Croydon Joint Strategic Needs Assessment 2009-10

Geographical health inequalities

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Acknowledgements

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Contents

Figures

Key findings

Average life expectancy in Croydon is increasing. In 2007 average life expectancy in Croydon was 78 years for men and 82 years for women. Life expectancy in the borough is increasing faster for men than for women. However, there has been little, if any, significant change in the gap in life expectancy between the most deprived areas and the least deprived areas between 1995 and 2007.

In Croydon the life expectancy gap between the most deprived 10% of areas and the least deprived 10% is 10.6 years for men and 5.7 years for women[1].

There is a strong association between deprivation and poor health outcomes in Croydon. Amongst thirty one London boroughs[2], Croydon has the third widest gap in health outcome for men and eighth widest gap in health outcome for women[3]. Croydon has small pockets of significant deprivation rather than wider areas of disadvantage.

Death rates from all causes are falling across the borough. The rates are falling at approximately the same pace in the least deprived areas as in the most deprived areas. The gap in all cause mortality has therefore not reduced significantly between 1995 and 2007. There are substantial differences in all cause mortality rates between the most and least deprived parts of Croydon. The all age all cause mortality rate for the least deprived fifth of the borough's 220 lower layer super output areas (LSOAs) is 430.3 per 100,000; the rate for the most deprived fifth is 765.9 per 100,000.

Circulatory diseases, cancers and respiratory diseases cause the majority of excess deaths when comparing mortality between the most and least deprived fifths of LSOAs in Croydon. Deaths from circulatory diseases make up 31.5% of excess deaths in men and 34.6% of excess deaths in women. Deaths from cancers make up 15.5% of excess deaths in men and 19.6% in women. Deaths from respiratory diseases make up 18.1% of excess deaths in men and 13% in women.

1 This is as measured by the 2003-07 slope index of inequality indicator used in the NHS World Class Commissioning assurance framework.
Males = 10.6 years (95% confidence interval: 8.9 to 12.33); Females = 5.7 years (95% confidence interval: 3.4 to 8). Source: Association of Public Health Observatories www.apho.org.uk/resource/view.aspx?RID=75050

2 Excluding the City of London

3 As measured by the 2007 slope index of inequality indicator

Recommendations

1. NHS Croydon, Croydon Council and the local strategic partnership should review their approach to addressing geographical variations in health within the borough. They should identify specific and measurable changes that partners can work together to achieve. Partner organisations should set out their contribution and the steps that they will take to deliver those changes. It is recommended that the overall focus is on reducing the gradient of the slope index of inequality.

2. The slope index of inequality should be used by NHS Croydon, the council and the local strategic partnership to track progress over time.

3. A long term (5 to 10 year) target and trajectory for reducing the SIope Index of Inequality gradient should be set out in the *community strategy* and NHS Croydon's *strategic plan.*

4. NHS Croydon and the Council should agree one or more additional long term targets that focus on the three major causes of excess deaths that are driving health inequalities in Croydon (circulatory diseases, cancers and respiratory diseases). It is recommended that this target should be to reduce the gap in deaths between the most and least deprived areas, recognising that there are significant technical issues involved in setting differential targets at a local level.

5. Reducing smoking prevalence is likely to have the single biggest impact on the three major causes of excess deaths. The local strategic partnership should agree a local target that focuses the efforts of all partners on a reduction in smoking prevalence and not solely the NHS stop smoking quit rate. Delivery of stop smoking services, tobacco control and prevention initiatives should be focused on the areas with the highest smoking prevalence.

6. NHS Croydon, the council, Croydon Community Health Services, Mayday Healthcare, and other partners should work together through the Croydon tobacco control alliance to speed up the reduction of smoking rates in the areas of highest prevalence. All frontline NHS and key council staff should be trained to stop smoking level 1 and be actively encouraging and supporting their patients, service users and customers to stop smoking.

7. NHS Croydon should commission services with an explicit aim of reducing excess deaths from circulatory diseases in areas of higher deprivation. This includes introducing NHS health checks to identify people at risk of circulatory diseases, using vascular risk assessment to diagnose and manage people in high risk groups. Primary and secondary prevention programmes should be in place targeting people living in areas of high deprivation. They should also target groups known to be at risk within those areas, such as people from South Asian, African and Caribbean ethnic groups. Programmes should include equity measures and be monitored to ensure that people living in areas of higher deprivation have equitable access.

8. The council should ensure that there is equitable access to parks and green spaces, sport, and leisure facilities across the borough to encourage and support active recreation. The council should also use its role as a place shaper to ensure that the built environment promotes walking and cycling. It should promote healthy food choices and physical activity in early years and amongst school age children, with a particular focus on the areas of highest deprivation.

9. NHS Croydon should commission services with an explicit aim of reducing excess deaths from cancers in areas of higher deprivation. This should focus on the prevention of lung cancer through reducing smoking prevalence and helping people stop smoking. Services should also aim to diagnose and treat lung cancer as early as possible with a focus on ensuring equity of access to early diagnosis and treatment in areas of higher deprivation.

10. NHS Croydon should commission services with an explicit aim of reducing excess deaths from respiratory diseases in areas of higher deprivation. This should focus on the prevention, detection and management of chronic obstructive pulmonary disease.

11. NHS Croydon should model expected disease prevalence within the most deprived areas, identify the gap between expected prevalence and recorded prevalence, and ensure that its contractors find and treat people with undiagnosed disease.

12. NHS Croydon and practice based commissioners should work to strengthen primary care in the most deprived areas, using *local enhanced service* agreements and the *quality and outcomes framework* to provide incentives for GPs and independent contractors to improve performance. People living in deprived areas should be encouraged to register with a GP.

13. Interventions should be of sufficient scale to make a measurable difference to life expectancy or excess mortality. This means that industrial scale systems need to be in place to deliver interventions and the workforce needs to have the right skills, for example, in disease register management.

14. Interventions should be evidence based wherever possible, with investment and disinvestment decisions taking the evidence base into account. Where evidence is less robust then appropriate evaluation measures should be put in place. The existing evidence base is less good for interventions to address the social determinants of health. This should inform, but not necessarily discourage, the commissioning of interventions which address social determinants.

15. The independent and third sectors can both play a major role in supporting the behavioural changes that people need to make and sustain. The third sector has a key part to play in reaching people who may not wish to use mainstream statutory service providers. Community activists and health champions have the potential to reach large numbers through social and informal networks. The existing *health champions* programme and similar initiatives should be independently evaluated for the extent of their reach into those networks. The council and NHS Croydon should continue to facilitate the development of the third sector in Croydon, particularly those organisations that serve communities in deprived areas.

16. Areas where further needs assessment work is recommended:

    a) The relationship between ethnicity and variations in health outcomes in Croydon.

    b) Equity audits for planned and existing interventions with a focus on those which address the major causes of excess deaths.

    c) Equity audit of health service and related spending in relation to deprivation and health outcomes in Croydon.

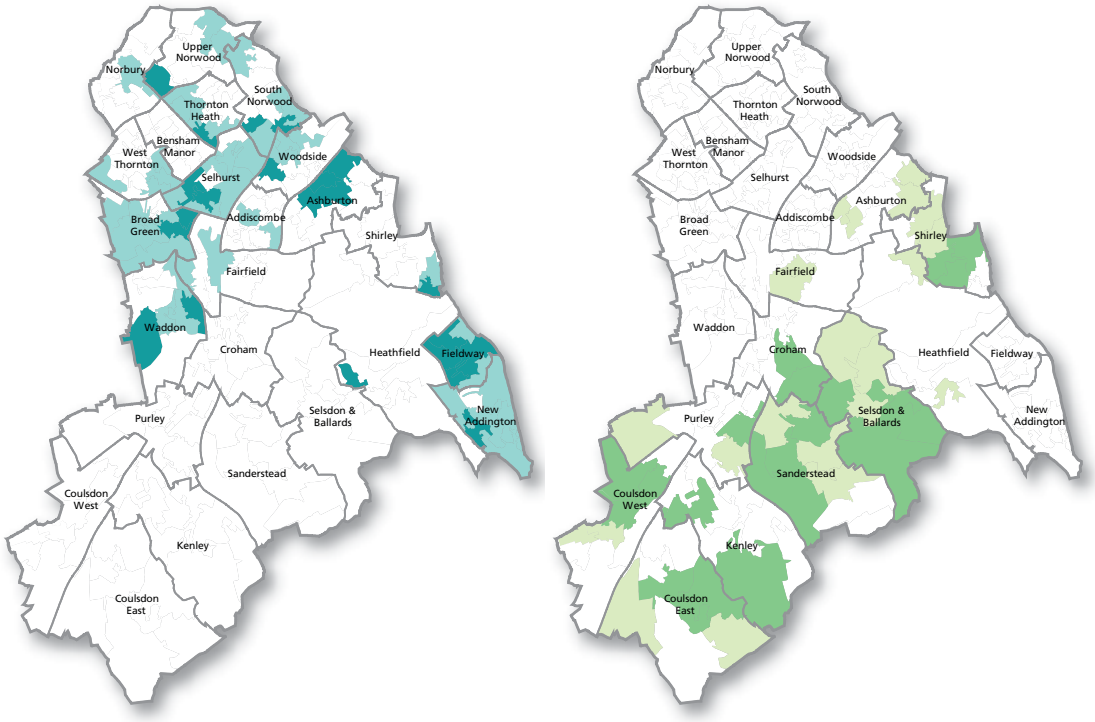
Introduction

One important dimension of health events or outcomes is where they occur, or where the person lives who experiences the event or outcome. In order to learn about the health of a population, the health of people within different geographical areas can be compared. This can be by using simple counts (crude rates) or standardised rates which adjust for different age structures of populations. The same area can also be compared over time to identify trends such as increasing life expectancy or decreasing smoking prevalence.

