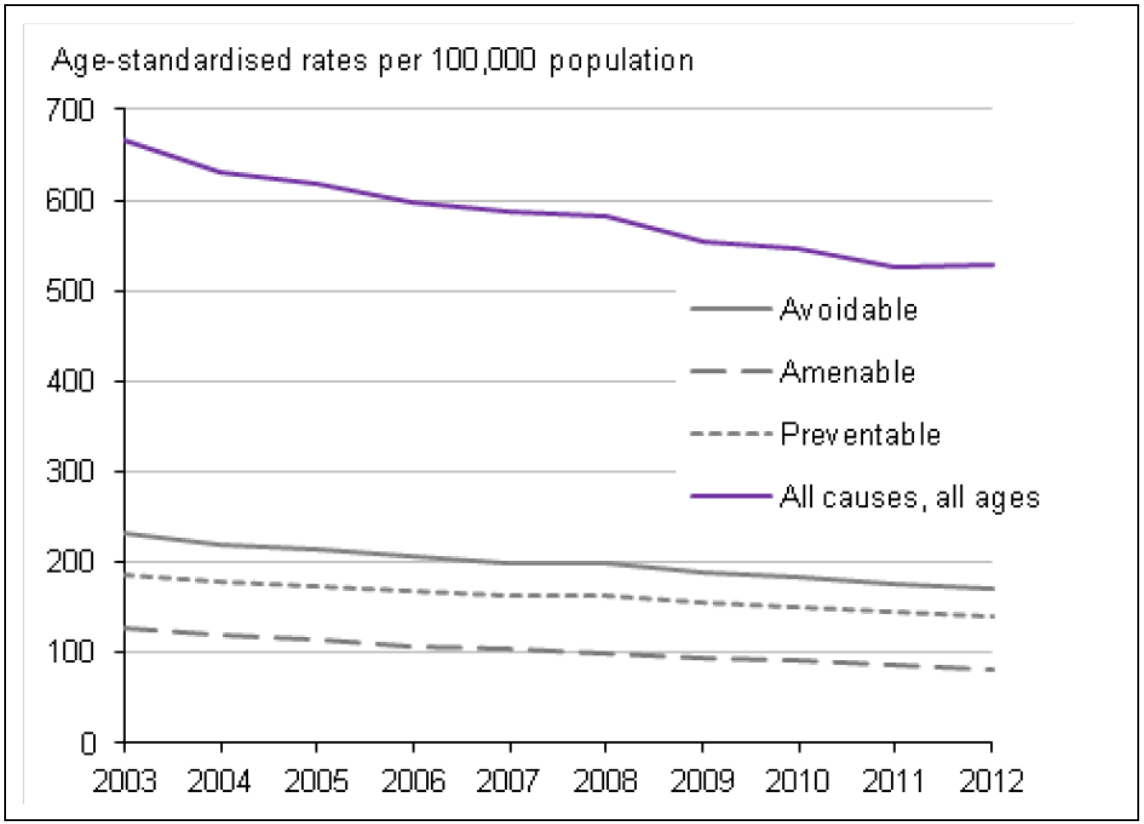


Life expectancy at birth in England continues to improve. In 2009–11 it was 78.7 years for males and 82.7 years for females.

Source: derived from data in http://www.ons.gov.uk/ons/dcp171778_302422.pdf

Avoidable, amenable and preventable mortality rates have fallen over time

Age-standardised mortality rates for causes of death considered avoidable, amenable or preventable, 2003–12

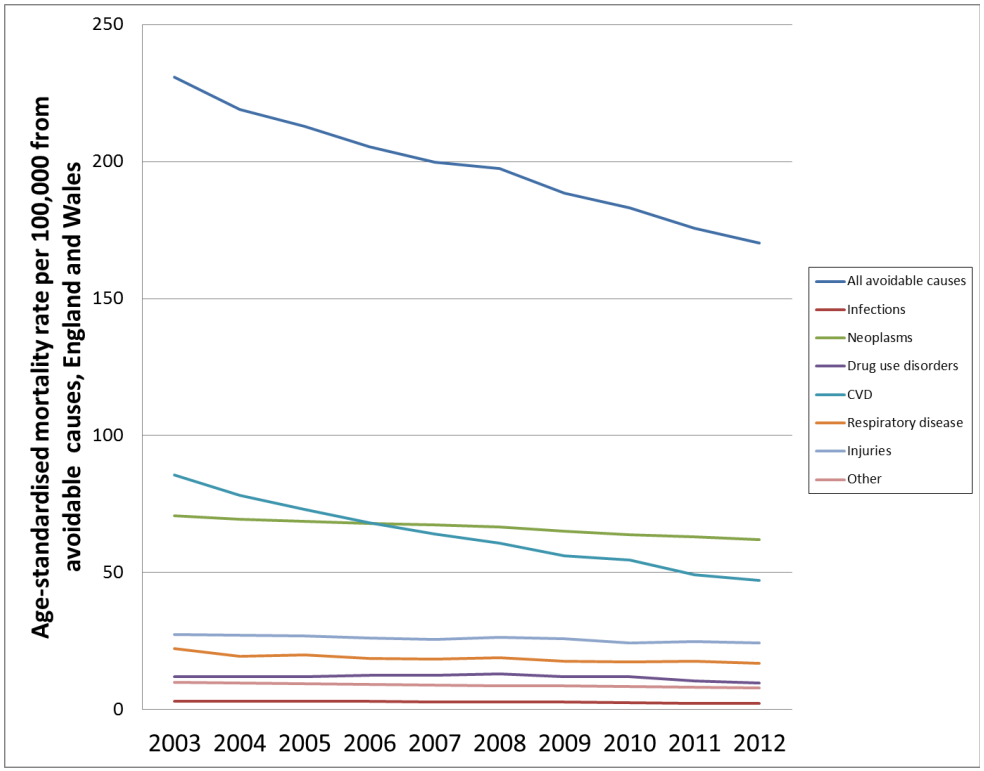


There were 35% fewer age-standardised avoidable deaths per 100,000 in 2012 than there were in 2003.

Source: http://www.ons.gov.uk/ons/dcp171778_362295.pdf

Falls in cardiovascular disease drove the drop in avoidable deaths

Age-standardised mortality rates per 100,000 for avoidable causes of death, in England and Wales, 2003–12

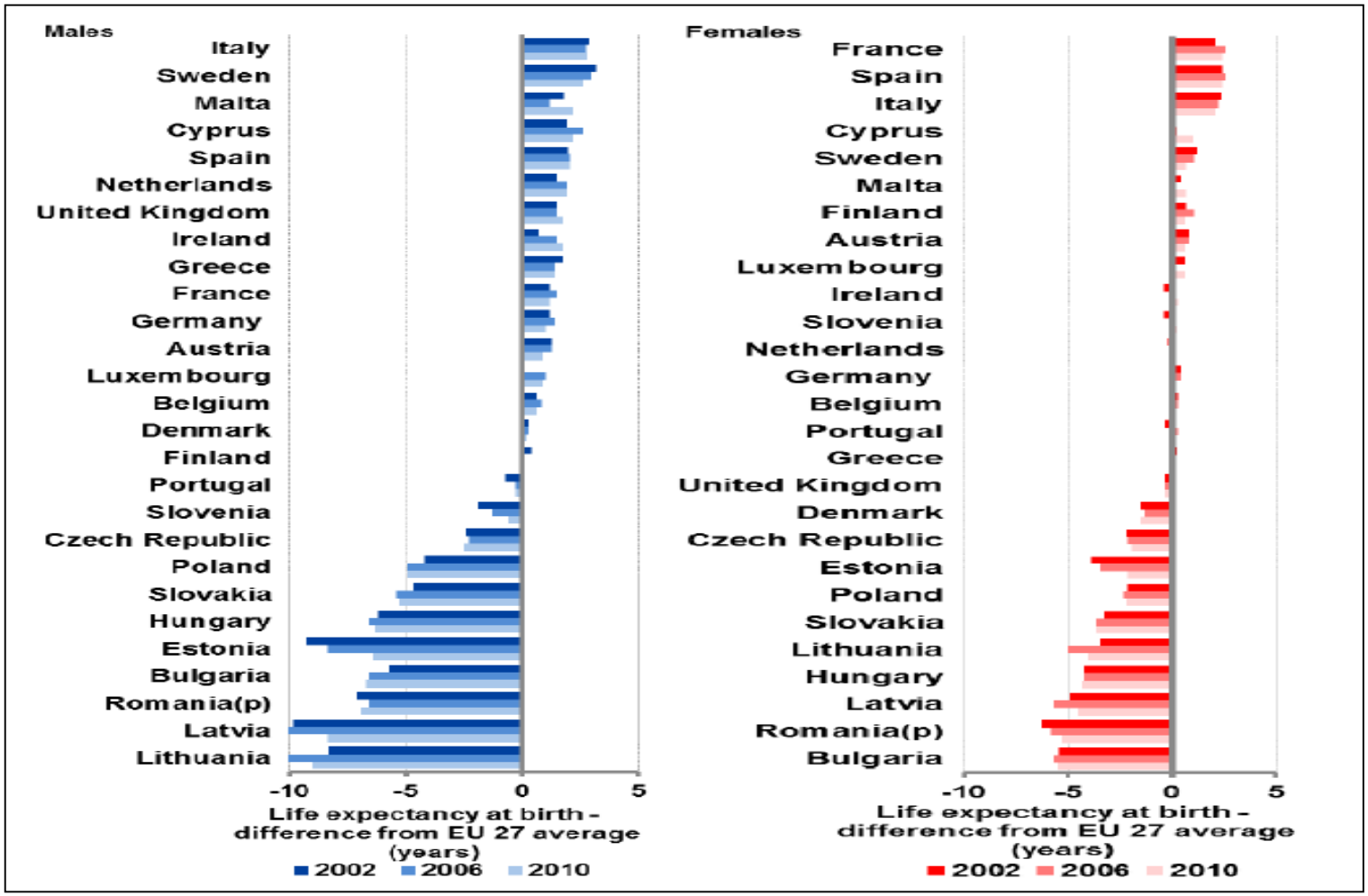


The biggest cause of the drop in avoidable mortality has been falls in cardiovascular death rates – from 86 to 47 per 100,000. Neoplasms (tumours) overtook CVD as the leading avoidable cause of death in 2007.

Source: Derived from, http://www.ons.gov.uk/ons/dcp171778_362295.pdf

UK male life expectancy is above and female life expectancy just below EU 27 average

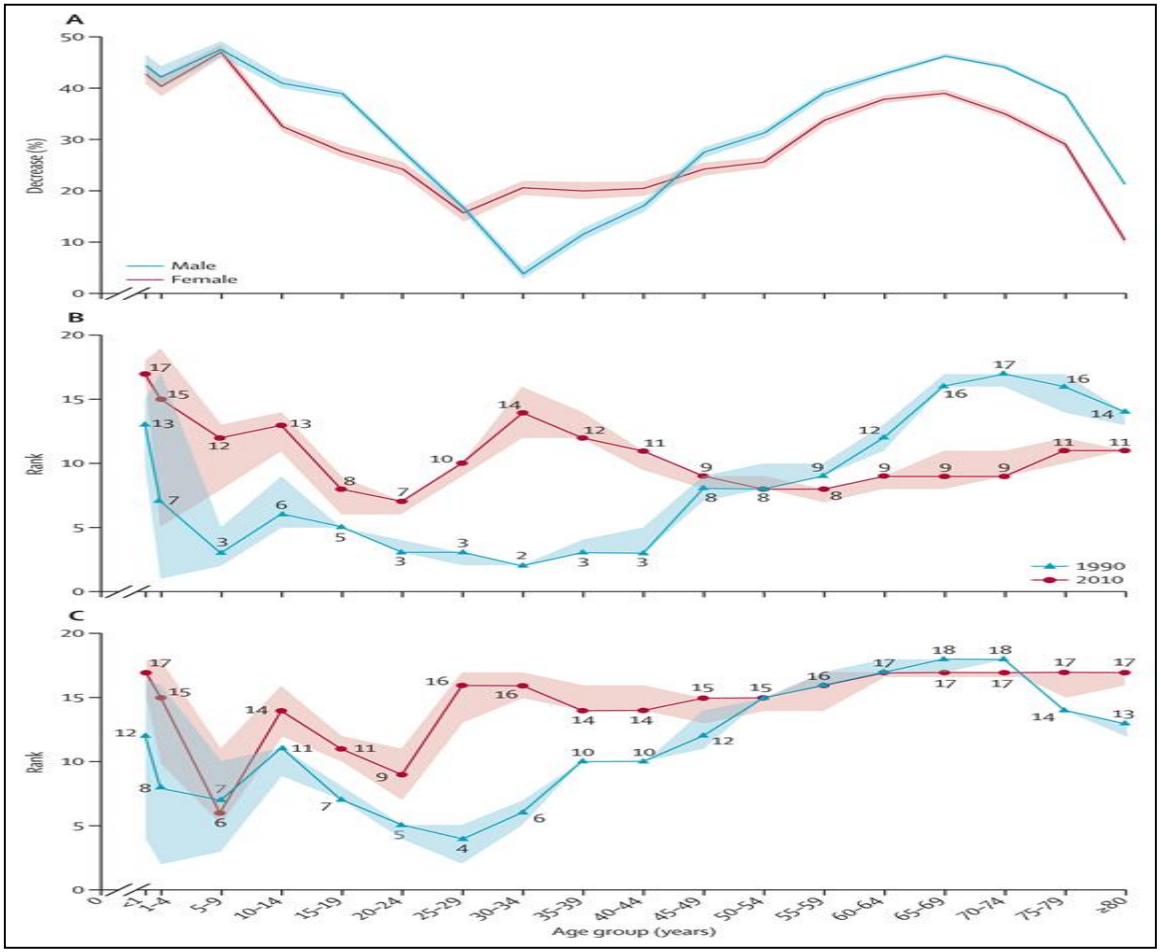
Life expectancy at birth – difference from EU 27 average, males and females, 2002, 2006, 2010



Source: http://ec.europa.eu/health/social_determinants/docs/healthinequalitiesineu_2013_en.pdf

But UK performance has worsened in wider league tables of mortality for both genders

Male and female age-standardised % decrease in mortality rates (panel A); ranking for males vs comparator countries (panel B) and ranking for females (panel C), 1990 and 2010



- The Global Burdens of Disease Study compared UK health outcomes against our major competitors and how they changed between 1990 and 2010.
- Panel A shows significant declines in mortality rates for younger and older groups but less change for those in their 30s and 40s (especially males, in blue).
- Panel B shows performance relative to other countries decreasing for males aged up to 50 and improving for males aged over 50.
- Panel C shows performance relative to other countries decreasing for females aged up to 50 and remaining stable (though still poor) at later ages.

Source: http://www.sciencedirect.com/science/article/pii/S0140673613603554, reproduced with permission from The Lancet

Also, the UK does relatively poorly on years of life lost for heart disease and some cancers

Years of life lost (YLL) by cause, relative rankings, 1990 (panel A) and 2010 (panel B)

- The Global Burdens of Disease Study estimated the leading causes of years of life lost. The lower the rank the better; green signifies better than average, red worse.
- Panel A shows the ranking of years of life lost by cause in 1990. For the UK it shows poor rankings for 9 of 30 areas assessed, including various cancers, heart disease, respiratory infections, peptic ulcers and COPD.
- Panel B shows ranking for 2010. Again, the UK ranks poorly for 9 of 30 areas assessed – in similar areas, with some improvement in cancers.
- The UK is the best performing country for diabetes in 2010 and also does well on road accidents. Its rank has slipped in other areas including cirrhosis and pre-term birth complications.

Source: http://www.sciencedirect.com/science/article/pii/S0140673613603554, reproduced with permission from The Lancet

Summary: life expectancy and mortality

- **We are living longer than ever**
  - Life expectancy at birth in England was 78.7 for males and 82.7 for females in 2009–11, higher than they've ever been.

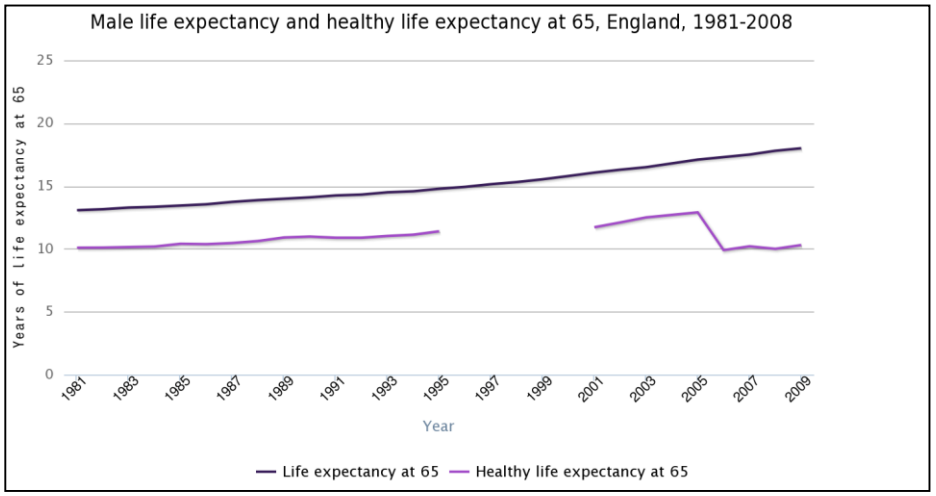
- **Avoidable deaths have fallen dramatically**
  - The falls in cardiovascular disease is the main reason.

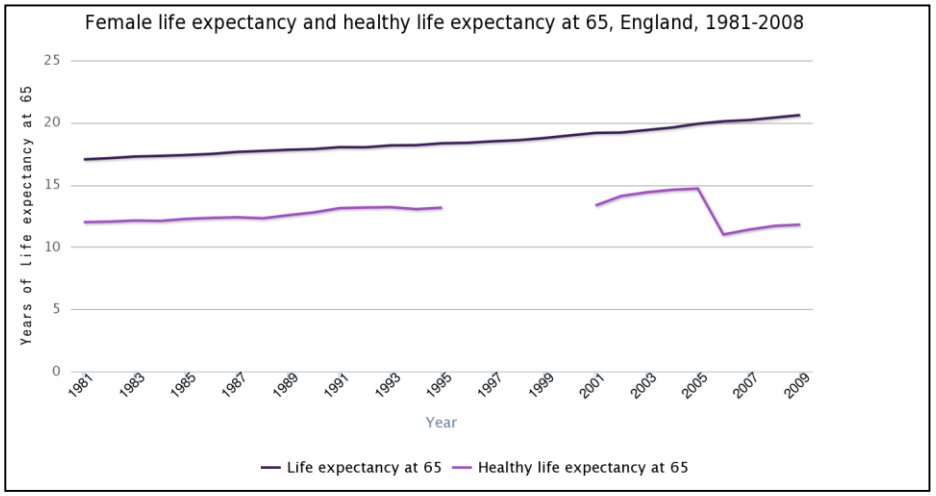
- **But compared to other countries our performance overall has slipped since 1990**
  - We have too many avoidable deaths in the first 50 years of life for both males and females.
  - We continue to do less well on the 'big killers', including heart disease and some cancers.
  - We perform well for diabetes and road accidents but our performance against cirrhosis and pre-term birth complications has slipped.

Illness and morbidity

Over time and compared to other countries

Male and female healthy life expectancy (HLE) is rising over time





Longer lives can be lived in better health. Between 2006 and 2009, HLE at 65 increased by 0.4 years for males and 0.8 years for females. For females, HLE grew at a higher rate than life expectancy.