The explanation for geographical variations in health can usually be provided by the socio-economic characteristics of an area. People living in the most deprived areas often have poorer health than the rest of the population. This can be shown for various health indicators and areas. For this reason we have chosen to compare health outcomes in different parts of Croydon by their level of deprivation as measured by the 2007 index of multiple deprivation. We have chosen to focus on life expectancy and on deaths from the biggest killers as our key outcome measures. This is because the number of events, for example of deaths from all causes, is large enough in the areas we are comparing for us to begin to draw conclusions about patterns in the data such as trends over time.

Most of the analysis in this chapter has been undertaken by comparing the most deprived and least deprived quintiles (or fifths) of the borough. This is generally the accepted unit of analysis for analysing variations in health at a small area level. Quintiles have a population large enough to give statistically significant results against a number of health outcome measures. However, the analysis of life expectancy has been done by decile to align with the *world class commissioning* assurance framework indicator. The rationale for choosing these units of analysis and the geographical areas to be compared is set out in the methods section which follows. The borough maps at Figure 1 show the areas that have been compared.

Figure 1: The most and least deprived areas in Croydon, 2007



Croydon lower super output areas

- Most deprived 10% of areas
- Second most deprived 10% of areas

Croydon lower super output areas

- Second least deprived 10% of areas
- Least deprived 10% of areas

Source: Department of Communities and Local Government, indices of deprivation 2007

The national health inequalities public service agreement target was set out in *Tackling health inequalities: a programme for action (2003)*[4]. It is to: 'reduce health inequalities by 10% by 2010 as measured by infant mortality and life expectancy at birth.' This target is underpinned by two more detailed objectives:

- 'Starting with children under one year, by 2010 to reduce by at least 10% the gap in mortality between the routine and manual group and the population as a whole.
- Starting with local authorities, by 2010 to reduce by at least 10% the gap in life expectancy at birth between the fifth of areas with the worst health and deprivation indicators (the Spearhead Group) and the population as a whole'.

Meaning of inequality

The way in which the term 'inequality' is used varies. An economist discussing 'income inequalities', for example, may simply be stating the fact that some people are richer than others. The term 'health inequalities' is used here to explore how health varies between social groups, for example, by gender, ethnicity, occupational classification or neighbourhood deprivation category.

Meaning of inequity

'Inequity' is a form of inequality, but it involves a judgement about unfairness or injustice. An investigation of equity in terms of health outcomes or access to services is called an equity audit. Inequalities in health may or may not be indications of inequity.

This chapter concentrates on geographical variations in health because at a local level it is more straightforward to do this than to measure, for example, variations by ethnicity, socio-economic status or disability. This means that some of the complex interactions between deprivation and socio-economic status, ethnicity and disability will not be addressed here.

There is a relationship between the deprivation of an area and the socio-economic status of the people who live there. There is a risk of assuming, however, that all people who live in a deprived area are 'deprived' and will have poor health outcomes. There are also many people who live in less deprived areas who will have poor health outcomes.

The relationship between ethnicity and deprivation or socio-economic status is complex. Although people from black and minority ethnic groups are more likely to be concentrated in particular parts of Croydon, some of which are comparatively deprived, some of the most deprived areas have very small black and minority ethnic populations.

4 Department of Health. *Tackling health inequalities: a programme for action.* London: Department of Health. 2003.

Methods: analysing geographical variations in health in Croydon

When analysing geographical variations in health, the results gained will vary depending on the unit of analysis used. The bigger the geographical area which is analysed, the less variation there will be in the results. Small pockets of deprivation, for example, can be obscured in an otherwise wealthy community. On the other hand, choosing very small units of analysis will frequently give small numbers of events, which is problematic both in terms of data confidentiality and statistical significance. Another aspect that needs to be considered is whether the required data are available at the geographical level chosen, for example, some health outcome data may not be available below ward level.

Traditionally electoral wards were the natural choice of geography below local authority level. They have familiar names, and are politically relevant. However, their frequently changing boundaries make it difficult to establish time series, and their uneven population size can cause analytical problems. Both these disadvantages were addressed by the introduction of output areas after the 2001 census. Output areas are defined for the distribution and collection of census forms. They have been aggregated by the Office for National Statistics into super output areas. Their boundaries are supposed to be kept stable over time with the option of simple splits or mergers in case of substantial population changes. They do not vary as much in size as wards.

Lower super output areas (LSOAs) are an aggregation of super output areas and have a mean population of 1,500[5]. If a geographical area needs to be easily identifiable LSOAs tend to be too small to be useful, although they have been used to target some interventions (for example, the Well London programme intervention in part of Broad Green).

Even if it is possible to obtain data for these small areas, it may involve such low numbers that it is difficult to reach statistically significant conclusions. For purposes of analysis in this chapter Croydon's 220 lower super output areas have been grouped into deprivation quintiles. A quintile represents a fifth or 20% of the LSOAs in Croydon. The LSOAs have been sorted by their 2007 index of multiple deprivation (IMD) score and allocated into quintiles, from the least deprived to the most deprived quintile. Deprivation quintiles may change slightly over time as parts of the borough become more or less deprived, but this is unlikely to involve major changes to the composition of the quintiles.

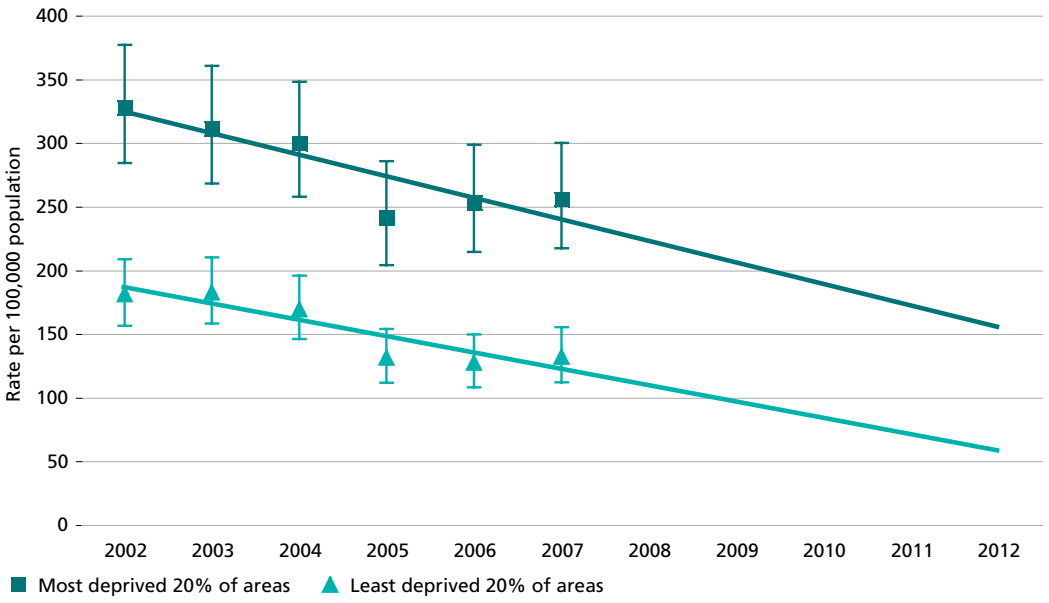
The analysis within this chapter includes confidence intervals, which help the reader gauge how reliable the findings are. A confidence interval gives a range within which we can be reasonably sure that the true figure falls. For example, a given underlying rate of teenage conceptions could give rise to one recorded rate one year and another recorded rate the next year, just because of random fluctuations. It is the underlying rate that we are trying to detect. A confidence interval defined around the recorded rate gives us an idea of the range within which the underlying rate is likely to lie. Small samples produce greater uncertainty than large ones, and hence bigger confidence intervals: sometimes so big that they swamp any pattern in the data. A 95% confidence interval means that we can be reasonably sure that 19 times out of 20 the true figure lies somewhere within the range indicated[6]. Confidence intervals are shown in the text as a number followed by two figures in brackets representing the lower and upper limits of the confidence interval, for example, *10.6 years (95% confidence interval: 8.9 to 12.33)*. Rates have been calculated using Office for National Statistics mid-2007 population estimates and age and sex standardised to the European Standard Population unless otherwise indicated.

5 Super output areas can also be aggregated into wards or other administrative units.

6 Association of Public Health Observatories, JSNA - the APHO resource pack: 2. Statistical validity. York: Association of Public Health Observatories. 2008.

On graphs the confidence interval has been shown by a symbol resembling the ones below, with the T bars representing the lower and upper limits of the confidence interval (Figure 2).

Figure 2: Example of use of confidence intervals and trend lines



Throughout the chapter the upper and lower lines on the charts denote the most and least deprived areas. These trend lines represent the line of best fit between the points of recorded data and also indicate possible future trends. These trends may be helpful in practice in indicating whether or not a gap between areas is widening or narrowing. One way of checking if the findings are reliable is to test for statistical significance. One problem with comparing areas below borough level is that, as noted above, the smaller the number of health events or outcomes (for example, deaths or cases of disease) the less likely it is that the findings will be statistically significant. Conclusions drawn about patterns or trends in any data which is not statistically significant may not be reliable.

Deprivation in Croydon

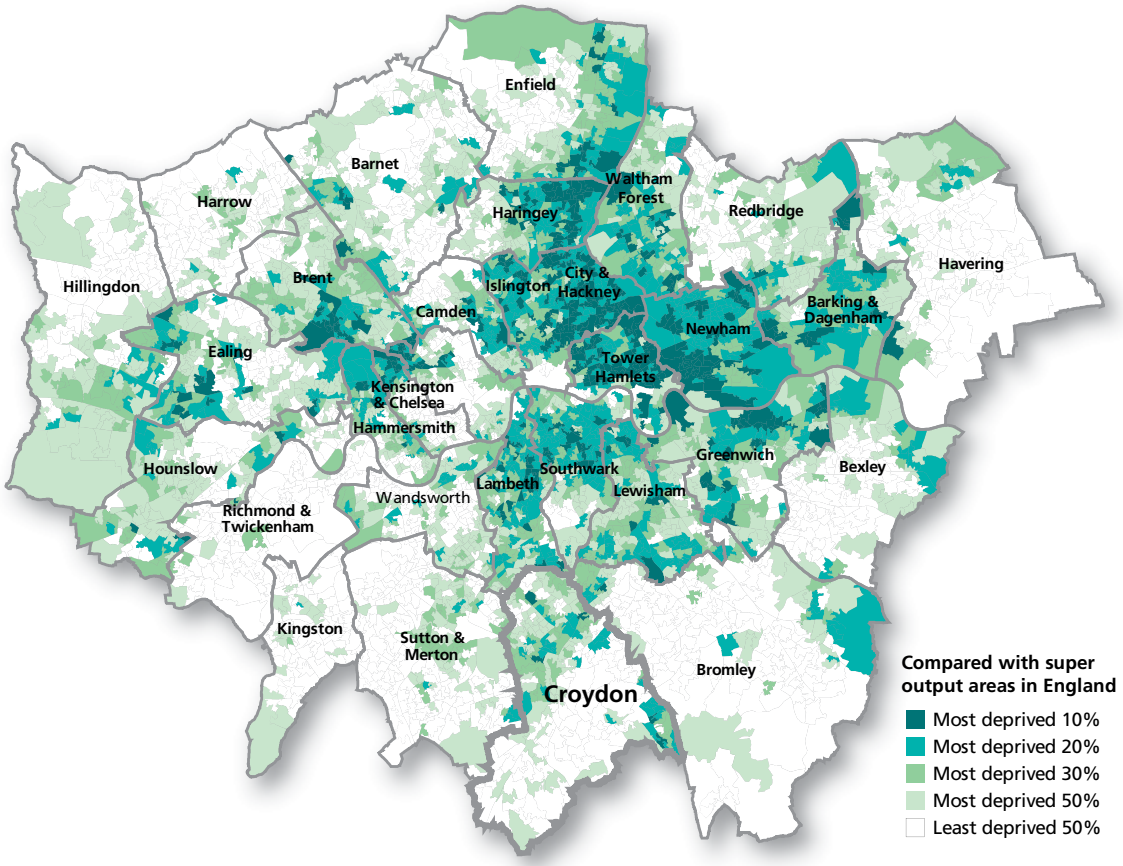
The *index of multiple deprivation 2007* combines a number of indicators, chosen to cover a range of economic, social and housing issues, into a single deprivation score for each lower super output area (LSOA) in England. These can be combined to give average scores for groups of LSOAs, wards, boroughs or regions. With an index of multiple deprivation score of 21.3 Croydon as a whole is slightly less deprived than the national average (21.6) and considerably less deprived than the London average (26.0). In 2007 Croydon was ranked 125th nationally out of 354 local areas, where 1st is the most deprived and 354th is the least deprived. Croydon is ranked 20th compared to 31 London boroughs[7].

Croydon has small pockets of significant deprivation rather than wider areas of disadvantage. Thirty three out of Croydon's 220 LSOAs fall within the 20% most deprived areas in England. Five LSOAs fall within the 10% most deprived in England. These areas include the borough's main social housing estates and parts of the north of the borough (Figure 3).

Detailed profiles of Croydon's electoral wards showing LSOAs by index of multiple deprivation scores are available on the Croydon Observatory website www.croydonobservatory.org.

7 Excluding the City of London

Figure 3: Index of multiple deprivation 2007, London and Croydon



Source: Department of Communities and Local Government, indices of deprivation 2007

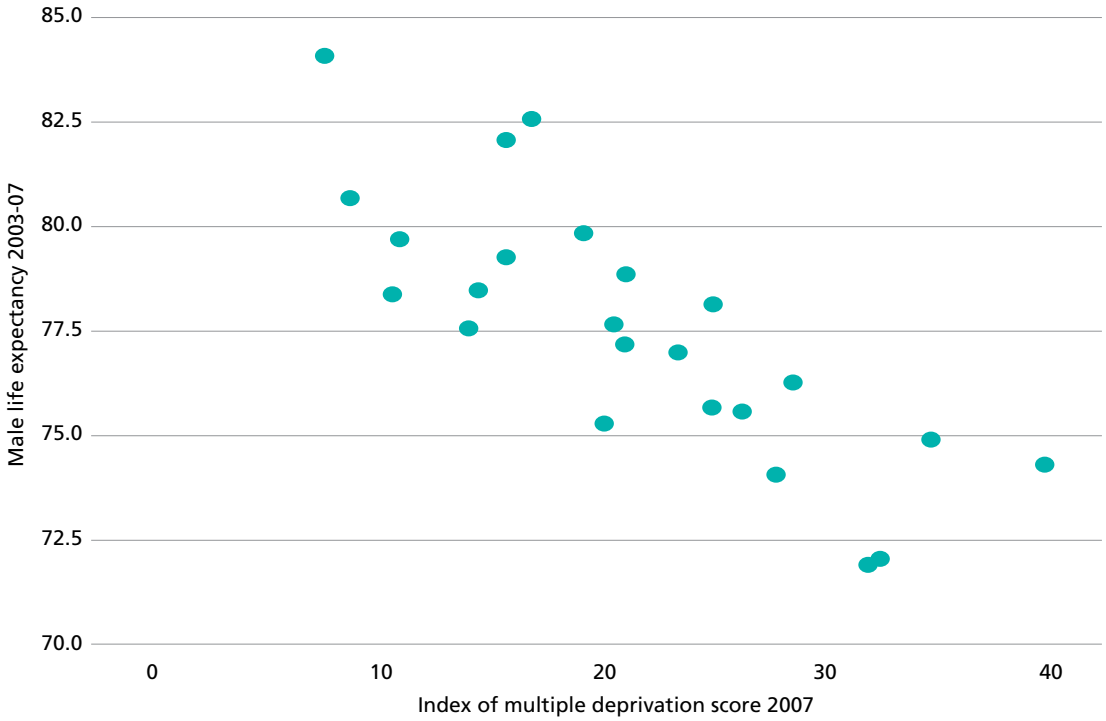
Life expectancy

Life expectancy at birth is an estimate of the number of years a newborn baby would expect to live if he or she experiences an area's age specific death rates for that time period throughout their life. The figure reflects mortality among those living in the area in each time period, rather than mortality among those born in each area. It is not therefore the number of years a baby born in the area could actually expect to live, both because the death rates of the area are likely to change in the future and because many of those born in the area will live elsewhere for at least some part of their lives. Life expectancy by deprivation decile[8] has been calculated using methods set out by the Office for National Statistics[9].

Scatter plots charts help us understand the association between two variables. Figure 4 shows the relationship between life expectancy and deprivation in Croydon. Ward level data has been plotted with male life expectancy in years and index of multiple deprivation score as the variables. The higher the index of multiple deprivation score the more deprived the area. The resulting scatter plot shows a statistically significant correlation between male life expectancy and deprivation[10]. A similar correlation is found for female life expectancy.

8 A decile represents a tenth or 10% of the LSOAs in Croydon.
9 Toson, B., A. Baker, and Ofice of National Statistics Life expectancy at birth: methodological options for small populations. National Statistics Methodological Series No.33., Norwich: HMSO. 2003.
10 Correlation coefficient p = -.829, P<0.001

Figure 4: Male life expectancy and deprivation in Croydon by ward

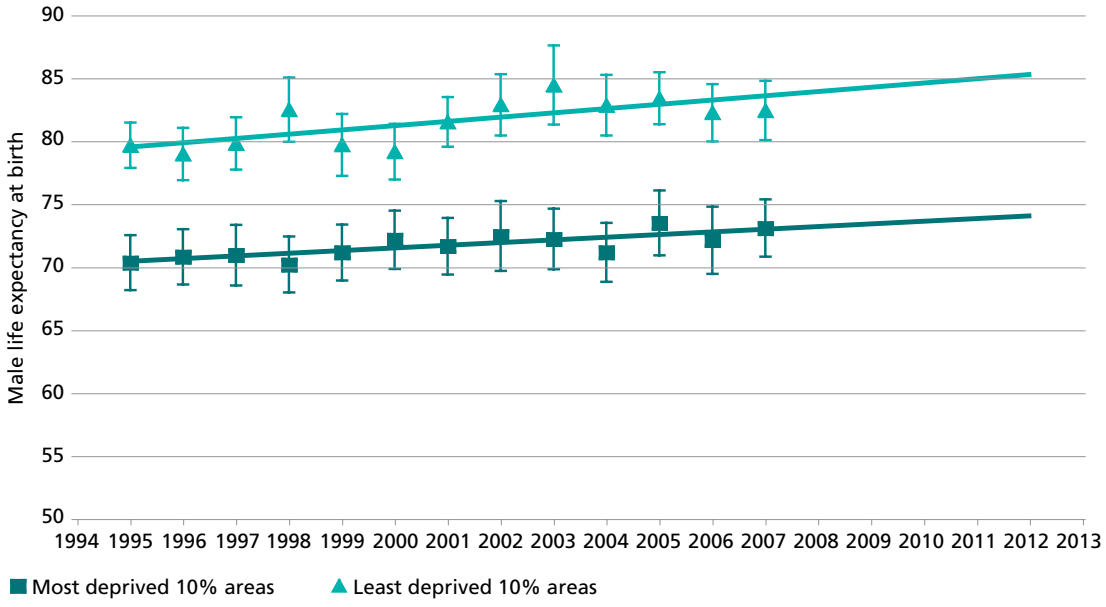


Sources: London Health Observatory, life expectancy at birth, 1999-2003 to 2003-2007, ward level; Department of Communities and Local Government, indices of deprivation 2007

Male life expectancy

Male life expectancy is increasing over time in all parts of Croydon, and at a faster rate than that for women. It is increasing at about the same rate in the most deprived decile as in the least deprived decile. In 1995 the absolute difference in male life expectancy between the least deprived decile of the borough and the most deprived decile was 9.3 years (95% confidence interval: 6.5 to 12.1). In 2007 the absolute difference was also 9.3 years (95% confidence interval 6.1 to 12.6). The underlying trend for each decile is shown by the solid lines (Figure 5).