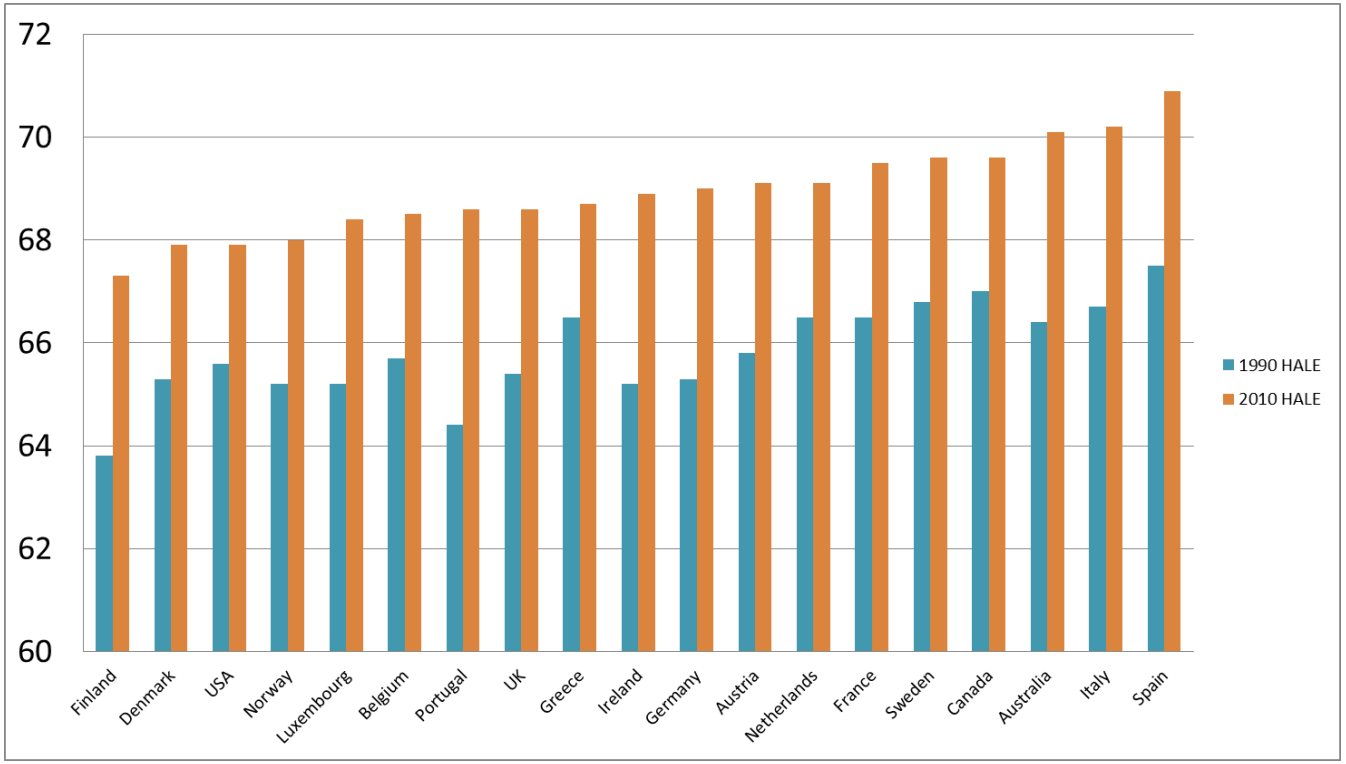
- The way in which HLE is estimated changed in 2006 to harmonise measurement with the European Union. This explains the dip in the graphs – see the source below for more details.

Source: http://www.kingsfund.org.uk/time-to-think-differently/trends/demography/life-expectancy#healthy

But the UK is low to mid-table in terms of health-adjusted life expectancy

In both 1990 and 2010 the UK was ranked 12th of 19 nations in the proportion of life spent in good or better self-reported health.

Health-adjusted life expectancy, 1990 and 2010, UK and other countries

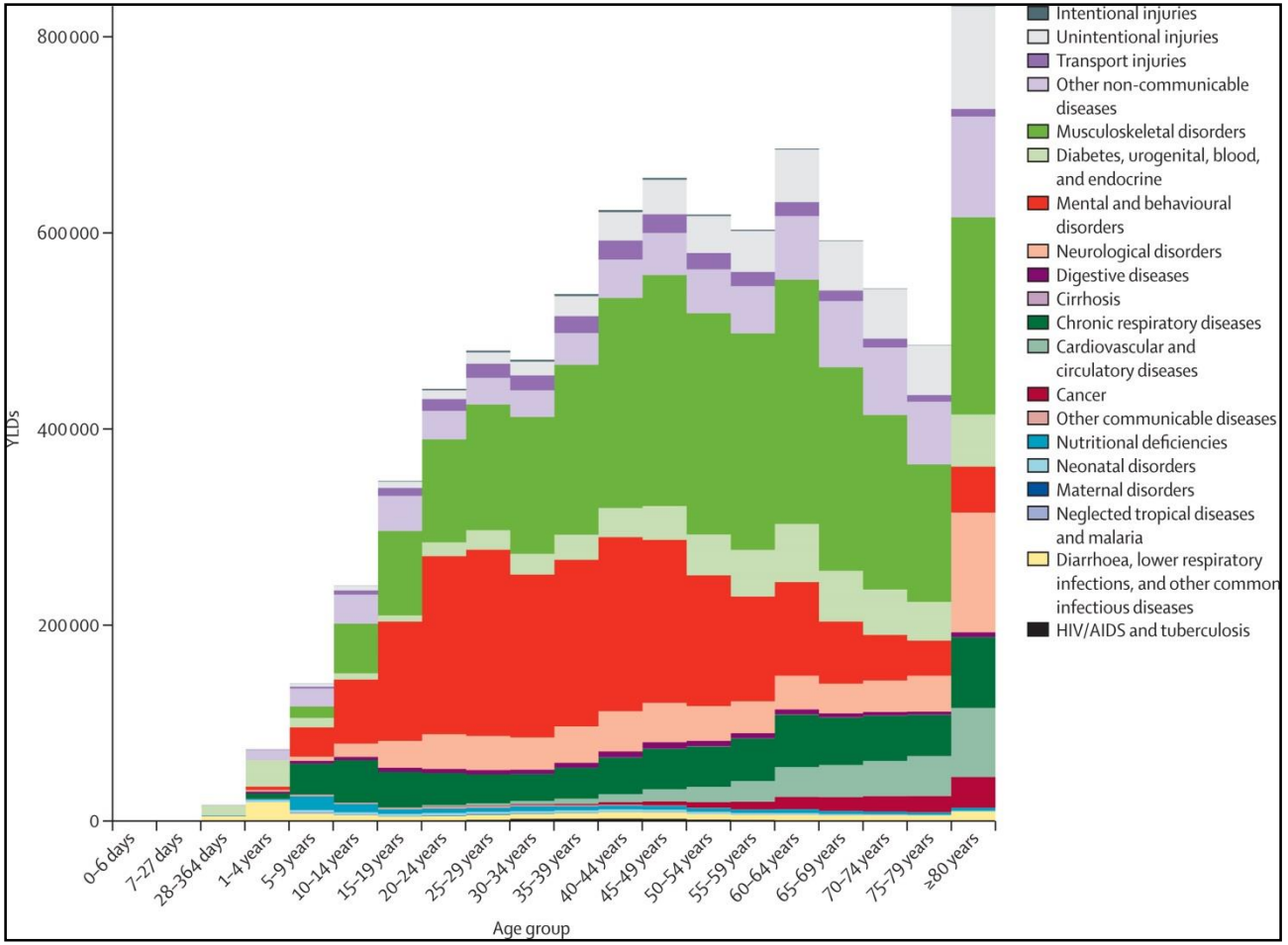


In 2010 we could expect to live 68.6 years in good health. The Spanish could expect to live 70.9 years.

Source: Derived from Table 1, The Lancet, http://www.sciencedirect.com/science/article/pii/S0140673613603554

Musculoskeletal and mental health problems are important causes of disability

Years lived with disability in the UK by cause and age, 2010



Musculo-skeletal disorders and mental health problems accounted for more than half of years lived with disability in the UK in 2010.

Source: http://www.sciencedirect.com/science/article/pii/S0140673613603554, reproduced with permission from The Lancet

The UK does poorly for COPD, drug use disorders and some other conditions, but well for diabetes

Age-standardised DALYs by cause, relative ranking 1990 (A) and 2010 (B)

A

	Ischaemic heart disease	Low back pain	Stroke	Lung cancer	COPD	Lower respiratory infections	Falls	Major depressive disorder	Road injury	Neck pain	Breast cancer	Colorectal cancer	Other musculoskeletal disorders	Anxiety disorders	Drug use disorders	Asthma	Migraine	Self-harm	Diabetes	Alzheimer's disease	Congenital anomalies	Osteoarthritis	Preterm birth complications	Stomach cancer	Other cardiovascular and circulatory	Alcohol use disorders	Cirrhosis	Other hearing loss	Pancreatic cancer	Chronic kidney disease
Sweden	11	16	5	1	1	13	6	15	2	1	2	3	6	9	6	16	15	15	6	11	10	19	2	4	5	16	4	9	15	3
Spain	2	2	13	5	8	11	3	7	16	12	5	4	16	1	16	2	17	3	18	14	14	15	7	15	15	3	15	14	1	18
Canada	9	7	1	14	11	9	2	4	7	5	11	9	18	5	10	14	6	10	11	16	6	17	9	2	1	9	8	19	12	13
Greece	6	8	18	8	3	7	9	14	17	16	1	1	1	12	2	1	14	1	3	2	19	6	18	12	11	1	7	15	3	19
Netherlands	8	6	6	15	13	5	4	19	3	7	16	10	15	15	3	3	7	5	8	6	15	2	8	11	14	4	3	5	6	5
Italy	3	4	14	12	6	2	10	10	10	15	9	6	5	3	17	6	18	2	16	5	9	5	16	18	10	2	14	11	7	10
Australia	10	3	3	7	15	1	5	2	11	3	6	16	17	14	19	19	19	8	4	12	5	4	14	3	2	8	5	10	4	8
France	1	14	4	9	5	6	12	13	12	8	8	8	11	18	5	13	3	18	1	15	1	3	6	6	18	17	13	8	5	9
Belgium	5	5	9	19	14	12	13	9	15	10	17	12	4	2	8	7	12	14	10	18	4	11	10	7	17	10	9	7	8	11
Norway	14	19	7	3	4	15	11	18	4	9	4	13	8	19	12	11	2	12	17	10	11	1	5	8	4	19	2	2	10	2
Austria	12	11	15	6	10	4	18	6	14	11	12	11	12	7	14	5	8	16	12	1	13	14	15	17	12	12	18	4	14	7
UK	17	15	12	16	16	18	7	3	1	4	19	14	2	16	18	17	16	4	2	8	3	18	12	10	6	6	6	12	9	6
Germany	13	18	8	10	9	10	14	11	9	6	13	17	10	13	9	12	4	11	14	4	8	13	13	16	16	15	17	6	11	14
Ireland	19	13	11	11	19	17	8	1	6	14	15	18	14	8	7	15	11	6	7	7	16	9	11	13	13	5	1	16	16	15
Finland	18	9	16	4	2	16	19	12	5	19	3	2	3	4	1	8	13	19	5	19	12	7	3	14	8	14	10	13	19	4
Denmark	15	17	10	17	18	8	15	5	8	2	18	19	13	6	13	9	5	17	13	13	18	8	4	5	3	18	12	3	17	1
Luxembourg	7	12	17	13	12	3	16	17	18	13	14	15	7	11	11	4	10	13	9	17	2	10	1	9	19	13	16	1	18	12
USA	16	1	2	18	17	14	1	8	13	18	10	5	19	17	15	10	1	7	15	9	7	16	19	1	9	11	11	18	13	16
Portugal	4	10	19	2	7	19	17	16	19	17	7	7	9	10	4	18	9	9	19	3	17	12	17	19	7	7	19	17	2	17

B

	Ischaemic heart disease	Low back pain	COPD	Stroke	Lung cancer	Falls	Major depressive disorder	Other musculoskeletal disorders	Neck pain	Alzheimer's disease	Drug use disorders	Lower respiratory infections	Anxiety disorders	Colorectal cancer	Road injury	Asthma	Breast cancer	Migraine	Alcohol use disorders	Other cardiovascular and circulatory	Cirrhosis	Osteoarthritis	Self-harm	Diabetes	Schizophrenia	Prostate cancer	Chronic kidney disease	Pancreatic cancer	Preterm birth complications	Congenital anomalies
Spain	3	2	4	9	8	4	7	16	8	15	12	5	1	11	10	2	3	17	3	11	10	15	3	15	14	3	17	1	7	9
Italy	5	4	3	11	6	7	11	2	15	5	10	1	5	8	15	7	12	18	1	10	8	4	2	12	3	1	6	8	13	12
Sweden	8	16	6	4	1	6	9	3	1	14	5	4	9	5	1	16	1	15	15	4	4	18	15	9	15	17	2	13	2	3
Australia	6	3	12	1	4	3	1	17	3	10	17	3	14	14	13	19	6	19	4	2	3	6	9	7	17	16	7	2	12	10
Canada	11	5	9	3	15	1	6	18	12	17	15	9	3	6	5	15	11	6	7	1	6	19	14	14	19	10	14	6	16	17
Netherlands	4	7	15	8	18	5	19	11	6	11	2	13	13	17	2	5	17	7	6	15	2	2	5	3	2	13	5	11	9	11
Germany	15	18	8	5	10	9	12	8	7	3	6	10	11	9	6	8	10	4	12	17	16	12	8	11	7	5	16	15	14	6
Greece	19	8	7	18	14	12	13	1	16	2	4	17	12	2	19	1	7	12	2	5	5	5	1	6	6	2	15	5	15	14
Austria	14	14	13	7	7	18	14	6	9	1	13	2	6	4	11	4	5	8	13	12	17	11	16	13	4	6	13	16	17	15
France	1	13	2	2	13	15	10	13	5	9	3	8	18	7	14	14	14	3	16	16	14	3	17	4	11	7	10	7	6	2
Ireland	16	10	14	10	9	13	4	12	13	6	11	16	8	15	8	13	15	11	8	7	7	9	13	8	5	15	12	9	11	19
Luxembourg	9	11	10	15	11	16	18	5	14	8	14	7	16	12	12	3	8	10	14	19	12	10	6	5	12	4	11	19	3	1
Norway	7	19	11	6	5	14	16	4	10	13	16	11	19	16	3	11	2	2	17	3	1	1	11	17	9	18	1	12	1	5
Finland	17	9	1	16	2	19	17	7	19	19	7	6	2	1	7	9	4	14	19	8	18	7	19	2	13	8	3	18	5	7
Belgium	12	6	16	14	17	17	3	10	11	16	8	14	4	13	18	6	19	13	9	18	9	13	18	10	10	14	8	10	10	8
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Portugal	2	12	5	19	3	10	5	9	17	4	1	19	10	19	16	17	13	9	5	14	19	14	7	18	8	11	18	3	4	4
Denmark	10	17	18	17	19	11	15	15	2	12	9	12	7	18	9	10	16	5	18	6	13	8	10	16	1	19	9	17	8	13
USA	18	1	19	12	16	2	8	19	18	18	19	15	17	3	17	12	9	1	11	13	15	17	12	19	18	12	19	14	19	18

Ranking legend: Lower than mean | Indistinguishable from mean | Higher than mean

- The Global Burdens of Disease Study estimated the leading causes of number of years lived with a disability – disability-adjusted life years (DALYs). The lower the rank the better, green signifies better than average, red worse.
- Panel A shows rankings in 1990. The UK has poor rankings in 5 of the 30 areas: heart disease, lung and breast cancer, COPD and respiratory infections.
- Panel B shows rankings in 2010. The UK has poor rankings in 5 of 30 areas: COPD, drug use disorders, respiratory infections, breast cancer and pre-term birth complications.
- The UK has the best performance for diabetes in 2010 and does well for chronic kidney disease and major depressive disorders.

Source: http://www.sciencedirect.com/science/article/pii/S0140673613603554, reproduced with permission from The Lancet

Summary: illness and morbidity

- **We are living longer lives, often in better health**
  - Life expectancy is higher than it has ever been. Healthy life expectancy has been growing too, faster for females than males.

- **But we are doing less well compared to other countries**
  - We rank 12th out of 19 countries in terms of DALYs, and do significantly worse than average on COPD, drug use disorders, respiratory infections, breast cancer and pre-term birth complications.

- **Musculoskeletal conditions and mental health problems are the biggest causes of lives lived with disability**
  - More than half of UK DALYs are accounted for by musculoskeletal conditions and mental health problems.
  - Neurological conditions, such as Alzheimer's, become increasingly important as we age.

Not all in it together

Patterns of health by geography, deprivation and other measures of inequality

Avoidable mortality rates vary significantly by area

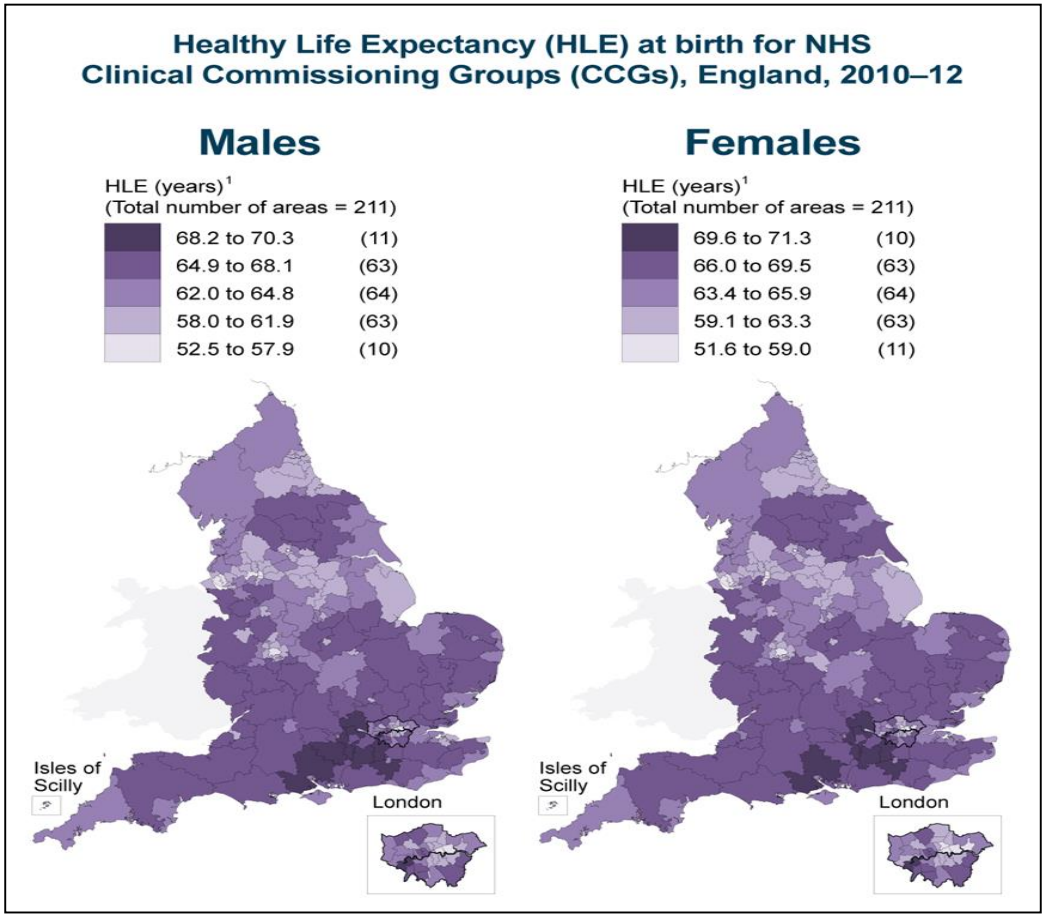
Age-standardised mortality rates (with 95% confidence intervals) for causes of death considered avoidable, by region and sex, England 2012

Source: http://www.ons.gov.uk/ons/dcp171778_362295.pdf

Avoidable mortality is higher in the north than the south of England. In 2012, rates for males and females were both highest in the North West.