Figure 5: Gap in male life expectancy between most and least deprived deciles, Croydon lower super output areas, 1995-2007

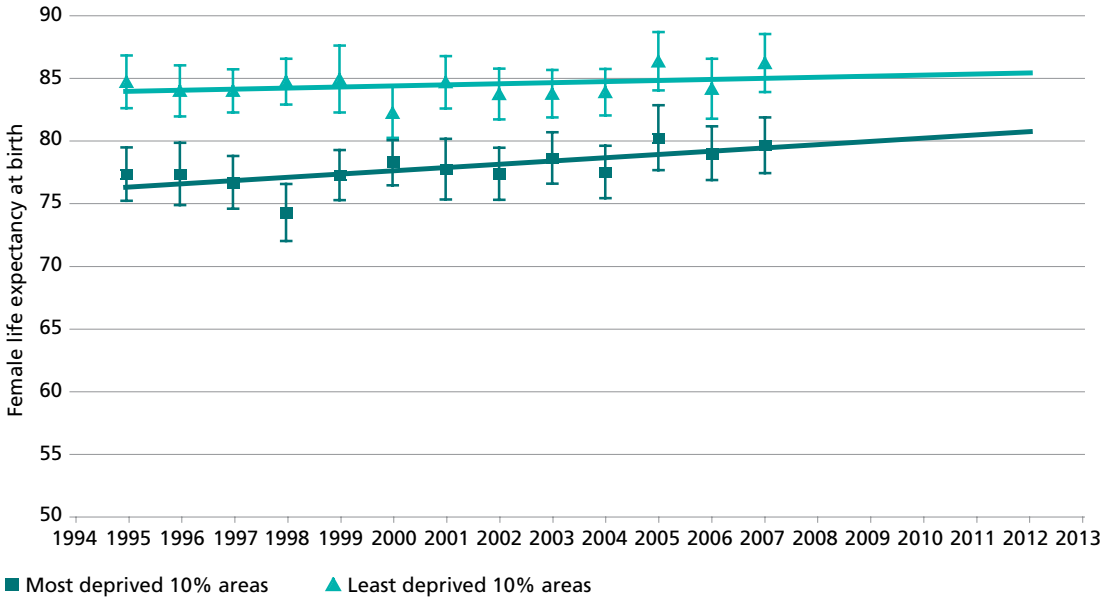


Source: Office for National Statistics death registration data

Female life expectancy

Female life expectancy is increasing over time in all parts of Croydon, but at a slower rate than that for men. The difference in female life expectancy between the least deprived decile and the most deprived decile is smaller than that for men. In 1995 the absolute difference in female life expectancy between the least deprived decile and the most deprived decile was 7.5 years (95% confidence interval: 4.4 to 10.5). In 2007 the gap was 6.7 years (95% confidence interval 3.4 to 9.9). The underlying trend for the most and least deprived deciles is shown by the solid lines (Figure 6). The trend lines appear to show a narrowing of the gap for women; however this is not a statistically significant trend[11].

Figure 6: Gap in female life expectancy between most and least deprived deciles, Croydon lower super output areas, 1995-2007



Source: Office for National Statistics death registration data

Slope index of inequality

The slope index of inequality is another way of representing health inequalities in an area. It shows the extent of overall variation in life expectancy within the population. It is used in the *NHS World Class Commissioning* assurance framework and calculated by grouping lower super output areas (LSOAs) within each PCT area into deciles (tenths or 10%) based on the index of multiple deprivation score for each LSOA. The life expectancy for each decile in the charts below is based on mortality data for the five years, 2003-2007[12]. The slope index of inequality is a single score which represents the gap in years of life expectancy between the best off and worst off within the local area, based on a statistical analysis of the relationship between life expectancy and deprivation scores across the whole area. Figure 7 shows the Croydon slope index of inequality using deciles for male and female life expectancy. As measured by the 2007 slope index of inequality the gap between the 10% of areas with the highest life expectancy and the 10% of areas with lowest life expectancy is 10.6 years for men and 5.7 years for women[13].

11 Linear regression was used to test the change in the gap between the most and least deprived quintile over time (P=0.14; regression coefficient=-1.1 (95% confidence interval: 2.5 to 0.4)).

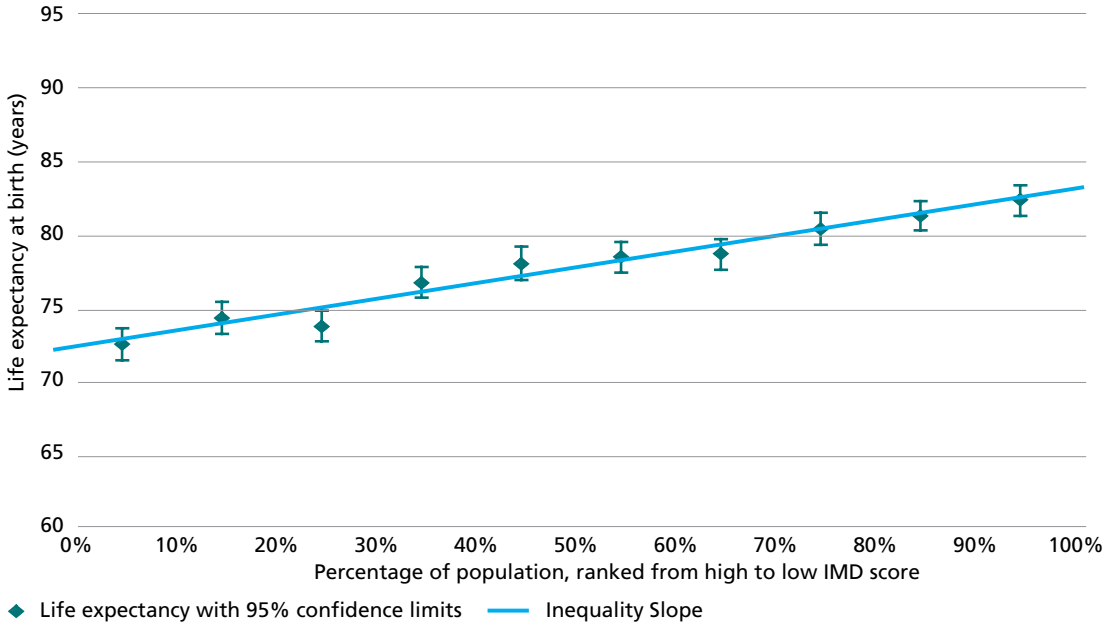
12 Data and analysis for 2004-08 will be available on the Association of Public Health Observatories website at the end of November 2009 www.apho.org.uk/resource/view.aspx?RID=75050

13 Slope index of inequality 2003-07 data Males = 10.6 years (95% confidence interval: 8.9 to 12.33); Females = 5.7 years (95% confidence interval: 3.4 to 8)

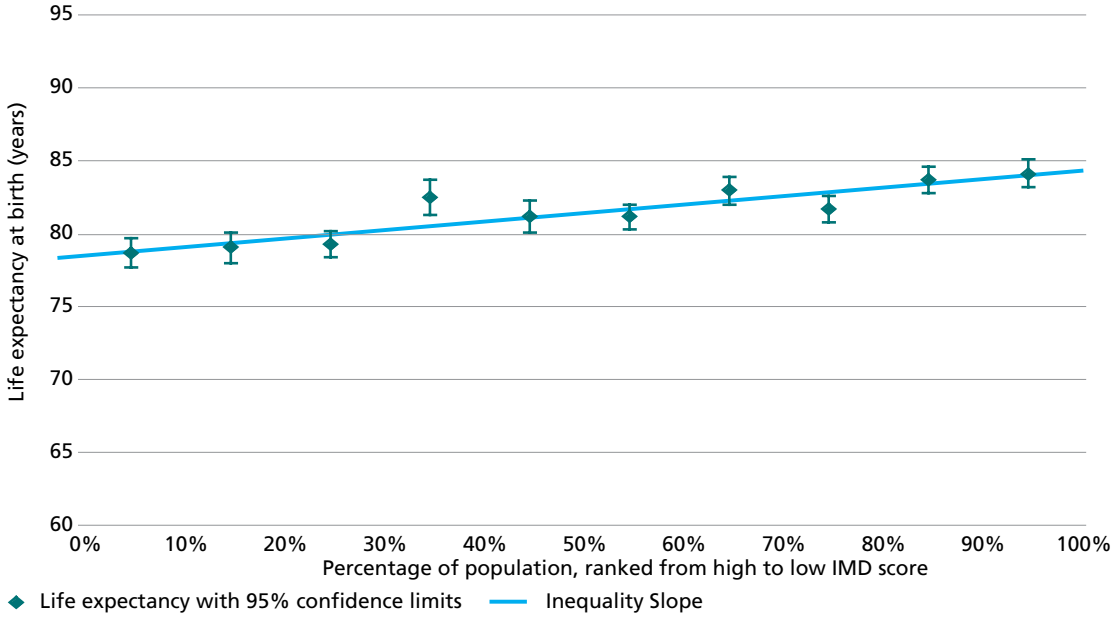
Data for five years have been aggregated to enable robust results to be provided, and to identify statistically significant differences between areas. When trend data are available, the five year moving averages will ensure greater stability, so the slope index of inequality will not fluctuate widely from year to year, purely through statistical variations. If a real substantial change is made in the slope index of inequality, it is likely this would be shown in five to ten years. Overall health outcomes tend not to respond rapidly to policy changes or interventions, so the slope index of inequality should only be expected to change slowly. The slope index of inequality can be used to track progress in narrowing inequalities but the Association of Public Health Observatories, who developed the indicator, has cautioned that it should not be used as a measure of performance.[14]

Figure 7: Croydon slope index of inequality using deciles for male and female life expectancy