The number of years we spend in good health varies significantly by geography

HLE at birth by clinical commissioning group for males and females, 2010–12



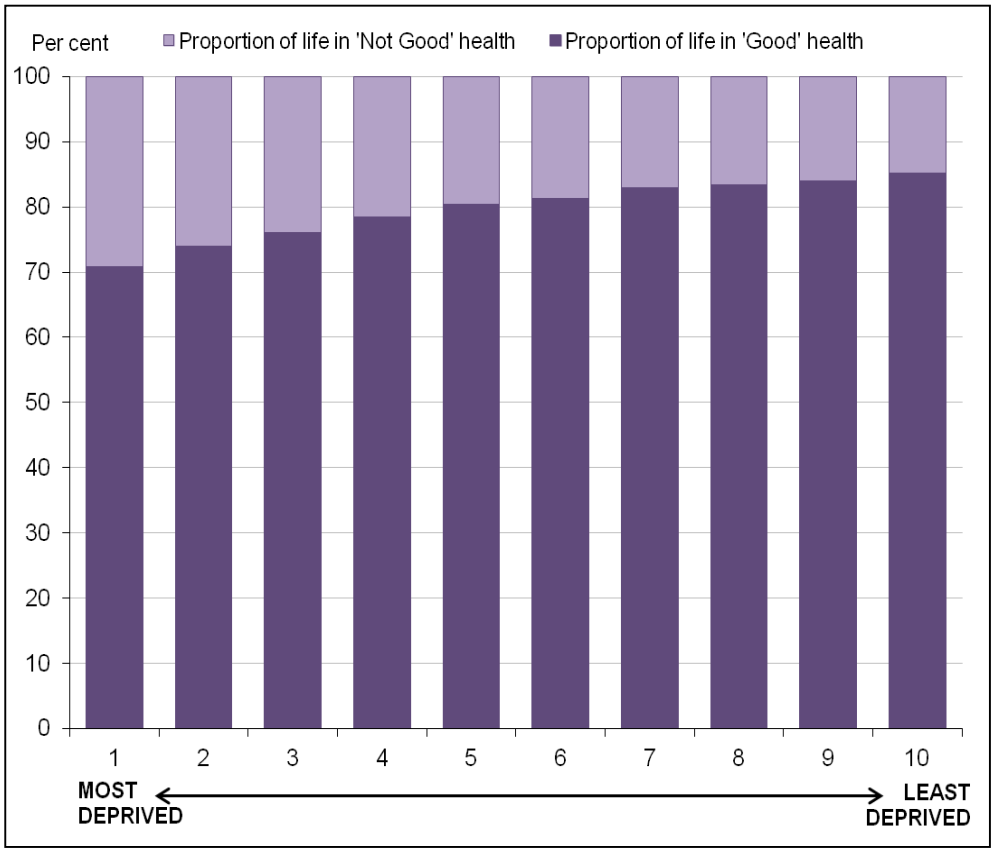
Source: http://www.ons.gov.uk/ons/dcp171776_356961.pdf

The gap between the areas with the highest and lowest healthy life expectancy is 17.8 years for males and 19.7 for females.

The healthiest CCG within which to be born is Guildford and Waverley. The least healthy is Bradford City.

Deprivation is a key factor in how healthy our lives will be

Percentage of life expectancy to be spent in good and not good health, males, England, 2009–11

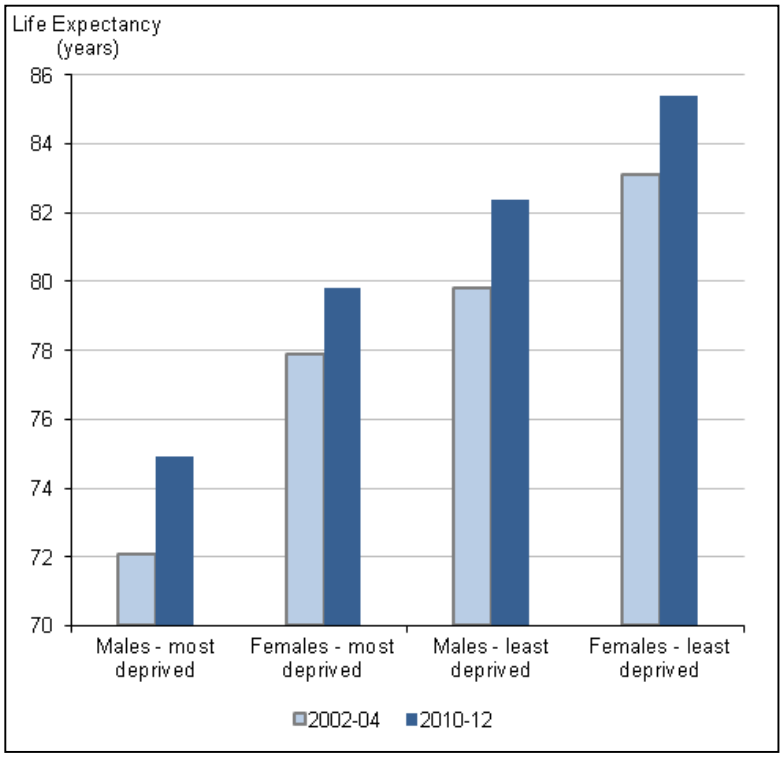


Source: http://www.ons.gov.uk/ons/dcp171778_356031.pdf

Males living in the most deprived areas spend 30% of their lives in poor health, compared with 15% for those in the least deprived areas.

Life expectancy by deprivation narrowed for males and widened for females over the 2000s

Changes in life expectancy at birth, least and most deprived areas, England, 2002–04 and 2010–12



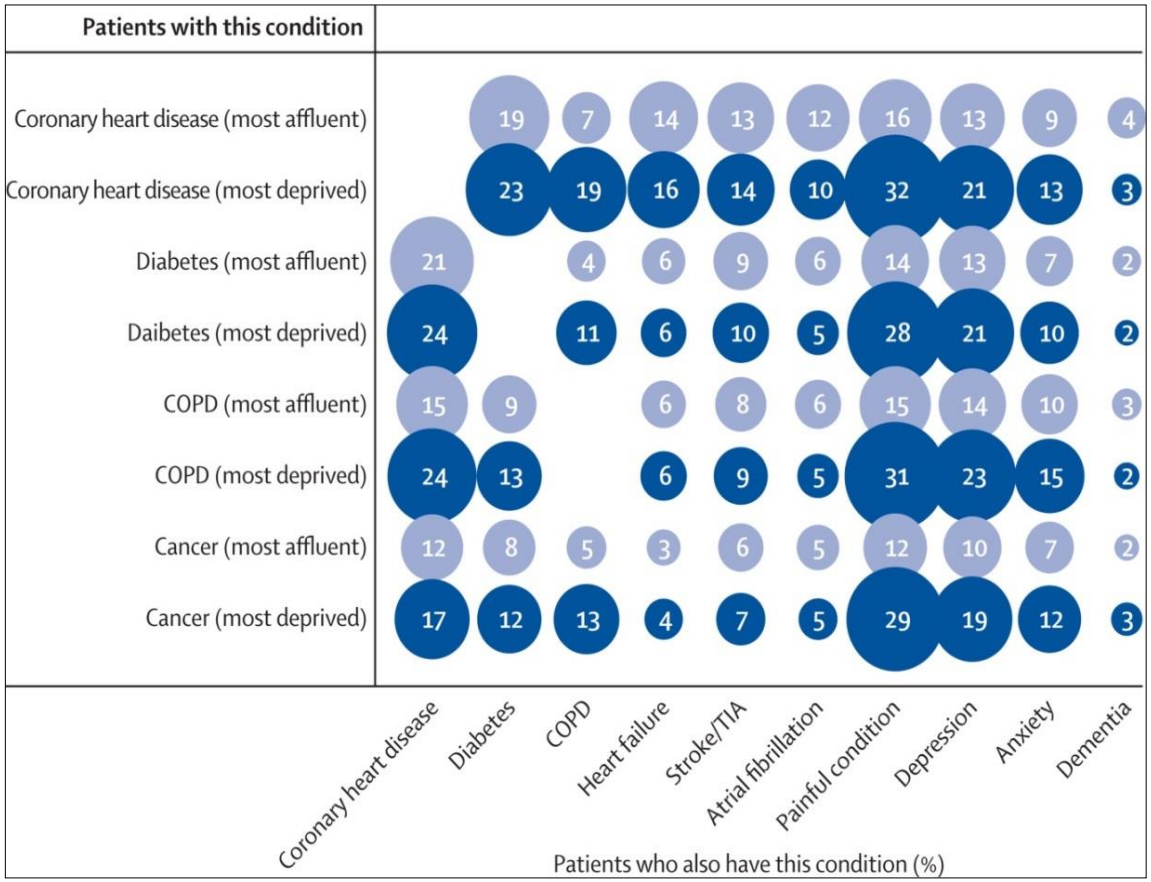
The gap in life expectancy between the most and least deprived quintiles narrowed from 7.7 years to 7.5 years for males between 2002–04 and 2010–12. The same gap for females widened from 5.2 to 5.6 years.

The difference in life expectancy between males and females narrowed in both the most and least deprived areas.

Source: http://www.ons.gov.uk/ons/rel/subnational-health4/life-expec-at-birth-age-65/2006-08-to-2010-12/sty-life-expectancy-gap.html

Multi-morbidity is more common and strikes 10–15 years earlier in deprived populations

Selected co-morbidities in people with four common, important disorders in the most affluent and most deprived deciles, 314 general practices in Scotland

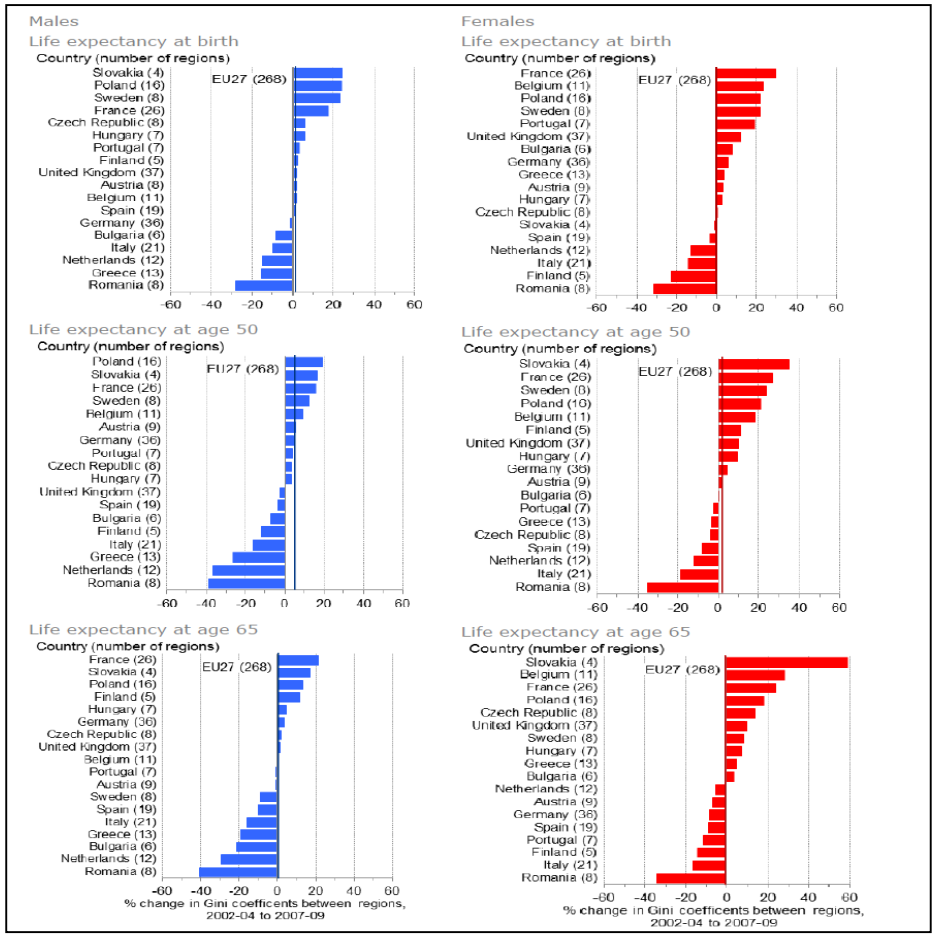


'The onset of multi-morbidity occurred 10–15 years earlier in people living in the most deprived areas compared with the most affluent, with socio-economic deprivation particularly associated with multi-morbidity that included mental health disorders.'
Barnett *et al*, 2012

Source: http://www.sciencedirect.com/science/article/pii/S0140673612602402, reproduced with permission from The Lancet

Regional inequalities in UK life expectancy have increased for females

Percentage change in regional inequalities in life expectancy measures within selected EU states by gender, 2002–04 to 2007–09



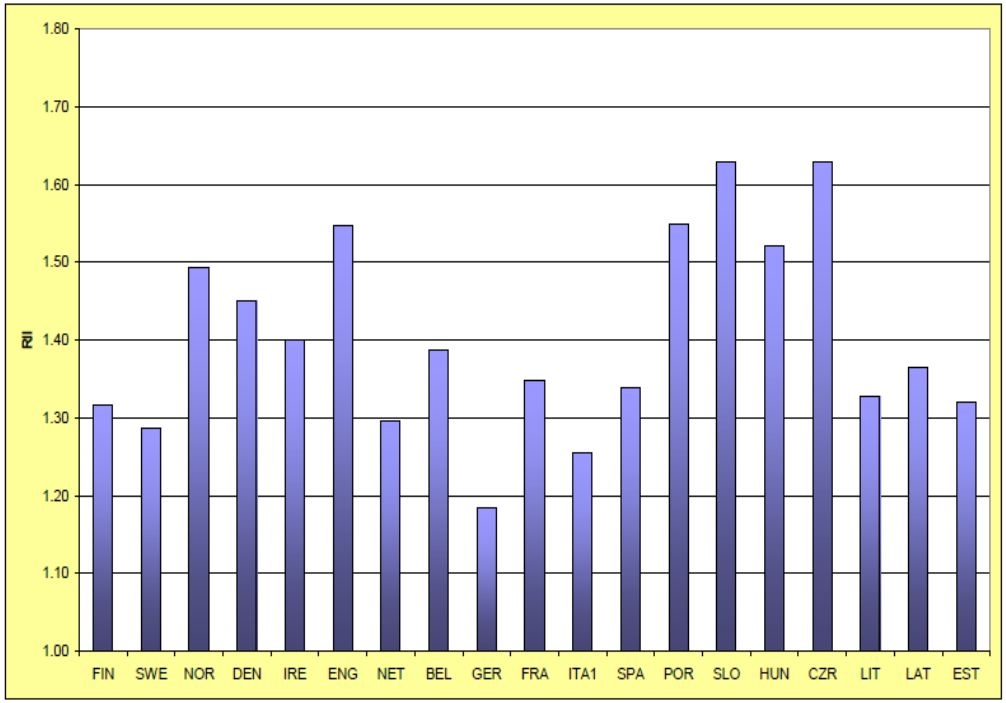
- The Gini coefficient is a measure of how regional inequalities within a country have increased or reduced. A reduction in it reflects a fall in regional inequalities *within* that country. It should not be used to compare levels of regional inequalities between countries, only rates of change.
- For various measures of life expectancy, within the UK regional inequalities changed little in the 2000s. But all measures for females worsened.
- Compared to other EU 27 countries, the UK was mid-table in terms of how within-country inequalities have changed over time.
- A number of countries did a lot better in reducing regional inequalities in life expectancy, notably Romania and the Netherlands. Some, such as France, did worse.

Source: http://ec.europa.eu/health/social_determinants/docs/healthinequalitiesineu_2013_en.pdf

Inequalities in self-assessed health are worse in England than in many other countries

A review in 2007 placed England towards the top of the EU in the impact of educational, occupational and income inequalities on self-assessed health.

Educational inequalities in self-assessed health among women in 19 countries



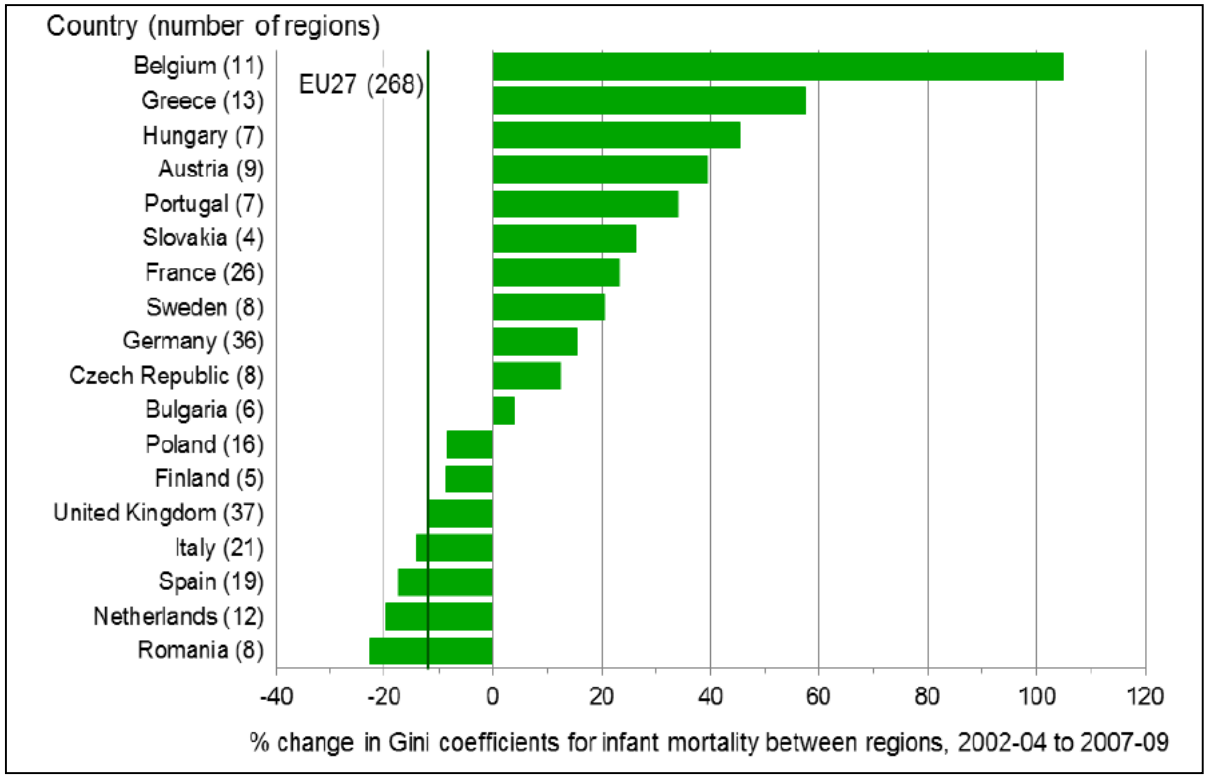
The most educated women in England report more than 50% higher self-assessed health than the least educated.

The y axis is the relative index of inequality. The higher the column, the larger the inequalities in self-assessed health between the lower and more highly educated.