Males, 2003-07 Slope Index of Inequality = 10.6 years (95% Confidence Interval: 8.9 to 12.3)



Females, 2003-07 Slope Index of Inequality = 5.7 years (95% Confidence Interval: 3.4 to 8.0)



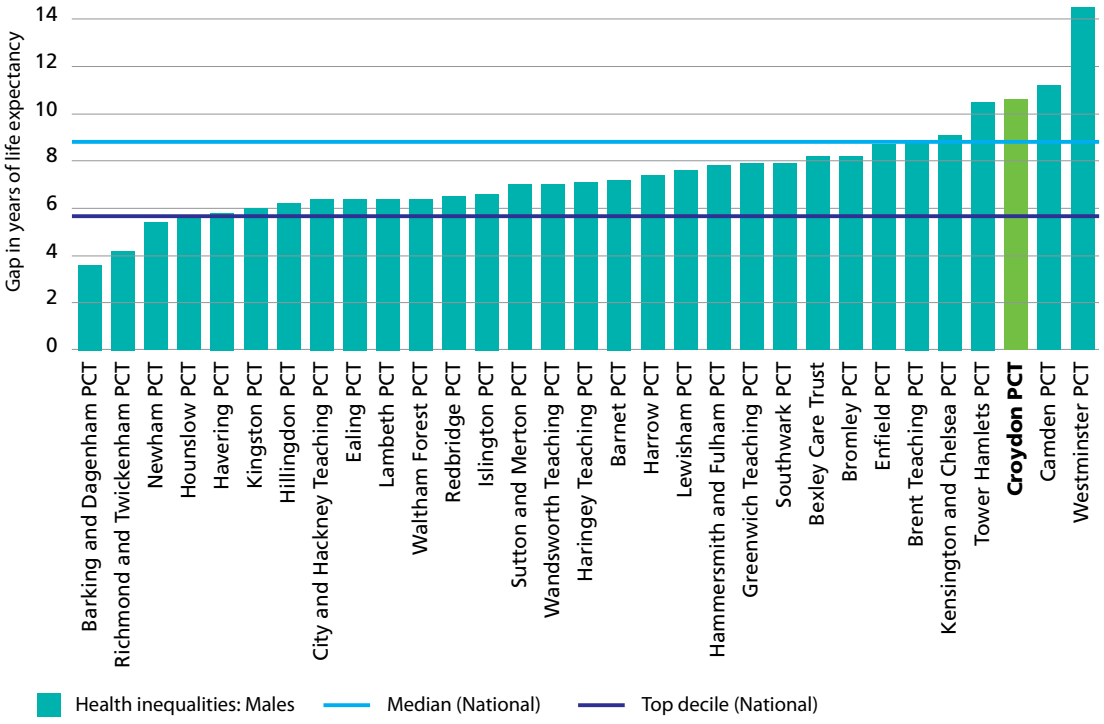
14 *Fryers, P., Baker, A., Fitzpatrick, J., & Jephson, D. World Class Commissioning assurance framework health inequalities indicator:* guide to interpretation. York: Association of Public Health Observatories. 2009.

	Males				Females			
PCT Decile of Deprivation	Life expectancy (years)	95% CI Lower	Upper	Popu-lation	Life expectancy (years)	95% CI Lower	Upper	Popu-lation
1	72.5	71.4	73.6	15,924	78.7	77.7	79.7	17,953
2	74.3	73.2	75.4	16,392	79.1	78.0	80.1	17,230
3	73.7	72.7	74.8	16,261	79.3	78.4	80.2	17,485
4	76.7	75.7	77.8	17,097	82.5	81.3	83.7	17,492
5	78.0	76.9	79.2	16,839	81.2	80.1	82.3	17,332
6	78.5	77.4	79.5	16,900	81.2	80.3	82.0	17,440
7	78.7	77.6	79.7	16,468	83.0	82.0	83.9	17,070
8	80.4	79.3	81.5	16,527	81.7	80.8	82.6	16,623
9	81.3	80.3	82.3	16,200	83.7	82.8	84.6	16,656
10	82.4	81.3	83.4	15,996	84.1	83.2	85.1	16,636

Note: Decile 1 is the most deprived decile. Population refers to the average of the mid-year population estimates for 2003-07.
Sources: ONS death registration data and mid-year population estimates & Department of Communities and Local Government, Indices of Deprivation 2007. Analysis carried out by LHO and EMPHO on behalf of APHO.

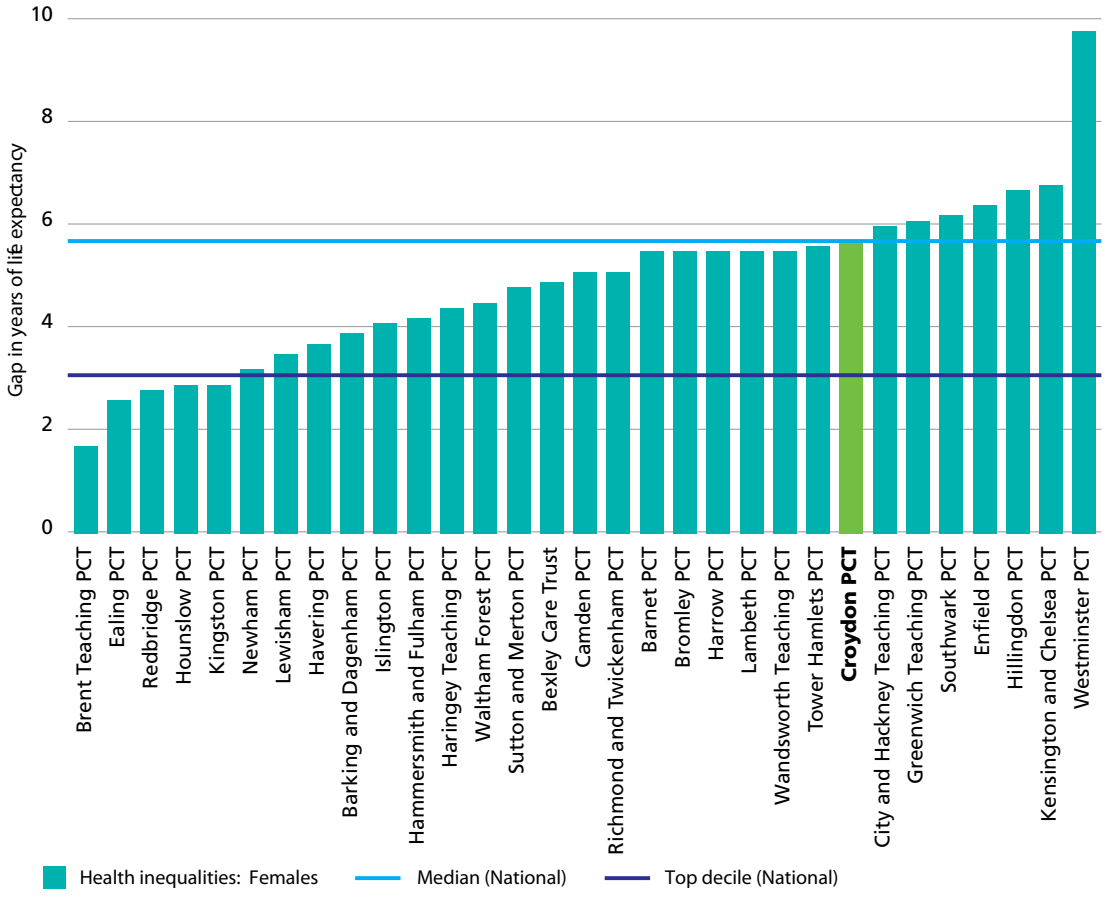
The slope index of inequality describes the extent of overall variation in life expectancy within the population without ascribing that variation to any cause. Boroughs like Croydon with a diverse range of communities, from very affluent to very deprived, will tend to have wide inequalities in health outcomes as well, and the slope index of inequality will reflect these underlying differences. Similarly, boroughs that have relatively uniform populations will tend to have smaller health inequalities and lower slope index of inequality scores. This includes affluent places like Richmond and Twickenham and also deprived boroughs like Newham (Figures 8 and 9). Croydon has a much more varied population in terms of range of deprivation, and this is reflected in a higher slope index of inequality.

Figure 8: Slope index of inequalities in male life expectancy by deprivation deciles: gap in years of life expectancy between most deprived and least deprived in the primary care trust (PCT), 2003-2007



Sources: Office for National Statistics death registration data and mid-year population estimates and Department of Communities and Local Government, indices of deprivation 2007.Analysis carried out by London Health Observatory and East Midlands Public Health Observatory on behalf of the Association of Public Health Observatories.