Source: Machenbach, J.P. et al (2007) Economic implications of socio-economic inequalities in health in the European Union. http://ec.europa.eu/health/archive/ph_determinants/socio_economics/documents/socioeco_inequalities_en.pdf

Regional inequalities in infant mortality have fallen within the UK

Percentage change in regional inequalities (Gini coefficient) in infant mortality within selected EU states, 2002-04 to 2007-09



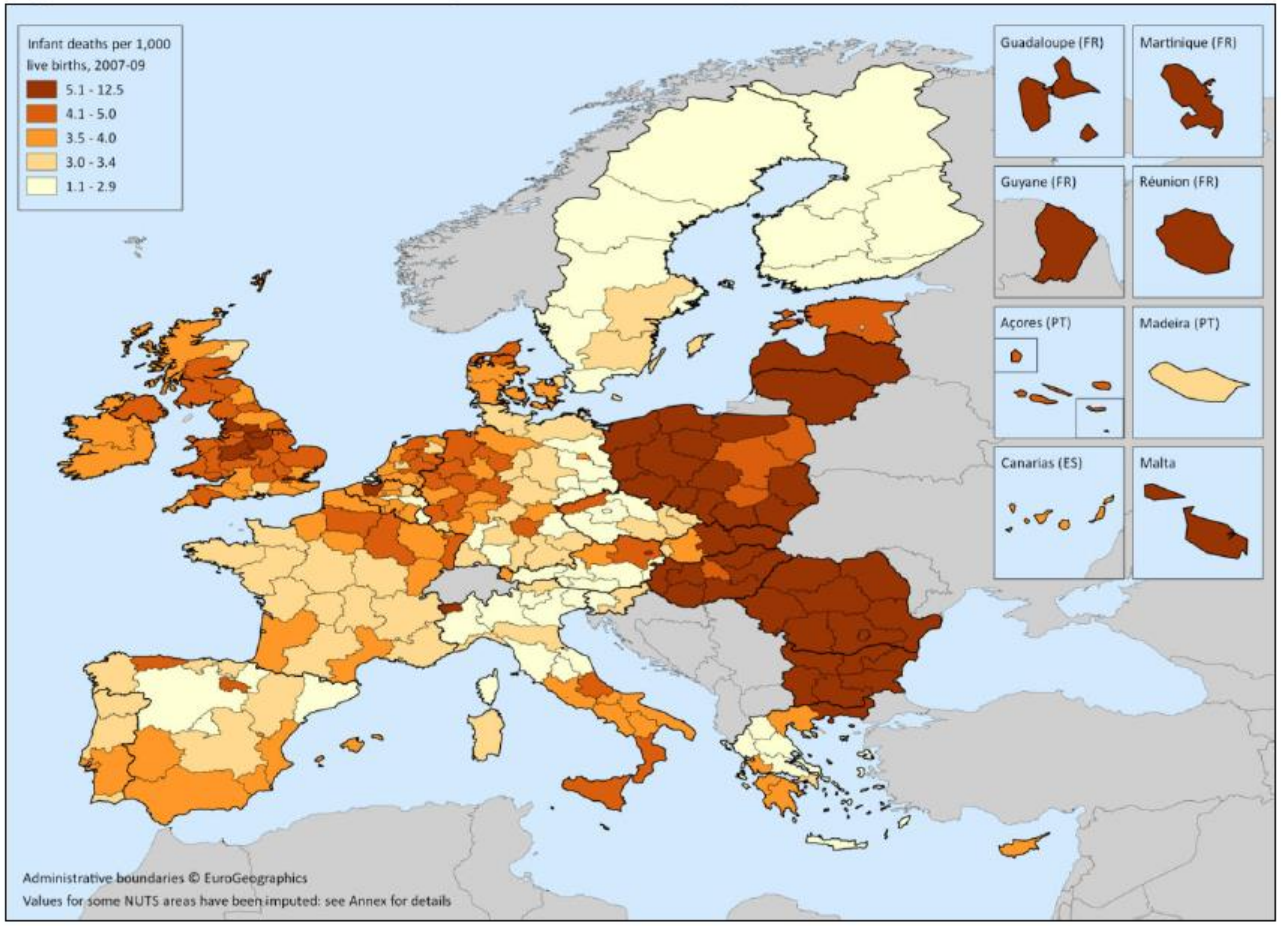
Of 18 EU nations, the UK was the 5th best at reducing regional inequality in infant mortality during the 2000s. Most countries got worse.

- The Gini coefficient is a measure of how regional inequalities within a country have increased or reduced. A reduction in it reflects a fall in regional inequalities within that country.

Source: http://ec.europa.eu/health/social_determinants/docs/healthinequalitiesineu_2013_en.pdf

Infant mortality rates in the UK remain higher than many of our European neighbours

Infant mortality rates, per 1,000 live births, EU regions 2007-09



Source: http://ec.europa.eu/health/social_determinants/docs/healthinequalitiesineu_2013_en.pdf

The health of some groups remains shocking

Work for the Department of Health and Cabinet Office has shown the health of some specific groups – such as the homeless, gypsies and travellers and sex workers – is dreadful.

- Homeless people have significantly higher levels of premature mortality and mental and physical ill health than the general population. As many as 40% of rough sleepers have multiple concurrent health needs relating to mental, physical health and substance misuse[1]
- Of those registered at Cambridge Access Surgery, a homeless specialist GP practice, 2-3% died each year between 2003-2008 and the average age of those who died was 44. Rough sleepers are 35 times more likely to commit suicide than the general population[2]

Main diagnostic categories of recorded health problems among the Cambridge Access Surgery registered population (N=216)

Health problem	%	
Drug dependence syndrome	62.5	Compares to estimated 3.4% in the general population (0.9% non cannabis)[3]
Mental ill-health	53.7	
Alcohol dependence syndrome	49.1	
Dual diagnosis*	42.6	Compares to estimated 5.9% in the general population (0.5% moderate to severe)[4]
Injuries/Assault	26.4	
Hepatitis C Virus antibody positive	17.6	
Respiratory diseases	16.7	
Liver disorders/ abnormalities	15.7	
Other infections (sepsis, abscesses, MRSA, C-difficile)	13.9	Compares to estimated <0.5% in the general population.[5]
Other health problems**	31.5	

*Mental health and substance misuse problems.
**Dental problems, gastroenterological diseases, deep venous thrombosis (DVT), skin conditions, epilepsy/ fits, urogenital diseases, learning/ physical disability, anaemia, cardiovascular diseases and cancer.

Findings from the Cambridge study are supported by a substantial body of evidence on the acute health needs of homeless people:

Health risks	Supporting evidence
Physical health	▪ Rough sleepers have a rate of physical health problems two or three times higher than the general population[6] ▪ 47% have at least one physical health need at a given point in time; 27% have concurrent multiple physical health needs; a third have conditions for which no treatment has been received[7]
Mental health	▪ 50-75% of rough sleepers have Axis I disorder (anxiety disorders, depression, dementia and psychosis disorders), and as many as 30% have schizophrenia[8] . 58% have Axis II personality disorder ('complex trauma')[9]
Substance misuse	▪ 60-90% of rough sleepers are regular drug users[10] ▪ 50% of rough sleepers are alcohol reliant[11]
Skin Problems	▪ Infestations: body, pubic/head lice, scabies. Infections including MRSA, fungal dermatitis, psoriasis
Respiratory problems	▪ Chronic chest / breathing problems and frequent headaches are 3 times higher than general population[12]
Trauma	▪ Foot trauma related to poor hygiene, walking in poor footwear. All accidental and inflicted trauma, with increased complications (owing to high incidence of assault, intoxication, self neglect)
Dental	▪ Dental caries frequently needing dental clearance
Tuberculosis	▪ Rates of TB 200 times that of known rate in general population[13]

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Social Exclusion Task Force

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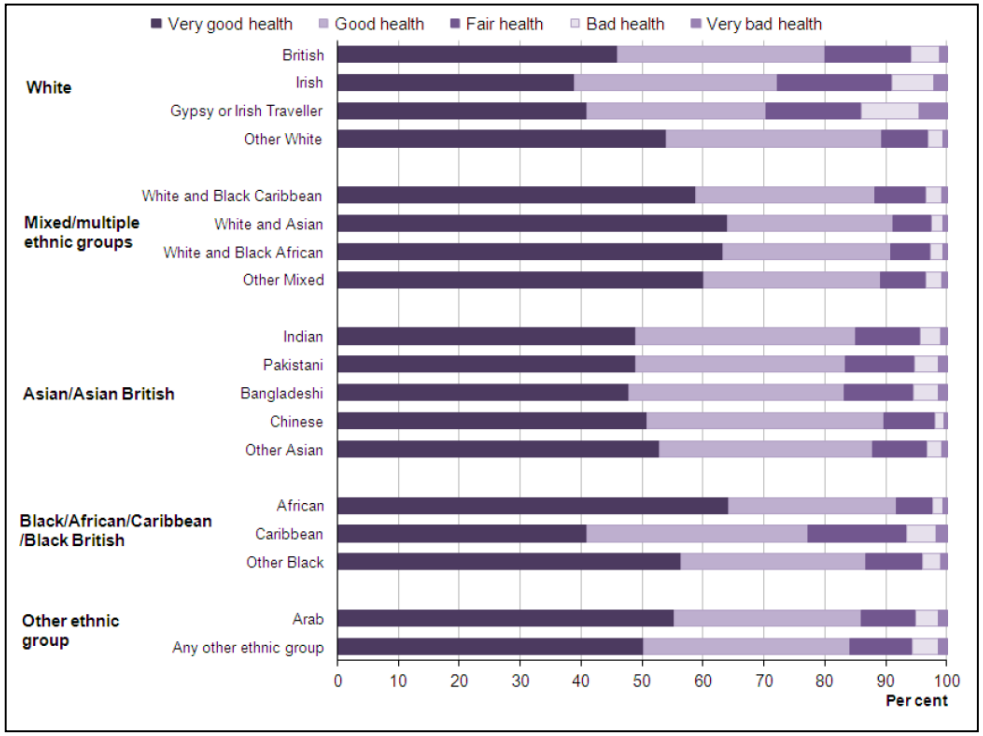
Rough sleepers are 35 times more likely to commit suicide.

Source: http://www.marmotreview.org/AssetLibrary/resources/new%20external%20reports/cabinet%20office%20-%20inclusion%20health%20report.pdf

Health differs between ethnic groups

Self-reported health differs by ethnic group. Some of this, but not all, can be explained by the age structure of the population. For example, the white and black Caribbean populations are older.

Variations in health by ethnic group, England and Wales, 2011



Twice as many gypsies and travellers report poor health than expected. This takes into account the age structure of the population (they are younger on average).

Source: http://www.ons.gov.uk/ons/dcp171776_318773.pdf

Incidence of health conditions and diseases differs between ethnic groups

The incidence of disease and health conditions differs by ethnic group. Some of this, but not all, is due to the age structure of different population groups.

Incidence of various health issues among different ethnic populations

	Asthma	Arthritis	Heart disease	Angina	Diabetes	High blood pressure	Depression
White	14%	16%	2%	3.3%	6%	20%	7%
Indian	9%	7%	1.3%	1.1%	9%	12%	2%
Pakistani	12%	7%	1%	3%	9%	9%	4%
Bangladeshi	10%	5%	1.9%	1.2%	10%	12%	2%
Black African	13%	11%	0.6%	1%	10%	21%	4%
Black Caribbean	6%	3%	0.1%	0.5%	3%	11%	2%

Source: Derived from Table 9.2, http://www.policyexchange.org.uk/images/publications/a%20portrait%20of%20modern%20britain.pdf

Summary: patterns of health

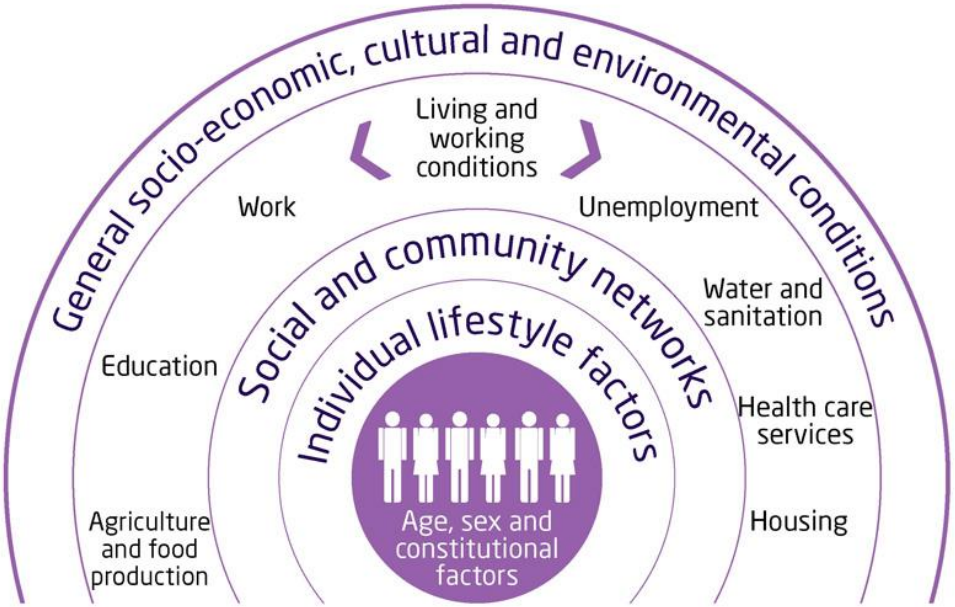
- **Inequalities in health are large and are strongly associated with deprivation**
  - Those born in the most deprived CCGs spend 30% of their shorter lives in poor health, while those born in the wealthiest spend 15% of their longer lives in poor health.

- **Our performance in reducing health inequalities is mixed**
  - Our within-country changes in inequalities for male life expectancy are comparable to those of our peers, but we do less well for females.
  - Our within-country inequality in infant mortality is poor, but has been improving faster than that in many other countries.

- **The health of some groups remains unacceptable**
  - The health of the homeless and travellers remains very poor.
  - Health varies by ethnic group. Some of this is explained by the age structure of the population, but not all.

What are the main drivers of our health?

Our health is determined by many factors



Beyond our genetics our health is determined by:

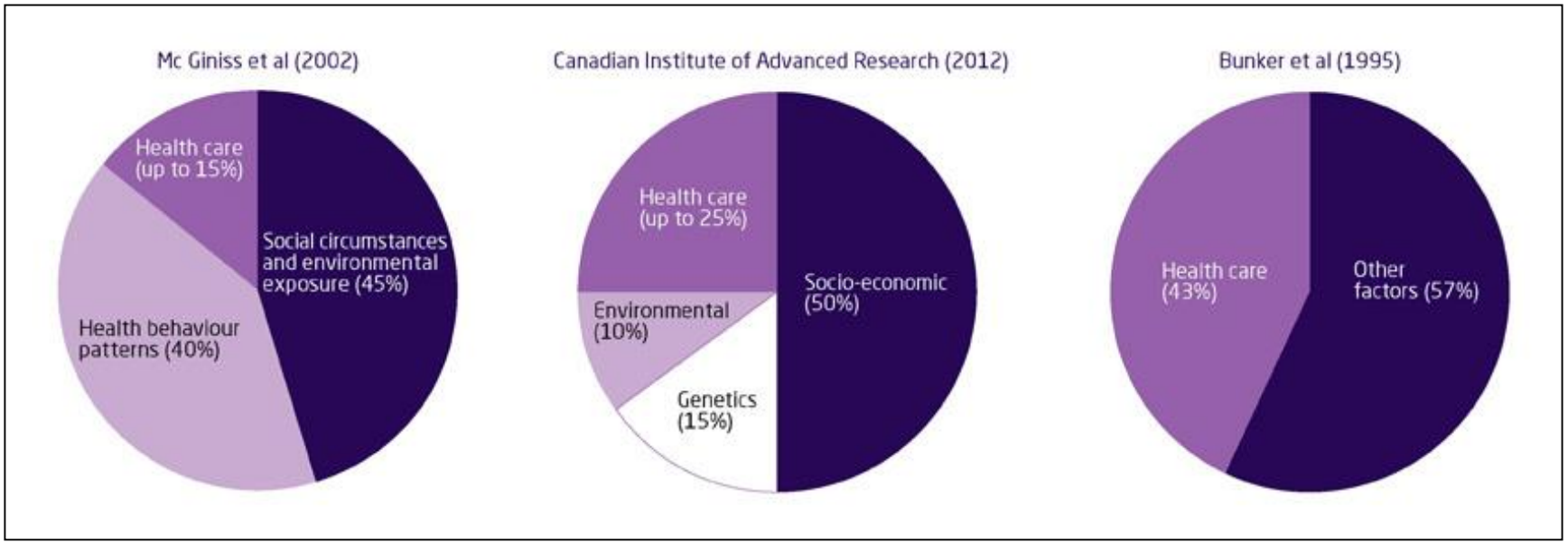
- exposures to health threats in our food, water and air, and communicable disease
- our upbringing, who we are born to, our position in society, how and where we live, who we live and work with, and the economic environment
- the health and lifestyles we adopt, are stuck with or manage to change
- our access to, and benefit from, health care.

None of these drivers are immutable; they can be changed in order to improve public health.

Source: http://www.kingsfund.org.uk/time-to-think-differently/trends/broader-determinants-health, derived from Figure 1, http://www.euro.who.int/__data/assets/pdf_file/0018/103824/E89384.pdf

Health care is influential but other drivers of health are just as important

Pinning down what determines our health is difficult as there are many competing factors. Most studies agree that what health care we receive, while important, is less than half of the picture.

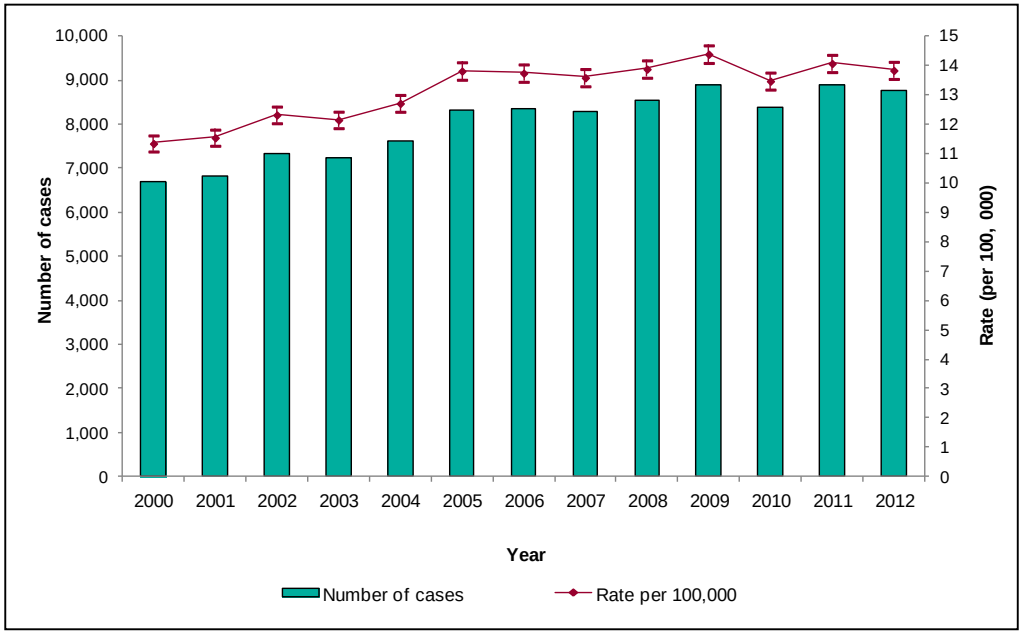


Source: http://www.kingsfund.org.uk/time-to-think-differently/trends/broader-determinants-health

Communicable disease, infection and environmental threats

Communicable diseases are an ever-present threat

Tuberculosis case reports and rates, UK, 2000-2012

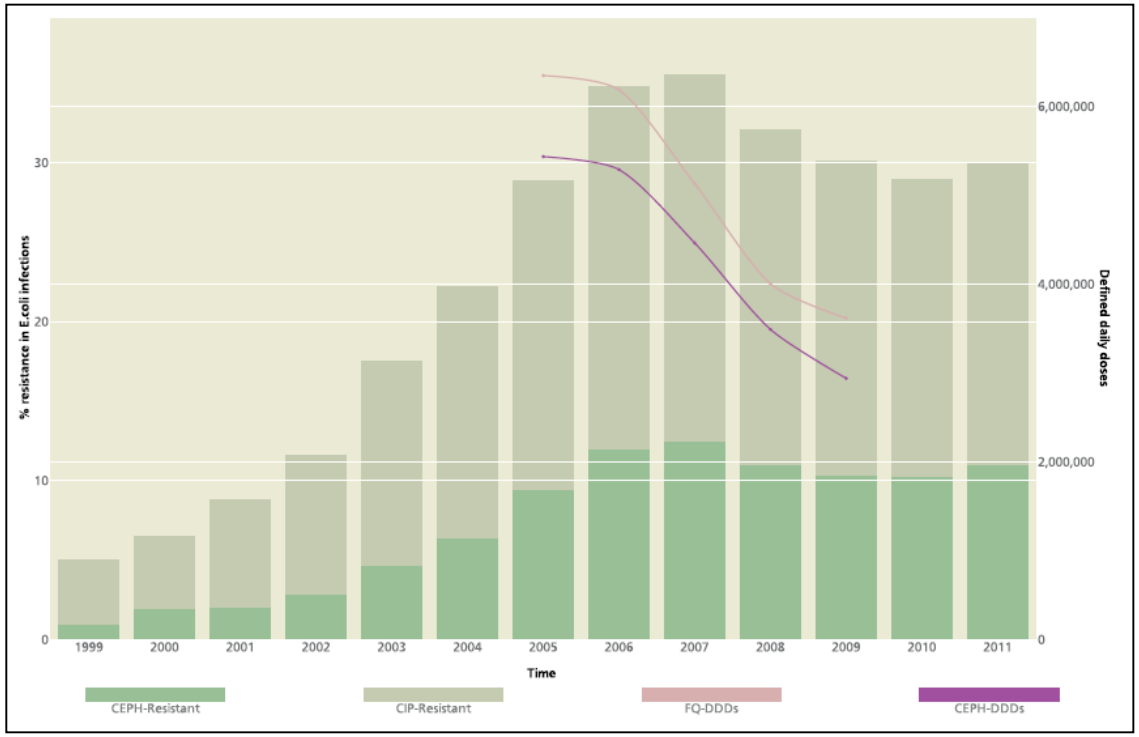


'TB rates in the UK have stabilised at a high level in recent years, and the UK now has one of the highest incidence rates of any Western European country. Within the UK, TB is very unequally distributed, with certain sub-groups, such as new migrants, ethnic minority groups and those with social risk factors, disproportionally affected.'
Dr Paul Cosford, Director for Health Protection, Public Health England