Figure 9: Slope index of inequalities in female life expectancy by deprivation deciles: gap in years of life expectancy between most deprived and least deprived in the primary care trust (PCT), 2003-2007



Sources: Office for National Statistics death registration data and mid-year population estimates and Department of Communities and Local Government, indices of deprivation 2007.[16]

Deaths from all causes

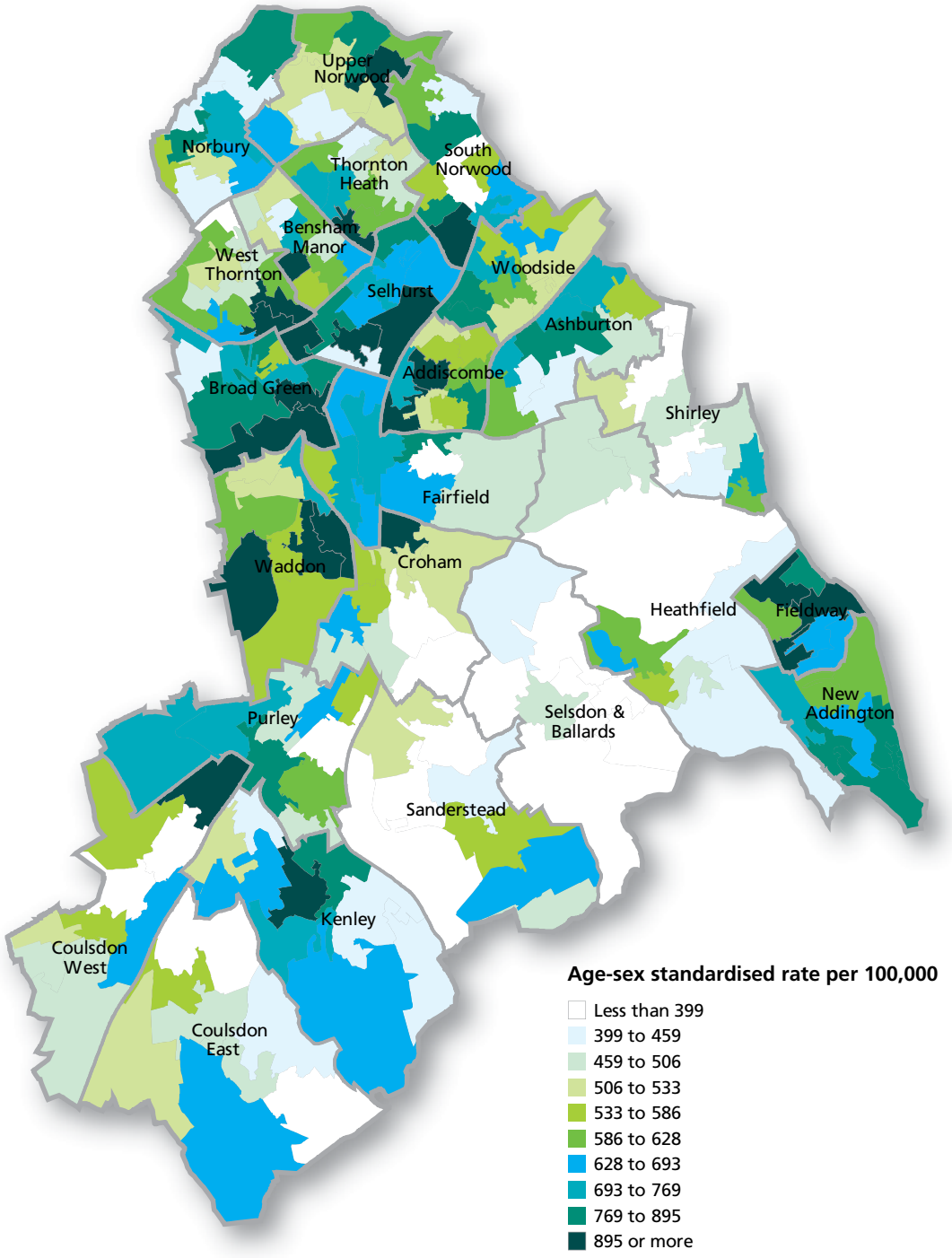
All cause mortality is a fundamental measure of the health status of a population. It represents the cumulative effect of the prevalence of risk factors, the prevalence and severity of disease and the effectiveness of interventions and treatments. Differences in levels of all cause mortality reflect health inequalities between different population groups, for example, between genders, ethnic groups or geographical areas: the lower the rate of all cause mortality the healthier the population.

All age all cause mortality is closely related to life expectancy and is based on the same source data. Figure 10 shows all cause mortality directly standardised per 100,000 persons. Standardisation is a technique allowing death rates to be compared across different populations.

There is a large gap in all age all cause mortality rates between more and less deprived parts of Croydon. Lower super output areas with the highest rates tend to be located in the north of the borough and in the borough's main social housing estates.

16 Analysis carried out by London Health Observatory and East Midlands Public Health Observatory on behalf of the Association of Public Health Observatories.

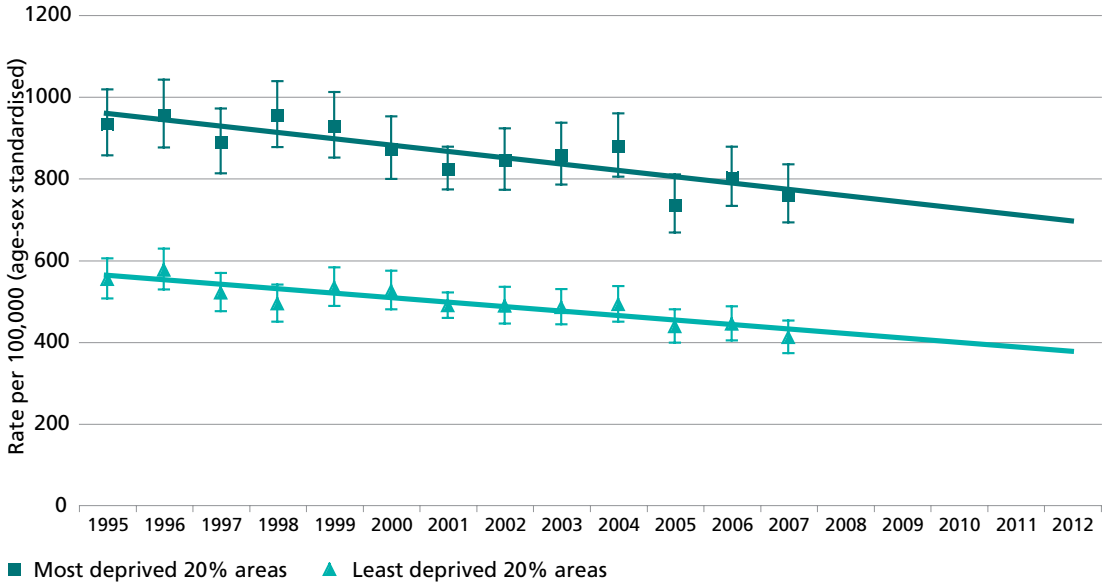
Figure 10: All age all cause mortality, Croydon lower super output areas, 2002-2007



Source: Office for National Statistics death registration data

All age all cause mortality rates are falling across the borough. The rates are falling at approximately the same pace in the least deprived areas as in the most deprived areas. The gap in all age all cause mortality has therefore not reduced significantly between 1995 and 2007. In 2007 the all age all cause mortality rate was 760.3 per 100,000 for the most deprived quintile and 410.5 per 100,000 for the least deprived quintile: a gap of 349.8 (95% confidence interval: 272.1 to 434.1) (Figure 11). In 1995 the gap was 380.9 (95% confidence interval: 290.2 to 478.7). Although this represents a reduction of the gap between 1995 and 2007 it is not a statistically significant change.

Figure 11: Deaths from all causes, all ages, rate per 100,000 by index of multiple deprivation quintile, Croydon lower super output areas, 1995-2007



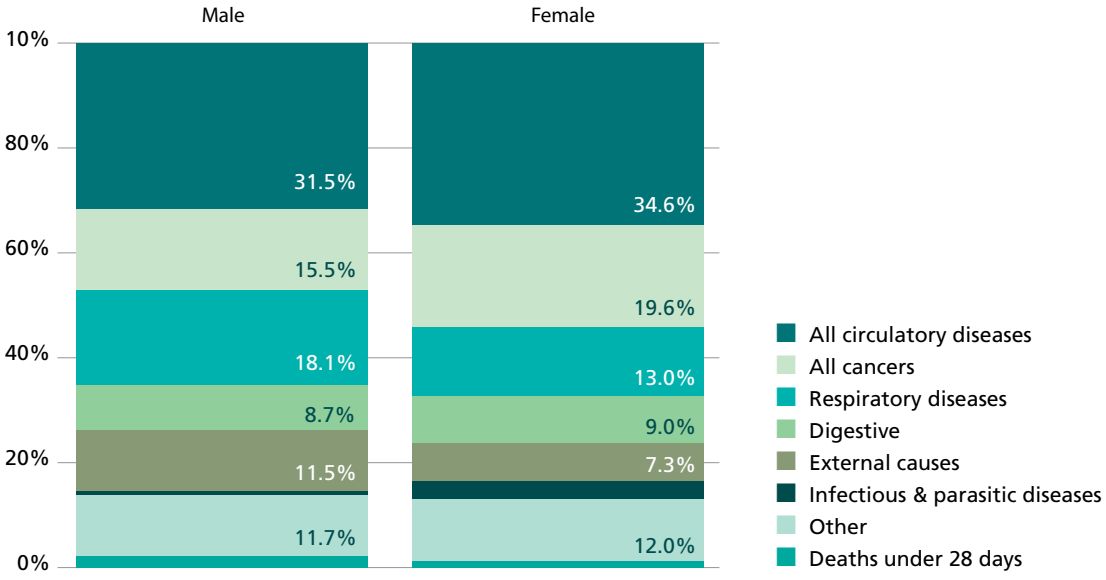
Source: Office for National Statistics death registration data

Excess deaths: a breakdown of the mortality gap

Excess deaths are the deaths from different causes that make up the gap between the most and least deprived quintiles in Croydon. These are the main causes of death driving health inequalities in Croydon (Figure 12).

Circulatory diseases, cancers and respiratory diseases cause the majority of excess deaths when comparing mortality between the most and least deprived quintiles in Croydon. Other causes of excess deaths include digestive disorders, accidents and suicide, infectious diseases and infant deaths. The three next sections examine in more detail variations in mortality from circulatory diseases, cancers and respiratory diseases.