Source: http://www.hpa.org.uk/webw/HPAweb&HPAwebStandard/HPAweb_C/1317139689732

Resistance to antibiotics is increasing

Trend in antibiotic use and resistance in E coli, England, Wales and Northern Ireland, 1999-2011

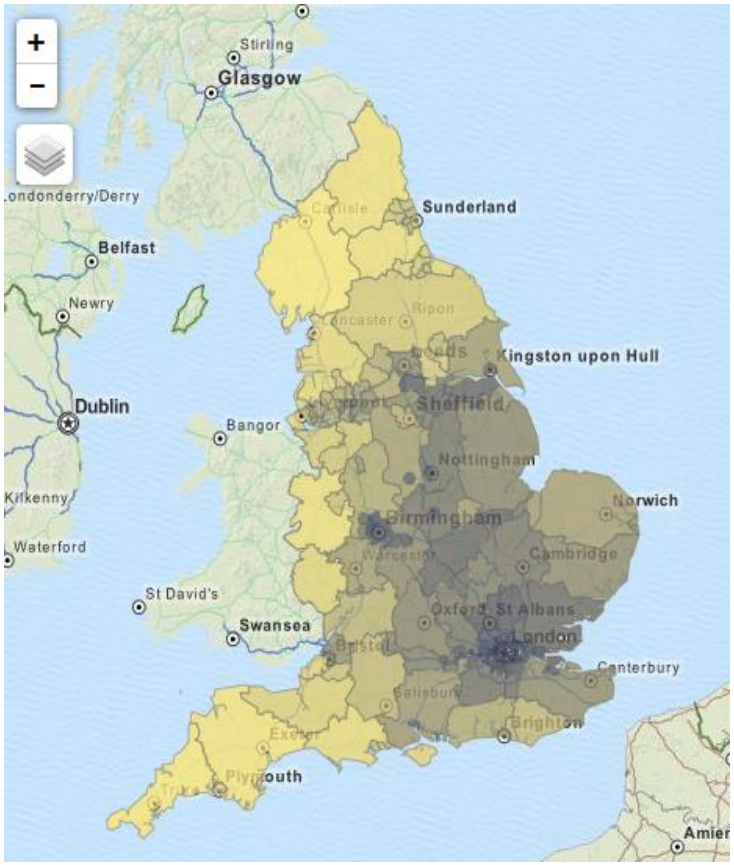


'Infections caused by resistant micro-organisms often fail to respond to treatment, extending illness and raising mortality. Resistance has steadily increased since systemic antibiotics were introduced in the 1930s and 1940s. What is new is the breadth of resistance and the dearth of new antibiotics being licensed.'
Dame Sally Davis, Director for Health Protection, Public Health England

Source: Chapter 5, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/138331/CMO_Annual_Report_Volume_2_2011.pdf

Air pollution is responsible for more than 1 in 20 of all UK deaths

Proportion of deaths attributable due to air pollution in England, 2012



Long-term exposure to human-made air pollution was estimated to be responsible for around 28,000 deaths in 2012. The proportion of deaths ranged from 2.5% in the rural local authorities in Scotland and Northern Ireland, to between 3% and 5% in Wales, to more than 8% in some London boroughs.

- The darker areas on the map show higher rates of death attributable to air pollution and the lighter areas lower rates. The highest percentage of attributable deaths in England are in Westminster and Kensington and Chelsea (8.3%) and the lowest in parts of Cumbria (3.4%).

Source: http://www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1317141074607 and map from Public Health England tool http://www.phoutcomes.info/search/pollution#gid/1/pat/10002/ati/102/page/8/are/E06000015

Food, water and airborne disease risks are likely to grow as climate changes

Summary of risks to health and health inequalities of climate change, mitigation and adaptation

	Risks to health	Causes of increased health inequalities
Direct effects of climate change	• Ground-level ultraviolet radiation (UVR) • Extremes of heat and cold • Poor air quality • Land and water pollution • More/new airborne and waterborne diseases due to changing environmental conditions • Vector-borne diseases, eg, malaria, dengue fever • Crop failures and food shortages causing decreased access to nutritious foods • Drought and water shortages • Heavy precipitation events • Flooding and storm damage leading to homelessness, dislocation, post-traumatic stress • Migration-related health effects	Groups most at risk include: • low-income groups • elderly, very young, chronically ill and socially isolated (increased risk of heat-related mortality) • those living in south east England (worse effects of water shortage, in part due to population growth) • urban populations (greater temperature rises due to air pollution and urban heat island effects). These groups are more likely to: • live near sources of pollution • live on flood plains • lack access to diverse sources of food • lack insurance against damages • lack resources to invest in adaptation to changing conditions.

Indirect effects of climate change	• Large-scale impacts and systemic shocks will have negative impacts on health due to migration, conflict, associated stress, anxiety and depression
	• Devastation of land and resource constraints will also contribute to migration and conflict
		Restriction of development programmes due to:
		• rising cost of implementation
		• other priorities for spending
		  • $44 billion needed globally before 2015 to make investments more climate-resistant
		  • $2 billion needed globally for climate-related disaster relief (HDR, in Stern 2009).

Source: Marmot Review support evidence annex 2 on sustainability. Available from http://www.instituteofhealthequity.org/projects/sustainable-development-task-group-report

Summary: communicable disease, infection and environmental threats

- **Communicable disease remains a threat**
  - The UK has one of the highest incidence rates of tuberculosis of any Western European country.
  - Certain sub-groups, such as new migrants, ethnic minority groups, and those with social risk factors, are disproportionately affected.

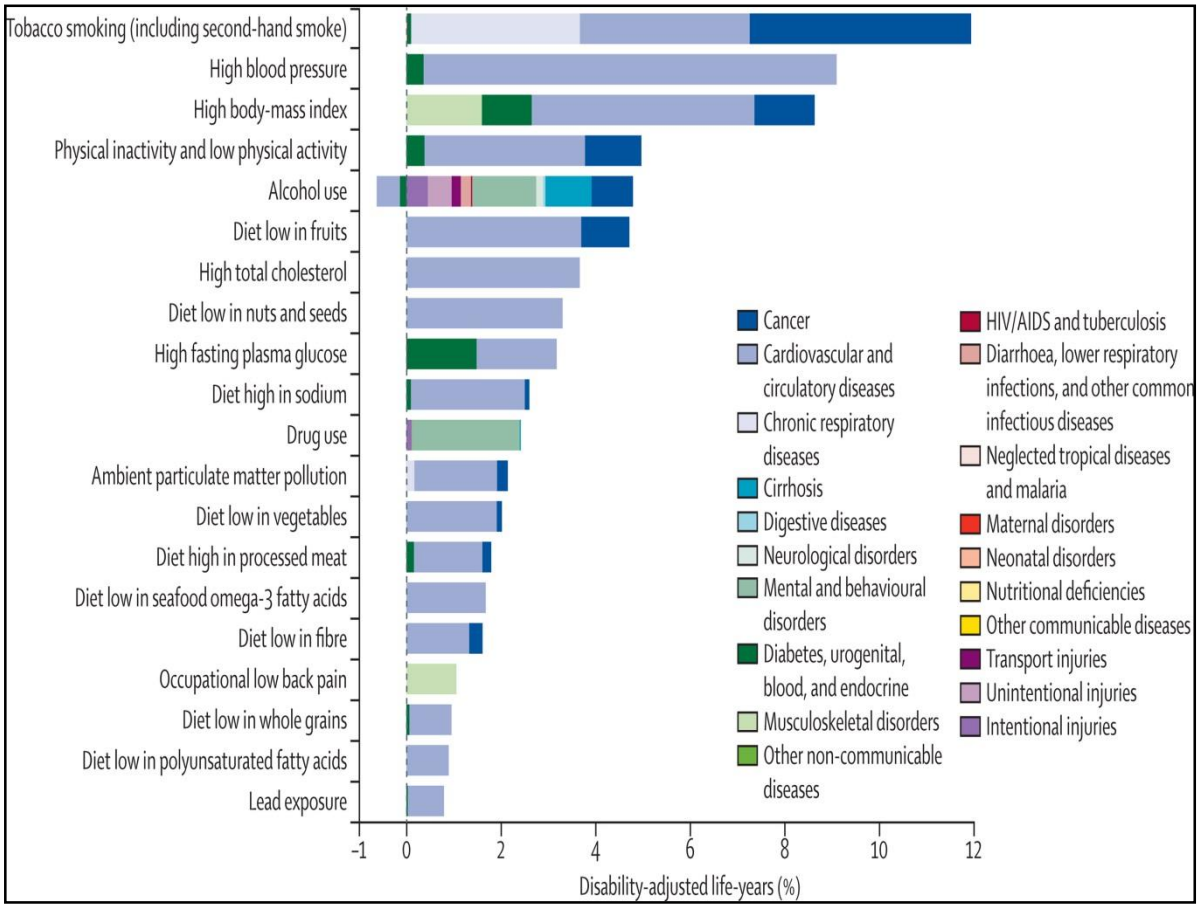
- **Antibiotic resistance is an increasing challenge**
  - Since the early 2000s, there has been a steep rise in antibiotic resistance for *E coli* and a wide range of other serious micro-organisms.

- **Air pollution does – and climate change will – affect our health dramatically**
  - Air pollution is a major health threat, accounting for more than 8% of mortality in some London boroughs.

Adults' lifestyles

Unhealthy lifestyles are associated with a high burden of morbidity

Leading causes of UK disability-adjusted life years (DALYs), 2010

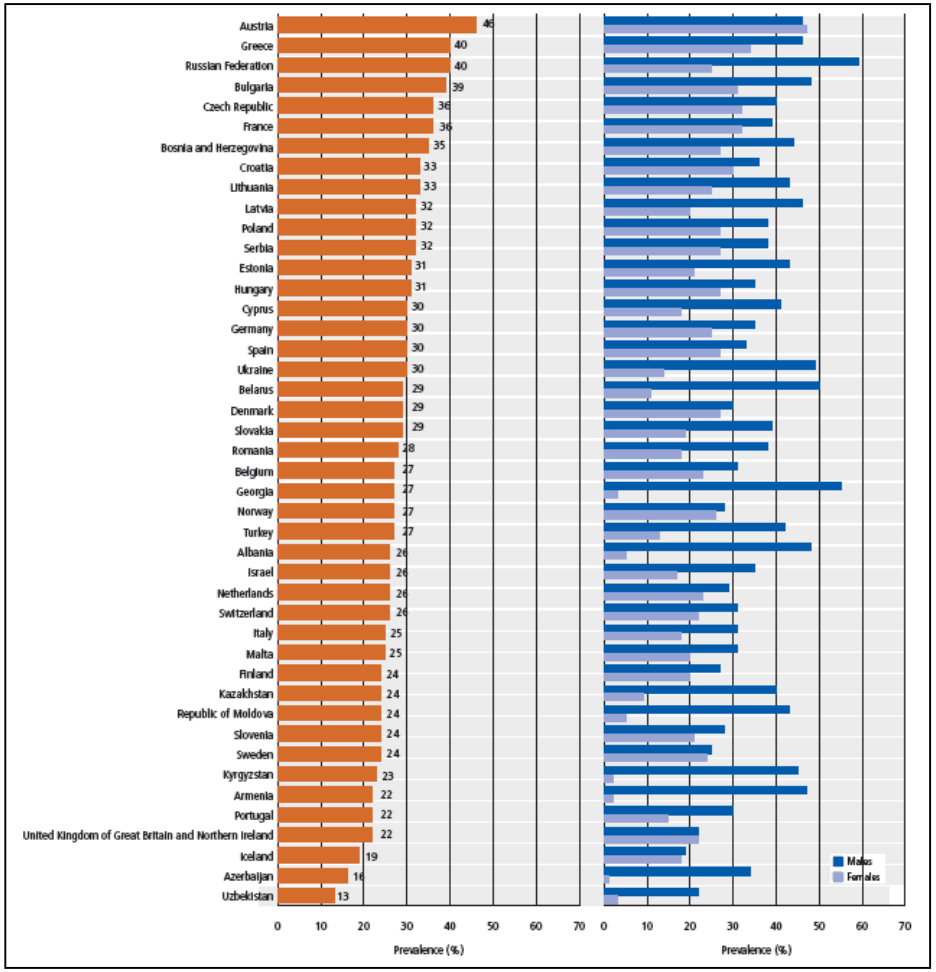


Tobacco, high blood pressure and high BMI account for around 30% of all DALYs in the UK.

Source: http://www.sciencedirect.com/science/article/pii/S0140673613603554, reproduced with permission from The Lancet

Tobacco use in adults has dropped over time, and the UK compares well internationally

Age-standardised prevalence estimates for tobacco smoking, 15+ year olds, Europe, 2011



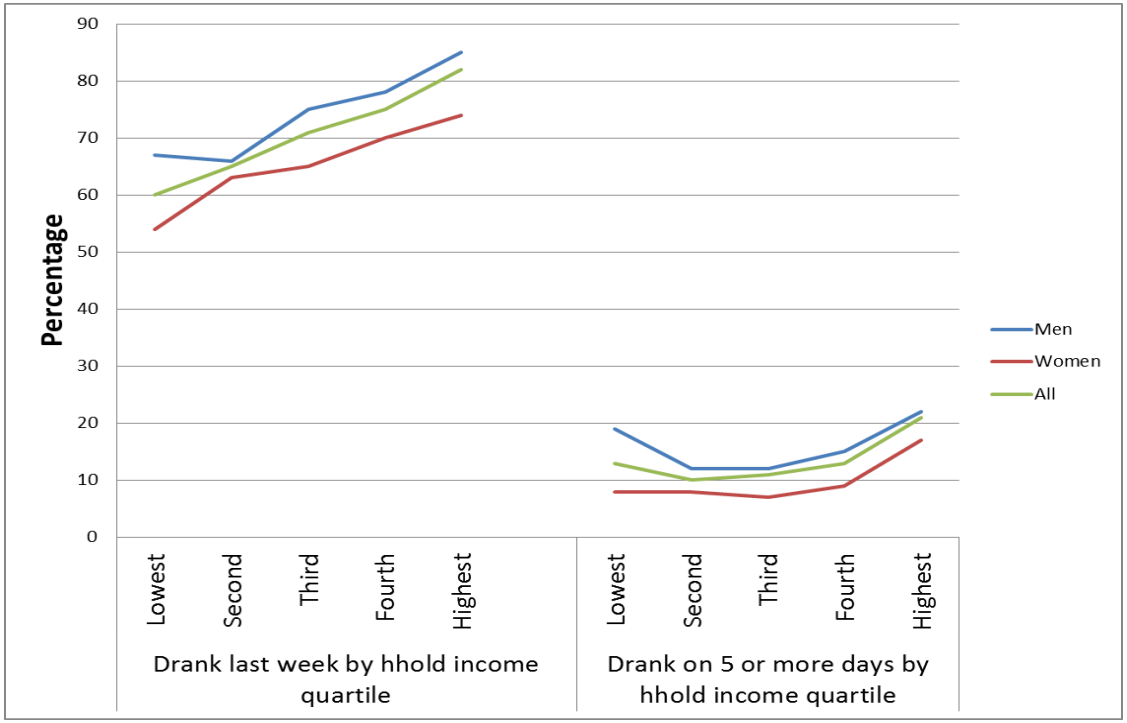
In 2012, 10 million adults in the UK smoked cigarettes (22% of men and 19% of women). In 1974 half of adults smoked.

Smoking rates are higher among poorer people: 1 in 3 adults in routine and manual occupations smoke tobacco.

Source: http://www.who.int/tobacco/global_report/2013/appendix_x_graph_10_1.pdf?ua=1 and http://www.ash.org.uk/files/documents/ASH_93.pdf

Patterns of drinking alcohol are more complex than for many other health behaviours

Percentage of adults drinking alcohol at various frequencies in the last week by household income quartile, Great Britain, 2011

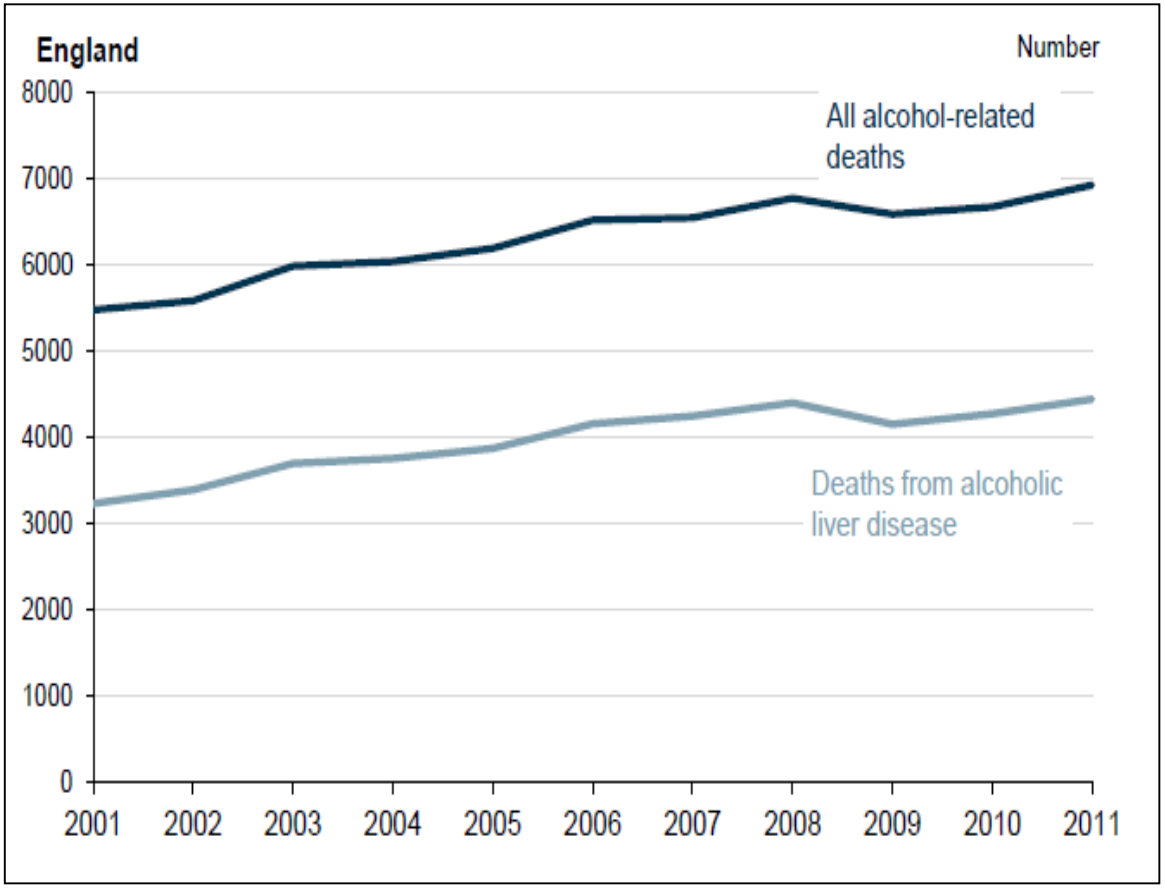


Higher incomes are associated with a higher overall likelihood of drinking alcohol. Frequent drinking is associated with both high and low incomes for males, but with high incomes only for females.