Figure 12: Breakdown of the mortality gap between the most and least deprived quintiles by cause of death, Croydon



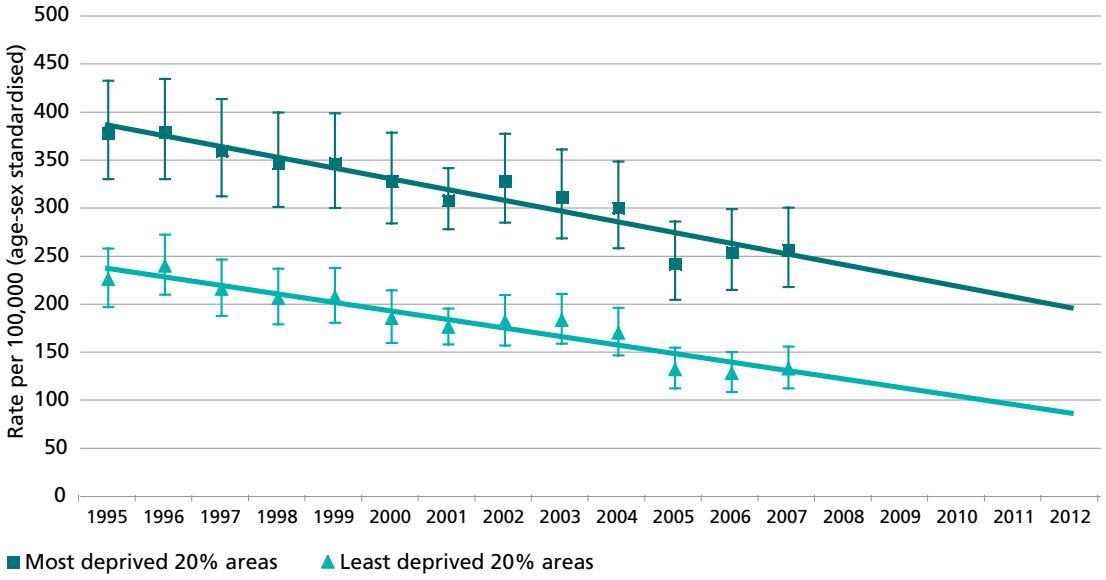
Source: London Health Observatory health inequalities intervention toolkit. Available at www.lho.org.uk/LHO_Topics/Analytic_Tools/

Circulatory diseases

Circulatory diseases include coronary heart disease, heart failure, stroke and a range of other related conditions. Deaths from circulatory diseases make up 31.5% of excess deaths in men and 34.6% of excess deaths in women when comparing mortality between the most and least deprived quintiles in Croydon.

Mortality from circulatory diseases is falling across the borough. The rate is falling at approximately the same pace in the most deprived areas as in the least deprived areas. The gap in mortality from circulatory diseases has therefore not reduced significantly between 1995 and 2007. In 2007 the mortality rate was 255.5 per 100,000 for the most deprived quintile and 131.8 per 100,000 for the least deprived quintile: a gap of 123.8 (95% confidence interval: 80.3 to 173.7) (Figure 13). In 1995 the gap was 152.9 (95% confidence interval: 96.8 to 215.9). Although this is a reduction of the gap it does not represent a statistically significant change.

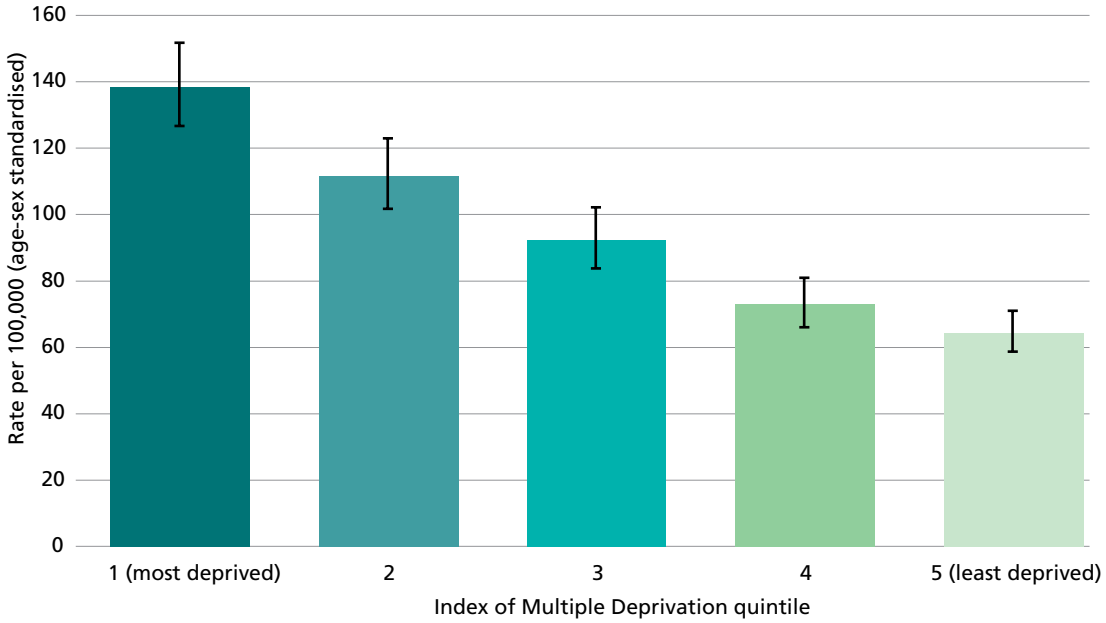
Figure 13: Deaths from circulatory diseases, all ages, rate per 100,000 by index of multiple deprivation quintile, Croydon lower super output areas, 1995-2007



Source: Office for National Statistics death registration data

One circulatory disease, coronary heart disease, is the single biggest cause of death in Croydon. It is significantly associated with deprivation and makes the biggest single contribution to the gap in life expectancy between the most and least deprived parts of the borough. Figure 14 shows that the death rate from coronary heart disease in the most deprived quintile of lower super output areas is double the rate of the least deprived quintile. The most deprived quintile has a coronary heart disease mortality rate of 138.5 deaths per 100,000 population (95% confidence interval: 126.4 to 151.6). The least deprived quintile has a rate of 64.4 deaths per 100,000 population (95% confidence interval: 58.5 to 70.8).

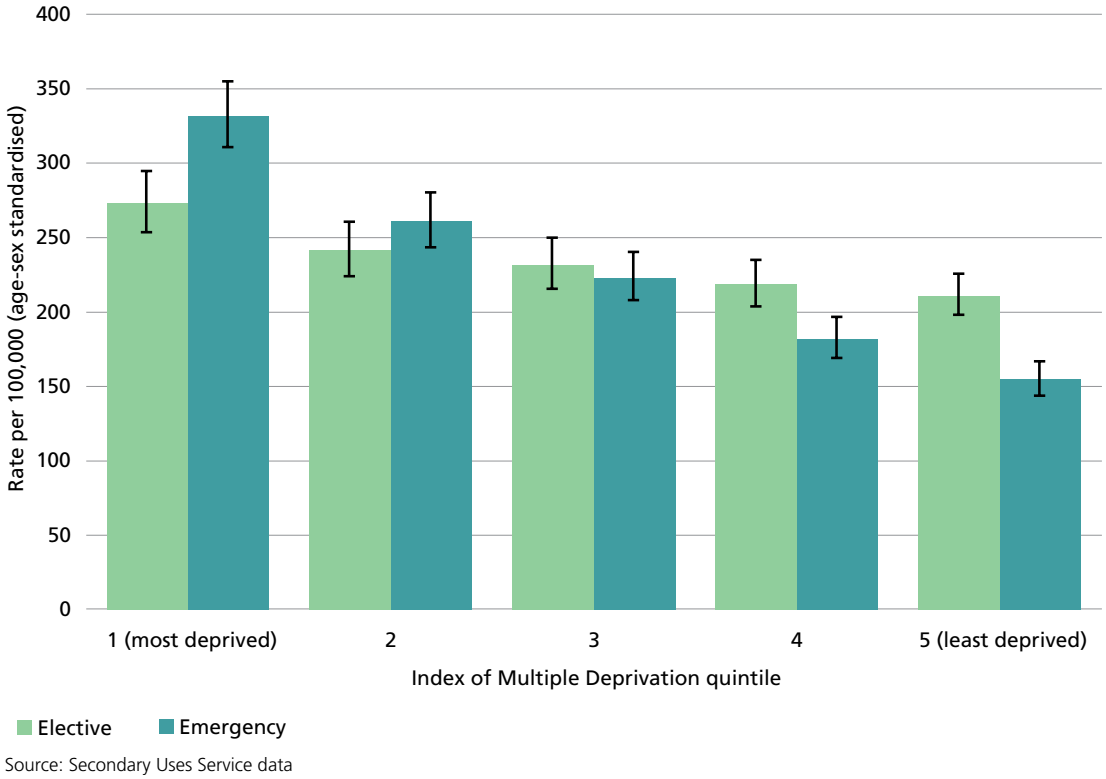
Figure 14: Deaths from coronary heart disease, all ages, rate per 100,000 by index of multiple deprivation quintile, Croydon lower super output areas, 1999-2007



Source: Office for National Statistics death registration data

Figure 15 shows that both elective and emergency hospital admissions for coronary heart disease are highest in the most deprived quintile. However, people living in the most deprived areas are more likely to be admitted as an emergency with coronary heart disease, whilst people living in the least deprived areas are more likely to be admitted for planned (elective) treatment. This may indicate more severe disease in areas of higher deprivation. It may also indicate that coronary heart disease is under diagnosed in people living in the most deprived areas.