Source: derived from Table 2.14, http://www.ons.gov.uk/ons/dcp171776_302636.pdf

Deaths from alcohol are increasing

Total alcohol-related death rates in England, 2001-11



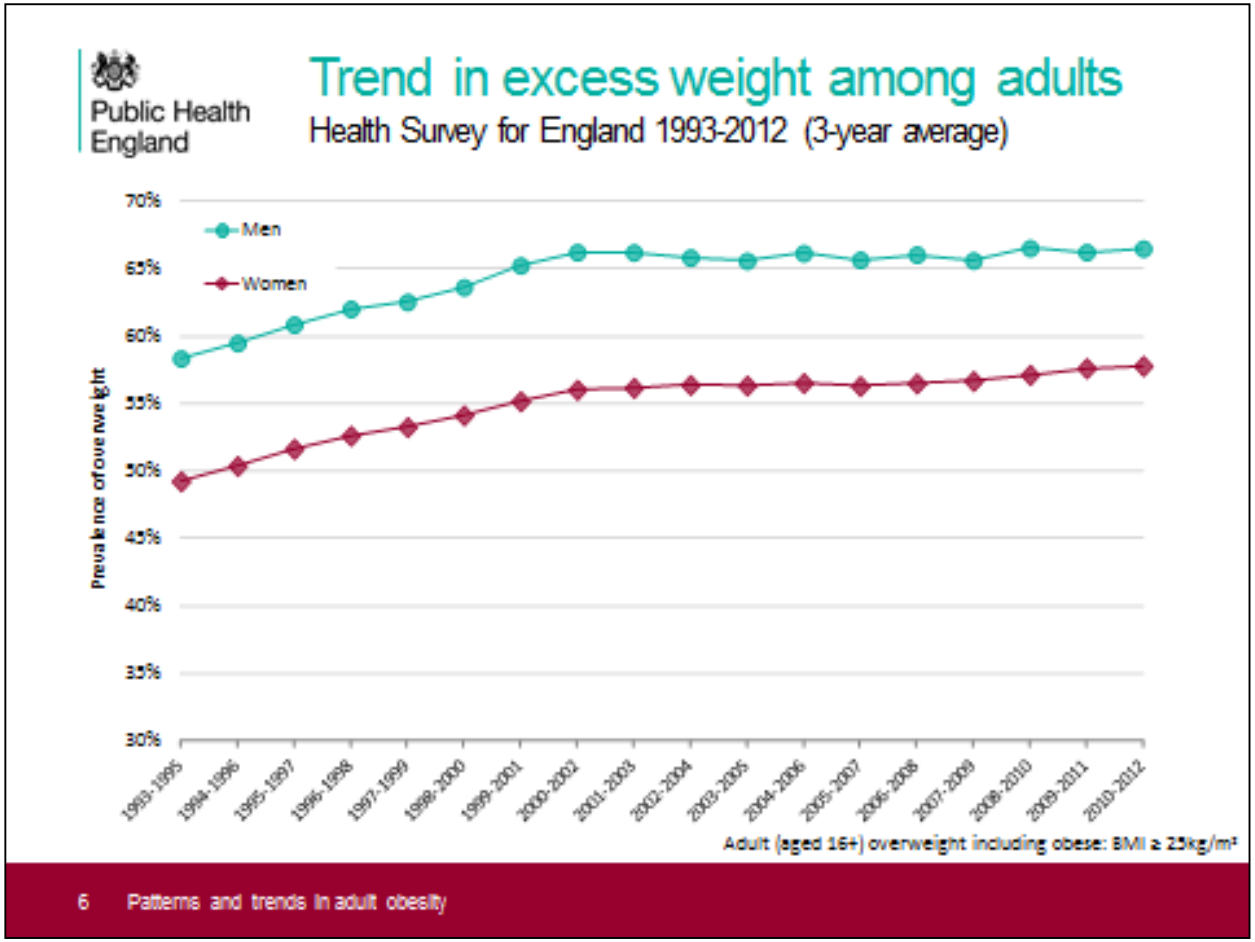
Source: http://www.hscic.gov.uk/catalogue/PUB10932/alc-eng-2013-rep.pdf

ONS estimates that 6,923 deaths in 2011 were directly related to alcohol, a 26% increase since 2001.

This may be an under-estimate: the North West Public Health Observatory found 15,000 alcohol-related deaths in 2009.

It is estimated that alcohol costs the NHS £3.5 billion a year.

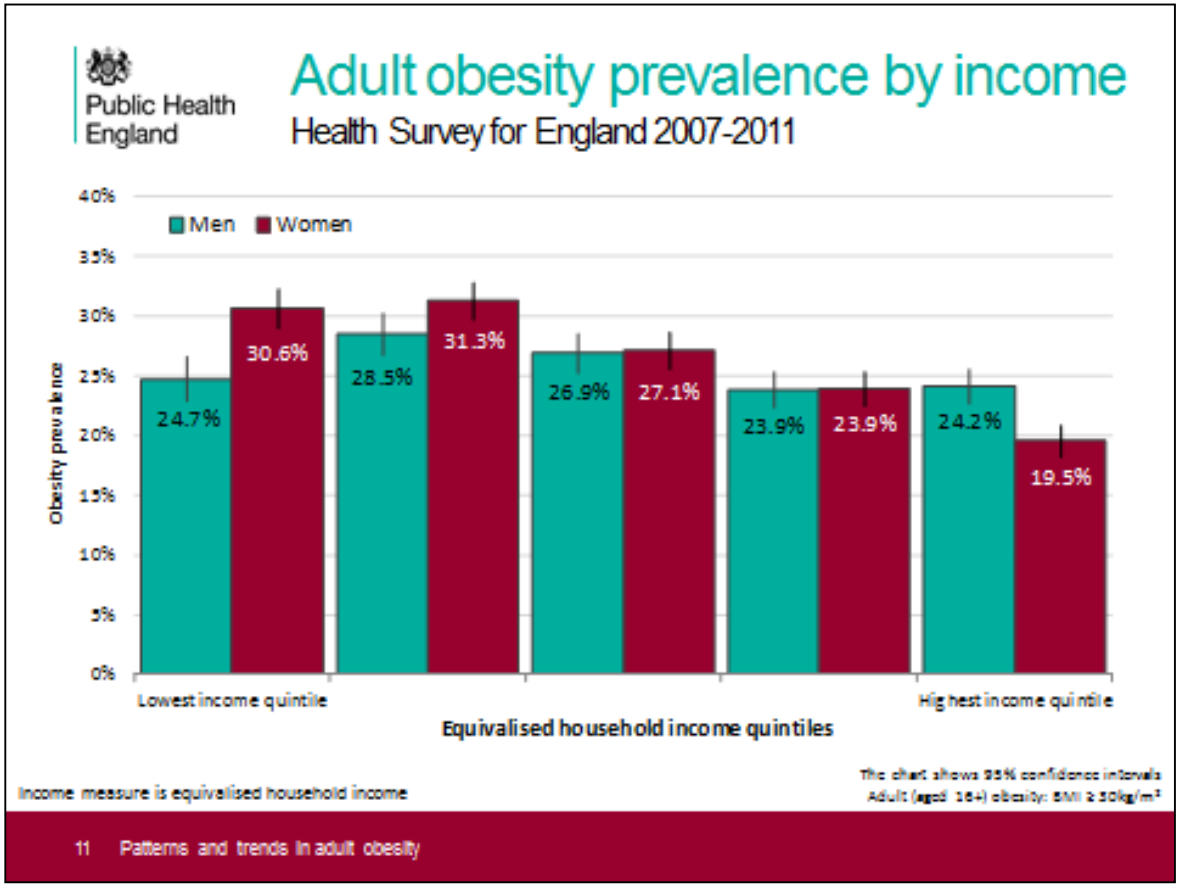
More than half of adults are obese or overweight, but trend is plateauing



More than 6 in in 10 males and more than 5 in 10 females in England are obese or overweight.

Source: http://www.noo.org.uk/slide_sets

Income is linked to adult obesity

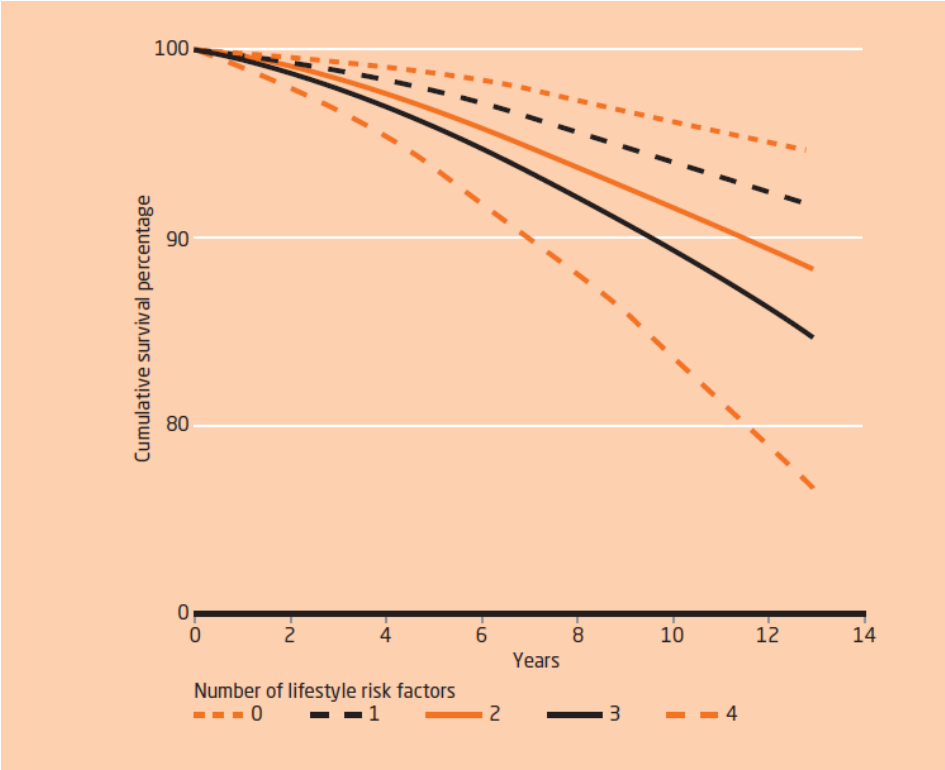


Source: http://www.noo.org.uk/slide_sets

Obesity is higher in lower income groups, but the relationship is stronger in women than men, and the lowest income groups have lower levels of obesity than those with slightly higher incomes.

Clusters of lifestyles matter for health

Clustering of healthy lifestyles and its impact on survival over time



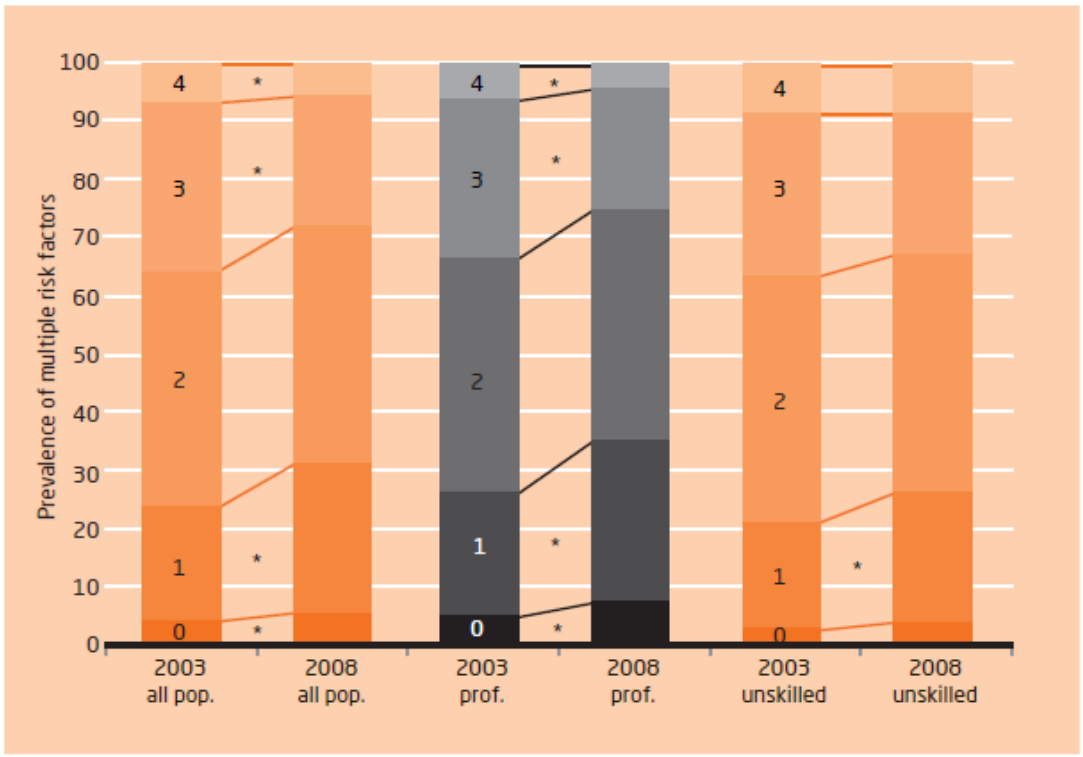
For middle-aged people, smoking *and* drinking *and* lack of exercise *and* poor diet increase the risk of early death from 1 in 20 to 1 in 5 over the next 10 to 15 years of life.

- The chart is based on a study following 20,000 people over 14 years in Norfolk. It shows the cumulative effects of multiple risky health behaviours.

Source: Figure 1, http://www.kingsfund.org.uk/sites/files/kf/field/field_publication_file/clustering-of-unhealthy-behaviours-over-time-aug-2012.pdf adapted from http://www.plosmedicine.org/article/info:doi/10.1371/journal.pmed.0050012

Unhealthy lifestyles cluster more in lower income and educational groups

Change in the prevalence of multiple lifestyle risk factors between 2003 and 2008, by gender



Note: *, Significant difference ($p<0.05$) between the years

Source: Authors' analysis of the Health Survey for England 2003 and 2008 (NHS Information Centre 2012)

Between 2003 and 2008, the relative risk of males from unskilled backgrounds having four unhealthy behaviours compared to professionals increased from 3 to 1, to 5 to 1.

› Download The King's Fund publication, Clustering of unhealthy behaviours over time

Source: Figure 2, http://www.kingsfund.org.uk/sites/files/kf/field/field_publication_file/clustering-of-unhealthy-behaviours-over-time-aug-2012.pdf

Summary: adults' lifestyles

- **Unhealthy lifestyles are responsible for much of our poor health**
  - Tobacco remains the biggest killer.
  - Together, smoking, high blood pressure and high BMI account for more than 30% of morbidity in the UK.

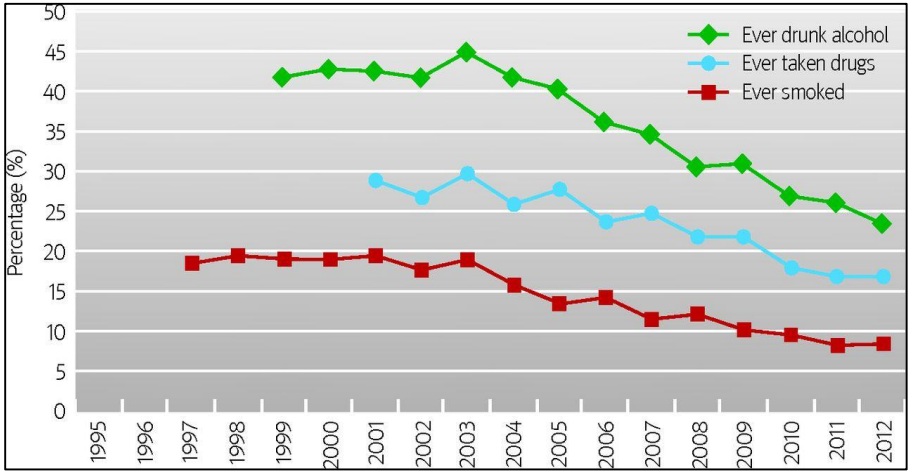
- **Deprivation and low income are related to unhealthy lifestyles, but patterns are complex**
  - Frequent drinking rises with income, but is also high in the lowest income groups.
  - Obesity falls with income, but is also low in the lowest income group.

- **Unhealthy lifestyles cluster together in lower socio-economic and educational groups**
  - Smoking *and* drinking *and* lack of exercise *and* poor diet increases the risk of mortality five-fold for middle-aged adults.
  - Unskilled males are 5 times more likely to have 3 or 4 unhealthy lifestyles than professional males.

Children's lifestyles

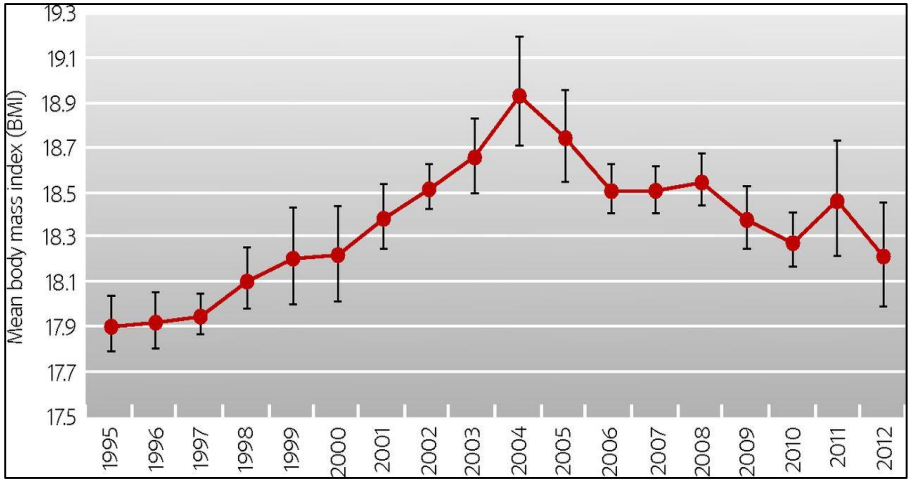
Our children's lifestyles appear to be improving

Percentage of children (2-15 years) in England who have ever drunk alcohol, taken drugs, or smoked cigarettes, 1995-2012



Abstinence from alcohol, drugs and smoking in children has grown since the mid-2000s.

Mean body mass index of children aged 2-15 in England, 1995-2012



Mean BMI in children has dropped since the mid-2000s.

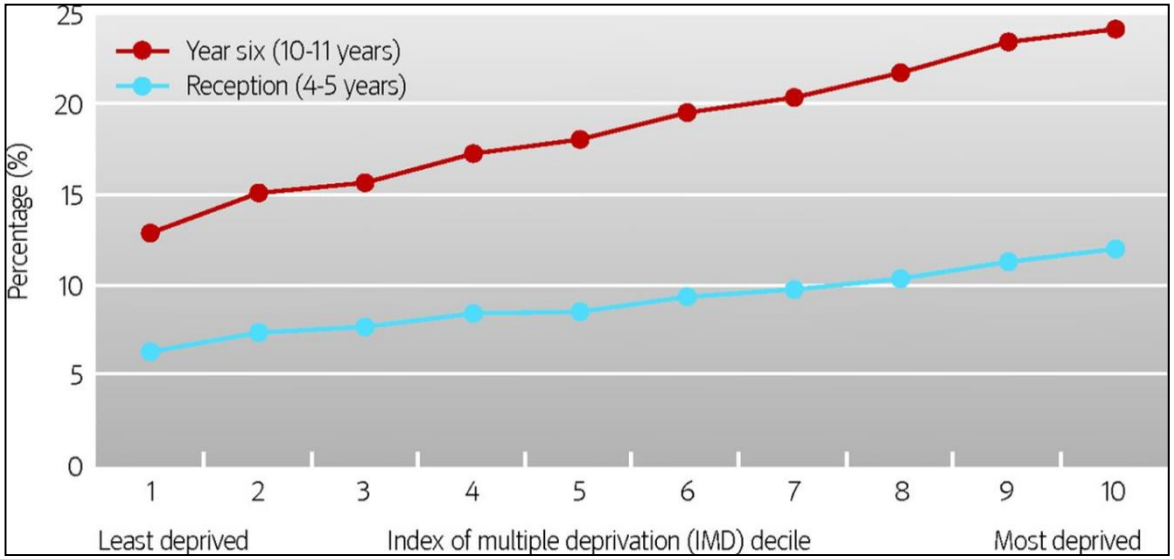
Source: http://www.bmj.com/content/348/bmj.g3025?ijkey=zwA7fbO7OdHvP51&keytype=ref, adapted with permission from BMJ Publishing Group

The King's Fund

Ideas that change health care

But children's lifestyles are heavily skewed, by deprivation, families and peers

Percentage of children in national school survey who are obese by socioeconomic deprivation

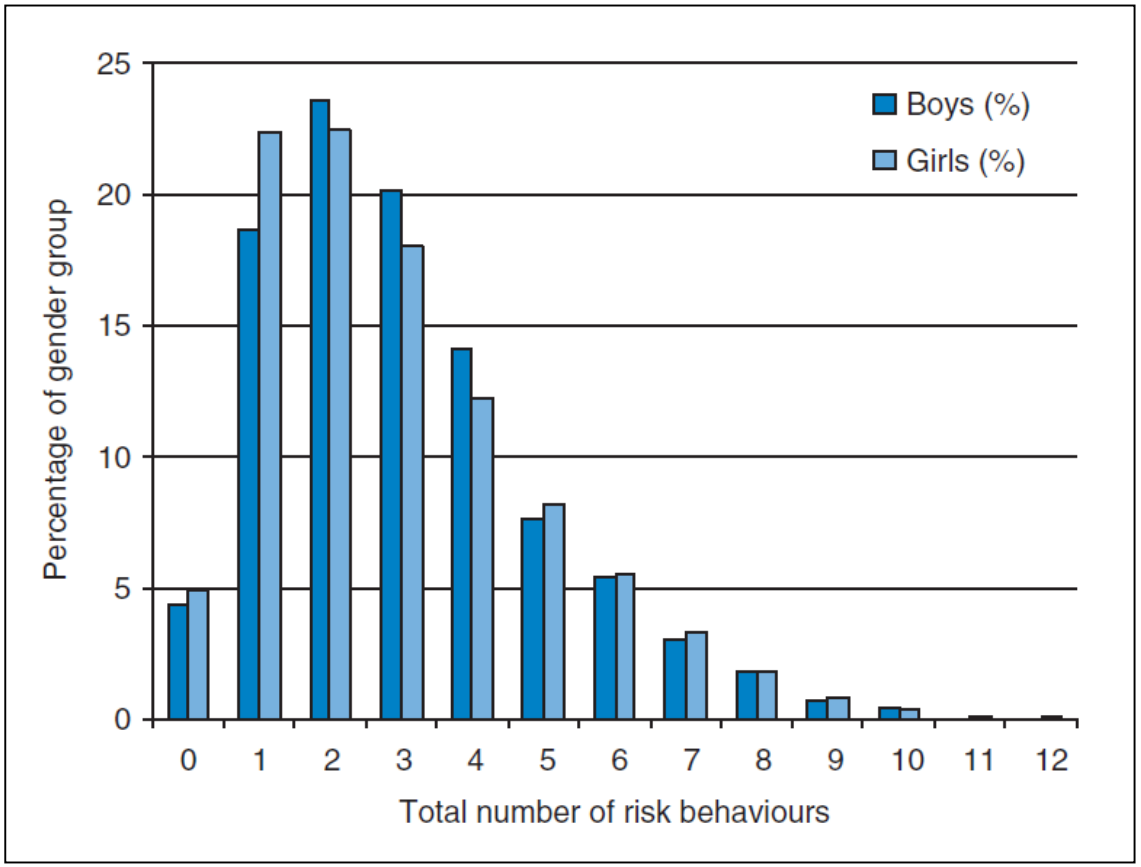


- 83% of children who live with people who do not drink alcohol have not drunk alcohol themselves, compared to 30% in households with 3 or more drinkers.
- Children who had truanted or been excluded from school were 10 times more likely to have taken drugs than those who hadn't.
- 98% of regular child smokers have friends and family who smoke, compared to 51% of child non-smokers.

Source: http://www.bmj.com/content/348/bmj.g3025?ijkey=zwA7fbO7OdHvP51&keytype=ref, adapted with permission from BMJ Publishing Group, and http://www.hscic.gov.uk/catalogue/PUB11334/smok-drin-drug-youn-peop-eng-2012-repo.pdf

Many children have multiple risk behaviours, just as adults do

Frequency of single and multiple risk behaviours by gender in adolescents aged 15–16 years, from the Avon Longitudinal Study of Parents and Children (ALSPAC)



At 15–16 years of age, around 40% of adolescents engaged in between three and five risk behaviours. Only 5% engaged in none.

- The ALSPAC study looked at multiple risk-taking among children and adolescents, measuring a large range of risks from physical activity, alcohol, smoking and sexual activity to self-harm, cycling without a helmet and criminal behaviour.

Source: http://jpubhealth.oxfordjournals.org/content/34/suppl_1/i20.full.pdf+html, reproduced with permission from Oxford University Press

Summary: children's lifestyles

- **Overall, there are encouraging trends in the lifestyles of our children**
  - The proportion of children having ever smoked, taken alcohol or drugs has been falling consistently since the mid 2000s.

- **Deprivation and family and peer behaviours are important drivers of children's lifestyle behaviours**
  - Childhood obesity is strongly related to deprivation.
  - Children with friends and in households who smoke, take drugs or alcohol are much more likely to do so themselves.

- **Unhealthy behaviours cluster together in children, as they do in adults**
  - At 15–16 years of age, around 40% of adolescents engage in between three and five risk behaviours, only 5% engaged in none.

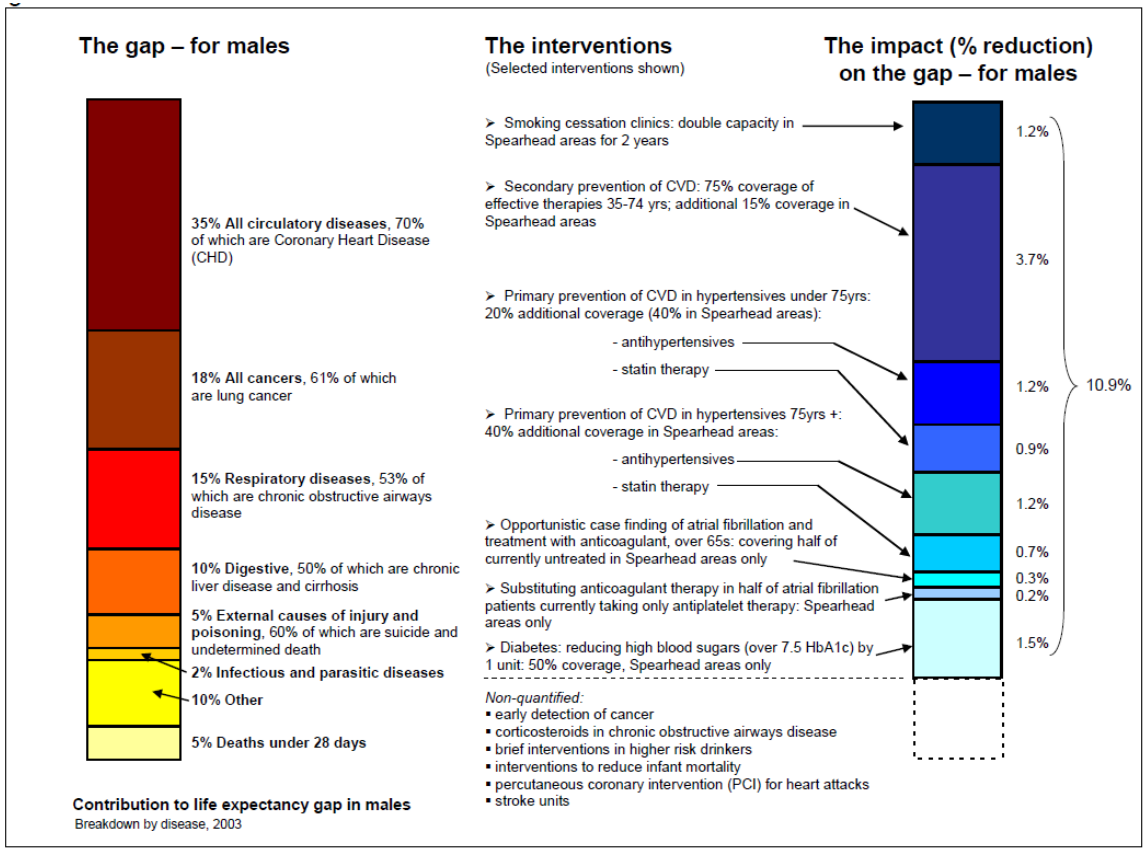
A preventive health care system

Access to health services can improve public health and reduce inequalities

- Primary care is an important determinant of public health, especially in terms of primary and secondary prevention.
  - Effective primary prevention helps patients to avoid health problems before they occur. While prevention in childhood provides the greatest benefits, it is valuable at any point in life.
  - Secondary prevention is based on a range of interventions that are often highly cost-effective and that, if implemented at scale, would rapidly have an impact on life expectancy.
- In the short term, systematic and scaled-up action from the NHS is the quickest way to reduce inequalities in health.

Focused secondary prevention in primary care is the fastest way to reduce health inequalities

Modelling of the life expectancy gap between the most deprived areas in England with health inequality problems (former 'Spearheads') and the evidence of action to close the gap

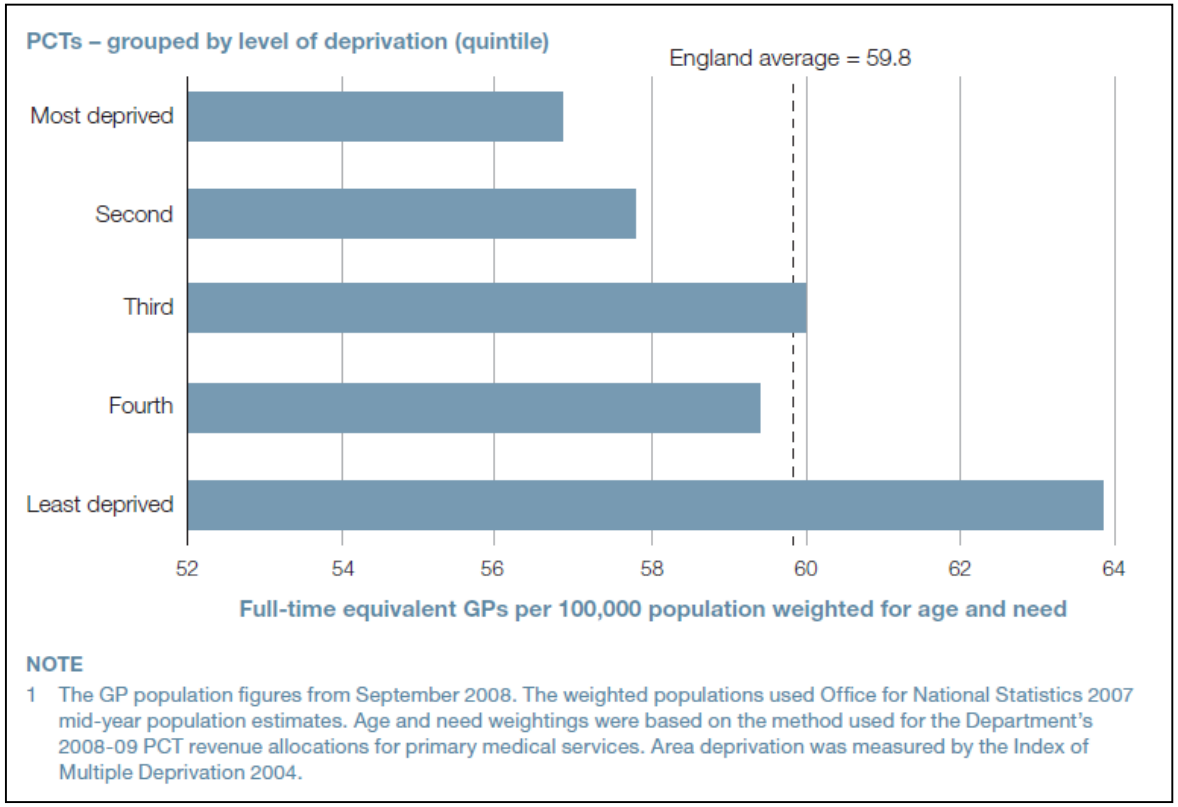


The Department of Health has shown that inequalities in life expectancy can be narrowed by at least 10% by focused primary care interventions.

Source: webarchive.nationalarchives.gov.uk/20130107105354/http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/@ps/@sta/@perf/documents/digitalasset/dh_109468.pdf and http://www.nao.org.uk/wp-content/uploads/2010/07/1011186.pdf

But there are fewer GPs per head in deprived areas

GPs per head, weighted for age and need, 2008, England

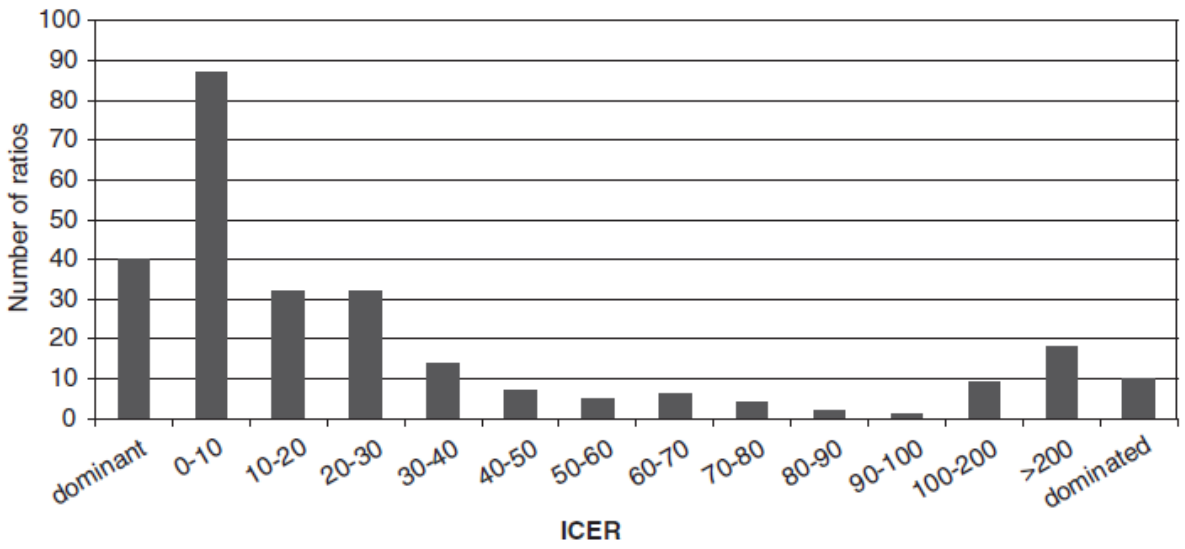


Source: http://www.nao.org.uk/wp-content/uploads/2010/07/1011186.pdf

The NAO argued for more GPs in deprived areas, saying that it would cost less than £25 million to have a measurable effect on inequalities in life expectancy by increasing numbers and access to smoking clinics, statins and antihypertensives in deprived areas.

Many preventive activities are cost-effective

Frequency distribution of 267 prevention studies and their incremental cost-effectiveness ratios (€10,000/QALY)



Source: http://eurpub.oxfordjournals.org/content/21/2/260.full.pdf+html, reproduced with permission of Oxford University Press and translated to English currency, and section 2 of http://www.kingsfund.org.uk/sites/files/kf/field/field_publication_file/10PrioritiesFinal2.pdf

Of the 250+ studies on preventive interventions from 2008, almost half showed a cost of less than £6,400 per quality-adjusted life year (QALY) and almost 80% cost less than the £30,000 threshold used by NICE for cost-effectiveness.

Summary: a preventive health care system

- **Systematic and scaled-up primary care is important for tackling inequalities in health**
  - The Department of Health has shown that focused primary care interventions through GPs and other services can reduce inequalities in life expectancy by at least 10%.

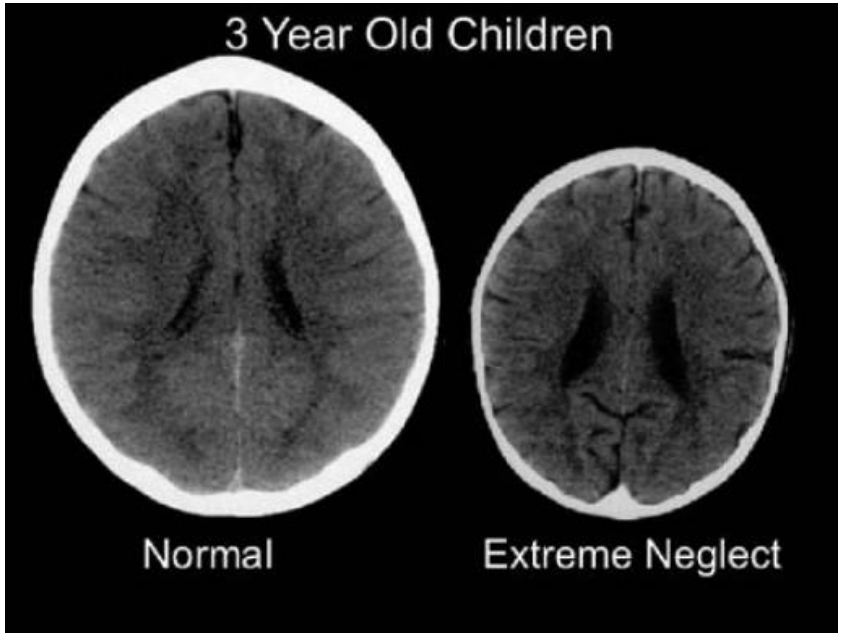
- **However, areas with deprivation have fewer doctors per head than wealthier areas**
  - The most deprived areas have about 56 GPs per 100,000 weighted population, the wealthiest around 64.

- **Prevention is cost-effective and could be a cheap way to make a measurable difference**
  - Around half of more than 250 studies looking at cost-effectiveness showed prevention costing less than £6,400 per QALY.
  - Targeting smoking clinics, statins and anti-hypertensives in deprived areas would could cost as little as £25 million to have a measurable effect on inequalities in life expectancy.

The wider social and economic determinants of health

What happens to us as young children is critical to our health and wellbeing

There is strong evidence that early life experience affects our future health.

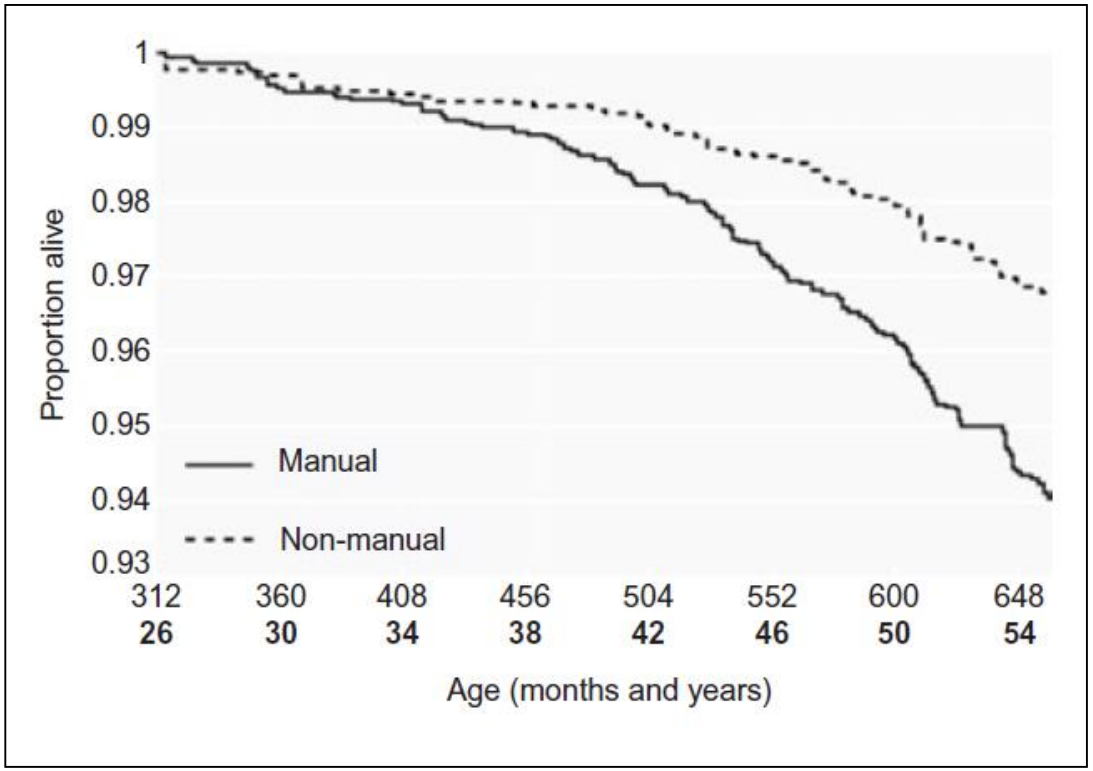


Insecure attachment in childhood is linked to higher risk of strokes, heart attacks, high blood pressure, and suffering pain, for example from headaches and arthritis.

Image source: Perry B,D. (2002) Childhood experience and the expression of genetic potential: what childhood neglect tells us about nature and nurture. Brain and Mind, 3: pp.79–100. Used as front page image in Allen, G. (2011) Early intervention: The next steps. An independent report to Her Majesty's government. London: HM Govt.
Fact source: McWilliams LA and Bailey SJ (2010) Associations between adult attachment ratings and health conditions: evidence from the National Comorbidity Survey Replication. Health Pscyhology 29(4): 446–53, quoted in same.

Our health is heavily influenced by the social position of our parents

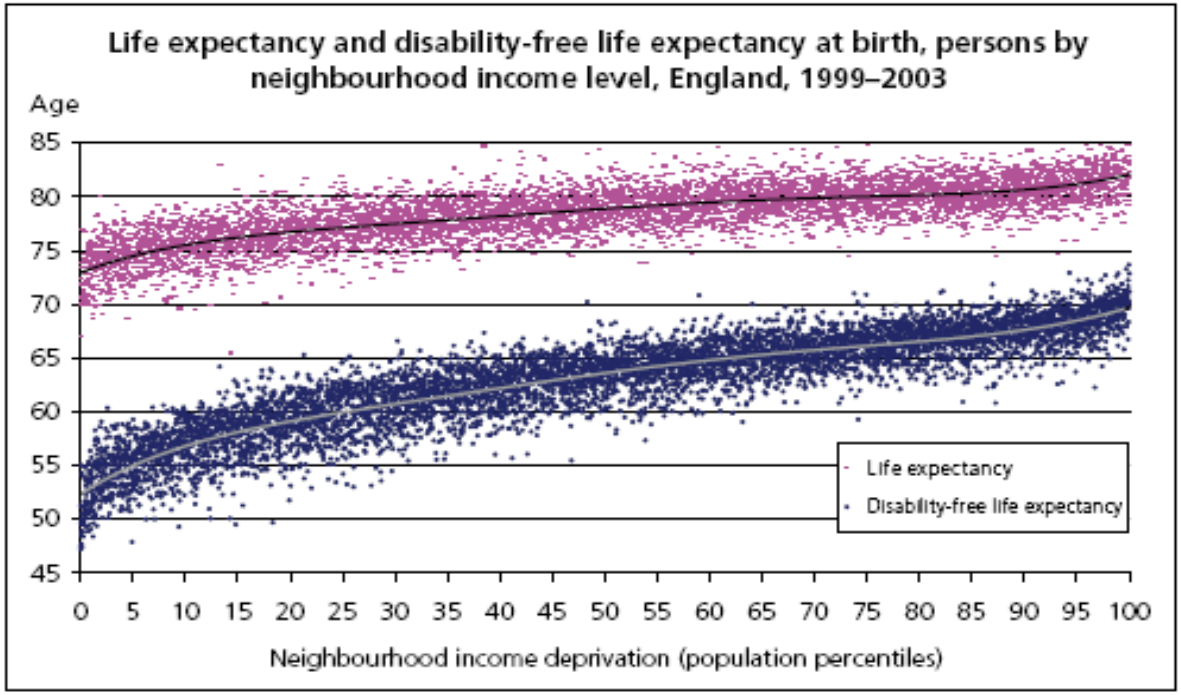
Cumulative death-rates age 26–54 by father's social class at birth for men and women in the 1946 birth cohort study



You are twice as likely to die in middle age if your father is a manual worker than if your father is an office worker.

Source: Kuh, D., et al. (2002) Mortality in adults aged 26–54 related to socioeconomic conditions in childhood and adulthood: post war birth cohort study. British Medical Journal 325 pp.1076–80, quoted in, Graham, H. and Power, C. (2004) Childhood disadvantage and health inequalities: a framework for policy based on lifecourse research. Child: Care, Health and Development 30 6 pp.671-78. Adapted with permission of British Medical Journal Publishing Group Ltd.

Our income, education and place in the social hierarchy directly affects our health



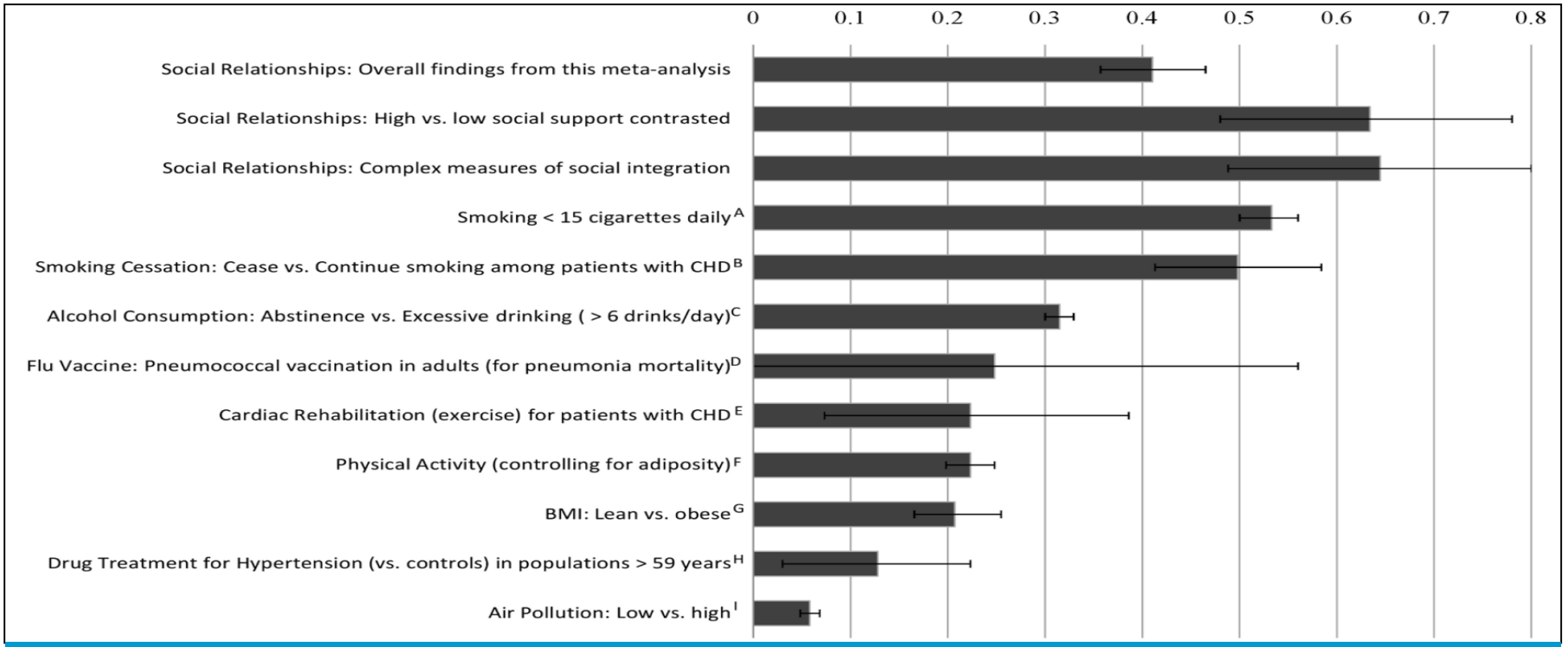
Source: Office of National Statistics

Living in the poorest areas reduces your life expectancy by 7 years and the time spent living healthily by 17 years compared to living in the wealthiest areas.

Source: Bernstein, H. et al (2010) Enabling effective delivery of health and wellbeing: An independent report. For Department of Health, available at http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_111692

Higher levels of social capital and 'connectedness' is linked to lower mortality

Comparison of odds of decreased mortality across several conditions associated with mortality

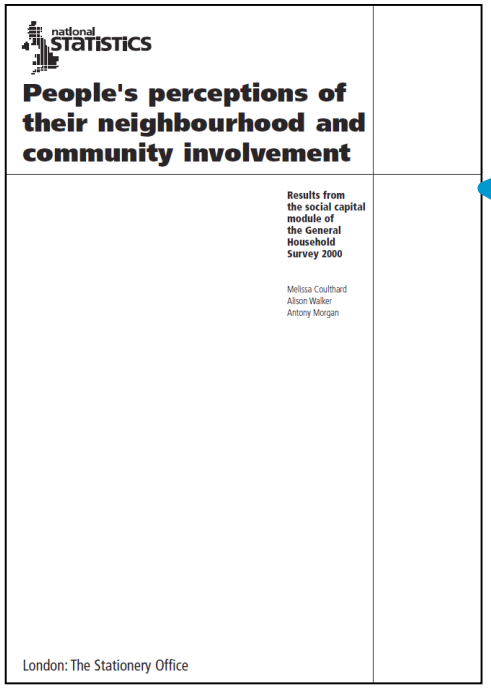


The effect of good social relationships and support is comparable to the effects of the major lifestyle factors on health.

Source: http://www.plosmedicine.org/article/info%3Adoi%2F10.1371%2Fjournal.pmed.1000316

But social capital and connectedness are lower in poorer areas

Improving the strength, cohesiveness and civic involvement of communities is likely to be positive for health



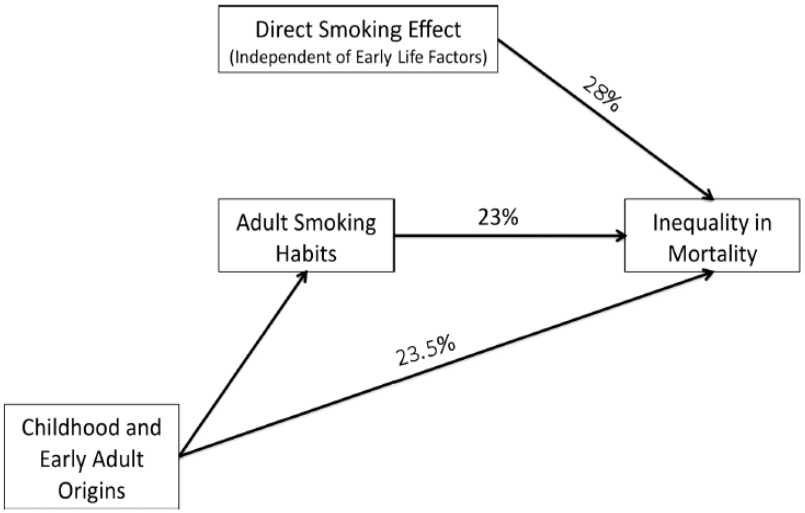
The variation with respect to the deprivation index showed that people who lived in the least deprived wards had more social support than those in the most deprived wards. Those in the least deprived wards were more likely than those in the most deprived wards to be able to ask for a lift (96% compared with 89%), ask for financial help (90% compared with 81%), or have at least three sources of informal help if ill (37% compared with 27%). They were also more likely to have more people they could turn to in a serious personal crisis, although there was no difference in the percentage of these people who lived locally.

Source: http://www.statistics.gov.uk/downloads/theme_social/Peoples_perceptions_social_capital.pdf

Wider determinants of health act directly, and indirectly, through the lifestyles we exhibit

Smoking is the core determinant of inequalities in mortality, but the probability of smoking is in turn highly influenced by early life circumstances – the wider determinants of health

Life-course pathway from early life origins to inequality in mortality mediated by smoking



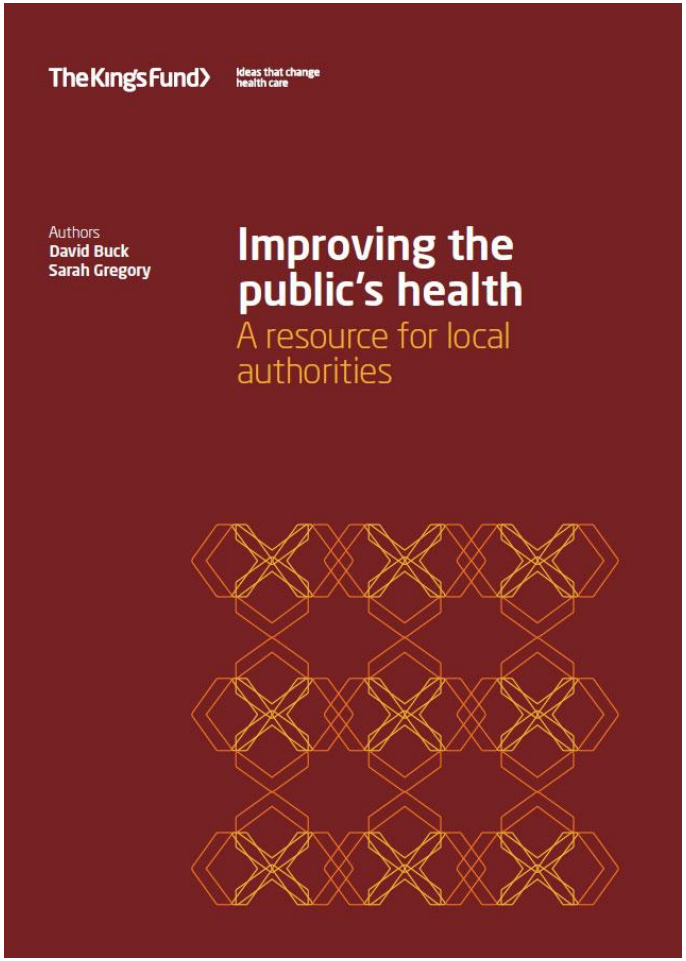
Source: http://jech.bmj.com/content/68/3/275.full.pdf+html

'Smoking and early life socio-economic indicators together explained 74% of the socio-economic gradient in mortality. Early life circumstances explained 47% of the gradient, 23.5% directly and 23.0% indirectly through smoking. The explanatory power of smoking behaviour for the gradient was reduced from 50.8% to 28% when early life circumstances were added to the model.'
Geisinger *et al*, 2014

Local authorities have a key role to play in influencing the wider determinants of health

Source: http://www.kingsfund.org.uk/audio-video/improving-publics-health-infographics

Our publication, *Improving the public's health*, sets out evidence-based actions



- Our publication sets out how local authorities can make the most impact in improving health and reducing inequalities across nine core areas:
  - the best start in life
  - healthy schools and pupils
  - good jobs and staying in work
  - active and safe travel
  - warmer and safer homes
  - access to green and open spaces
  - strong communities, wellbeing and resilience
  - public protection and regulatory services
  - health and spatial planning.

- For each of these core areas it sets out:
  - how functions in the area are related to health and health inequalities
  - evidence-based actions on how to act to make a difference
  - the business case for acting
  - further resources and case studies.

- We focus less on health behaviours, since NICE produces relevant guidance for local authorities in this area.

Source: http://www.kingsfund.org.uk/publications/improving-publics-health

Summary: the wider social and economic determinants of health

- **How we live with and relate to others is important to health**
  - Insecure attachment in childhood is linked to higher risk of strokes, heart attacks, high blood pressure and pain, for example from headaches and arthritis.
  - In later life, social support and connectedness is as important in explaining survival as smoking, alcohol or obesity.

- **Wider determinants indirectly influence our health through their impact on our lifestyles**
  - Early life experiences account for almost half of the influence of tobacco smoking on inequalities in mortality, by shaping the likelihood of smoking.

- **Local authorities have a renewed role in influencing the wider determinants of health**

Conclusion

- As a country, we are healthier than ever, but inequalities in mortality, morbidity and quality of life are persistent and exist in all our communities. Internationally, our performance varies.

- The main drivers of our health include exposure to infectious disease and other factors, the lifestyles we adopt and how they cluster, and the wider determinants in our environment, including income, our place in the social hierarchy and social capital.

- The poorest and least well off in our society tend to be more exposed to all of these threats, which explains why inequalities in our health are so persistent despite welcome overall improvements in health for the vast majority of us.

Source: http://www.kingsfund.org.uk/publications/improving-publics-health

Selective glossary

Term	Meaning
Spearheads	Areas that were the focus of the previous Labour government's targets on health inequalities. Primarily urban, deprived, inner-city boroughs with a combination of high preventable mortality and deprivation.
Life expectancy (LE)	The number of years an average person is expected to live if current patterns of mortality continue to apply. Can be defined by age (for instance at birth, at age 65), relative for gender, socio-economic position or other factors.
Avoidable mortality	Avoidable mortality is a measure of mortality that experts consider could be avoided by either effective health care (amenable mortality) or prevention (premature mortality). Taken together, they are known as avoidable mortality.
Disability-free life expectancy (DFLE)	A measure of how healthy we are during our lives. DFLE is the average number of years an individual is expected to live free of disability (as proxied by the presence of limiting long-term illness) if current patterns of mortality and disability continue to apply.
Disability-adjusted life-year (DALY)	A measure of how unhealthy we are during our lives. Years of life are adjusted, according to measures of disability. Year lost are also computed, relative to a standard population.
Quality-adjusted life-year (QALY)	A measure of how healthy we are during or lives. Years of life are adjusted (usually) between 0 and 1, with 1 being perfect health. The quality adjustment is based on representative surveys of the population given different health problems.
Healthy life expectancy	A measure of how healthy we are during our lives. HLE is a measure of the average number of years that an individual is expected to live in a healthy state.
Deprivation	A measure of individual and community material circumstances. Often measured by the Index of Multiple Deprivation (IMD) which includes factors such as income, employment, health, proximity to local services, crime and housing conditions.
Gini coefficient	A statistical measure of how concentrated a particular problem is in a given population. It lies between 0 and 1. A score of 0 implies perfect equality on the issue measured (for example, age at death), a score of 1 implies perfect inequality. In practice, scores will lie between these extremes.
Attributable risk	This is the difference between the rate of a condition between an exposed population and an unexposed population. For instance, the incidence of lung cancer for a smoking versus a non-smoking population.
BMI (body mass index)	A measure of healthy weight that relates height to mass. Defined as a person's weight in kilograms divided by height squared in metres (kg/m^2). For an adult population a score of >30 is widely accepted as the definition of obesity. For children, BMI is related to age and gender, and a BMI above the 95th percentile for a given age and gender is widely considered obese.
Odds ratio	The ratio of the odds of an event occurring in one group to the odds of it occurring in another group, for example, recovery from illness. A ratio greater than 1 indicates that a given event is more likely to occur in the first group compared to the other one.