Figure 15: Elective and emergency hospital admissions for coronary heart disease, all ages, rate per 100,000 by index of multiple deprivation, Croydon lower super output areas, 2004/05-2008/09



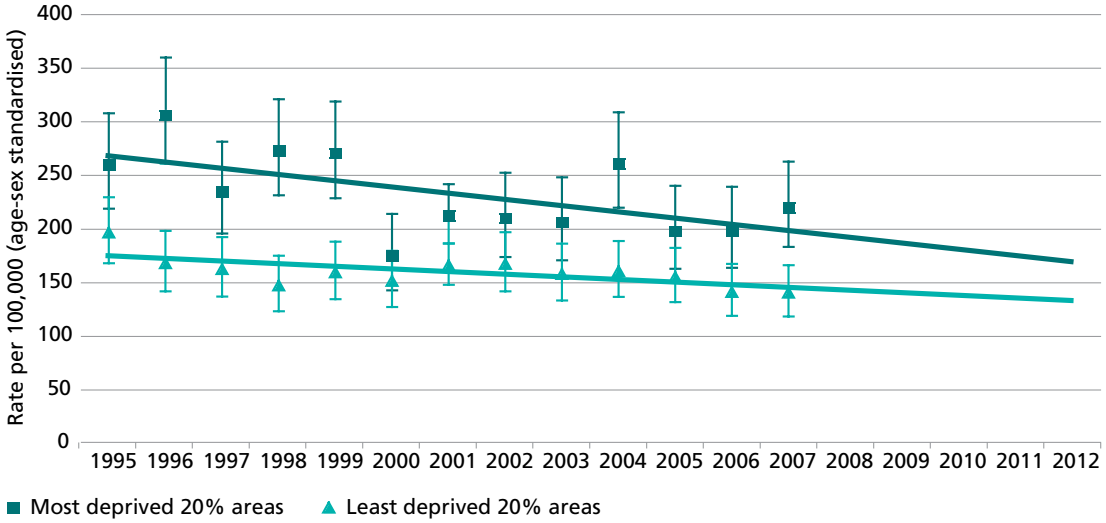
Source: Secondary Uses Service data

Cancers

This category of diseases includes lung cancer, breast cancer, prostate cancer, colorectal cancer, and cancers of the stomach and oesophagus. Deaths from cancers make up 15.5% of excess deaths in men and 19.6% of excess deaths in women when comparing mortality between the most and least deprived quintiles in Croydon.

Mortality from cancers is falling across the borough. The trend lines on the chart at Figure 16 indicate that the gap between the most and least deprived areas is narrowing. There is considerable variation in the mortality rate over time however, and the apparent trend is not statistically significant[18].

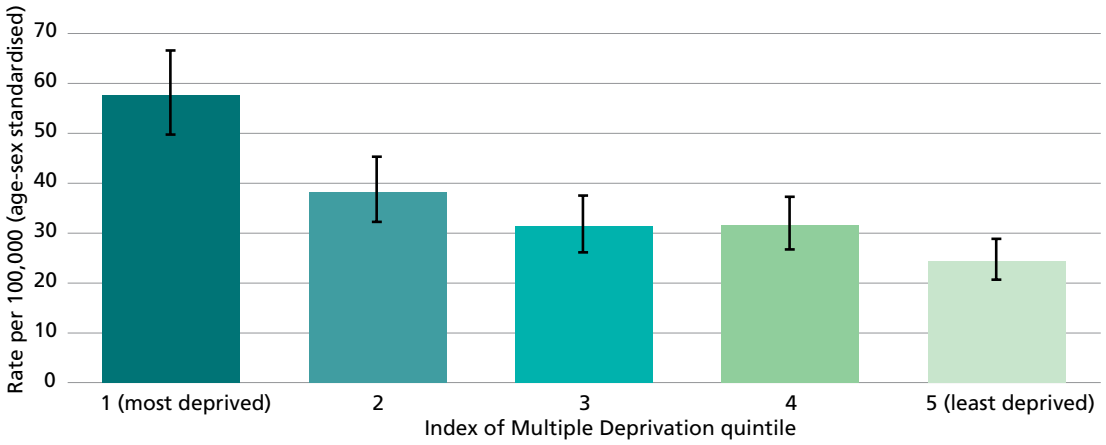
Figure 16: Deaths from cancers, all ages, rate per 100,000 by index of multiple deprivation quintile, Croydon lower super output areas, 1995-2007



Source: Office for National Statistics death registration data

Figure 17 shows that the most deprived quintile of lower super output areas in Croydon has double the death rate from cancers of the trachea, bronchus and lung than the least deprived quintile. The most deprived quintile has a death rate from these cancers of 57.5 per 100,000 population (95% confidence interval: 49.7 to 66.5). The least deprived quintile has a rate of 24.4 deaths per 100,000 population (95% confidence interval: 20.6 to 28.8).

Figure 17: Deaths from cancer of the trachea, bronchus and lung, all ages, rate per 100,000 by index of multiple deprivation quintile, Croydon lower super output areas, 2002-2007

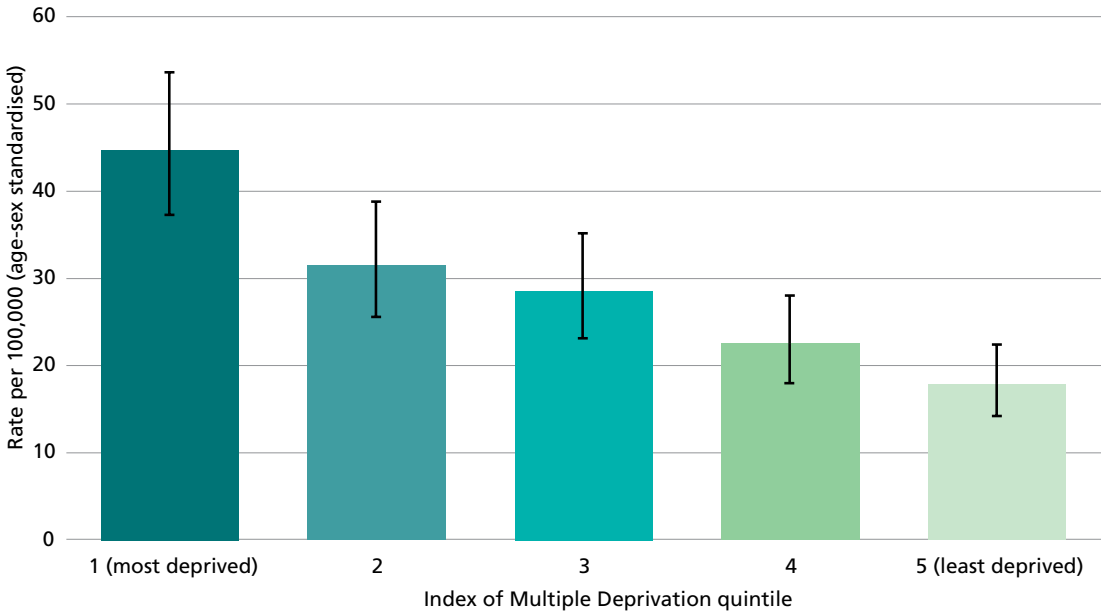


Source: Office for National Statistics death registration data

[18] Linear regression was used to test the change in the gap between the most and least deprived quintile over time (P=0.22; regression coefficient=-0.04 (95% confidence interval: -0.11 to 0.03)).

Emergency admissions to hospital for cancers of the trachea, bronchus and lung are highest in the most deprived areas of Croydon (Figure 18). In 2004-2009 the rate of emergency admission in the most deprived quintile was 44.7 per 100,000 population (95% confidence interval: 37.2 to 53.5). The rate in the least deprived quintile was 17.8 per 100,000 (95% confidence interval: 14.1 to 22.3). This may be due to higher prevalence of lung cancer in these areas which, given their higher smoking prevalence, is a likely explanation. It is also possible that people in the most deprived areas have a later diagnosis of lung cancer and therefore, a poorer prognosis.

Figure 18: Emergency admissions for cancer of the trachea, bronchus and lung, all ages, rate per 100,000 by index of multiple deprivation quintile, Croydon lower super output areas, 2004/05-2008/09



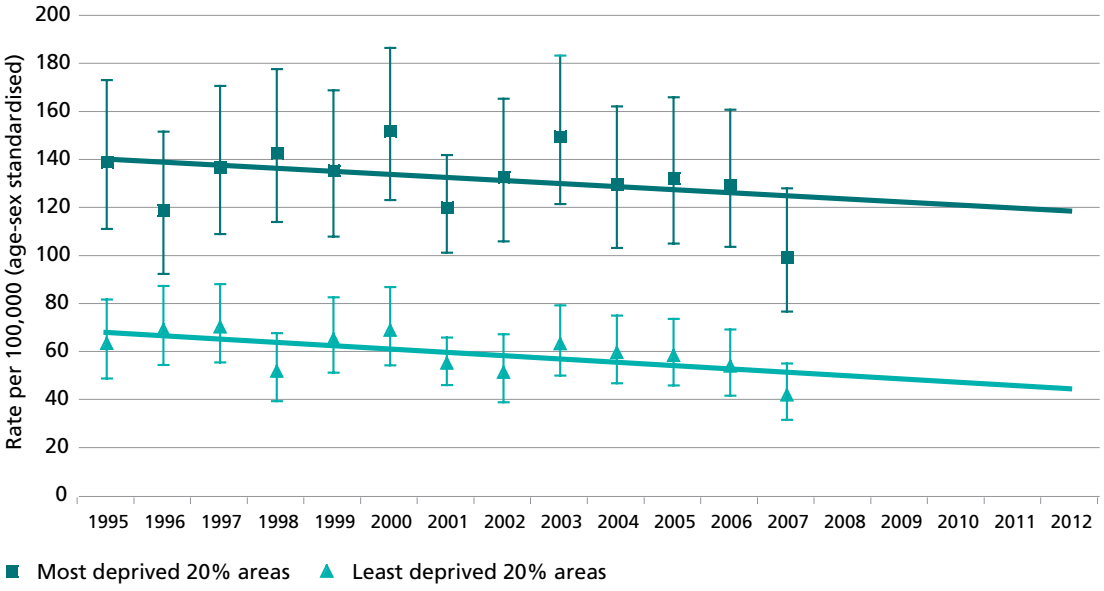
Source: Secondary Uses Service data

Respiratory diseases

Respiratory diseases include pneumonia, chronic obstructive pulmonary disease, asthma and related conditions. Deaths from respiratory diseases make up 18.1% of excess deaths in men and 13% of excess deaths in women when comparing mortality between the most and least deprived quintiles in Croydon.

Mortality from respiratory diseases is falling across the borough. The rate appears to be falling at approximately the same pace in the most deprived areas as in the least deprived areas (Figure 19). There is considerable variation in the mortality rate over time however which it makes it difficult to draw any conclusions about underlying trends.

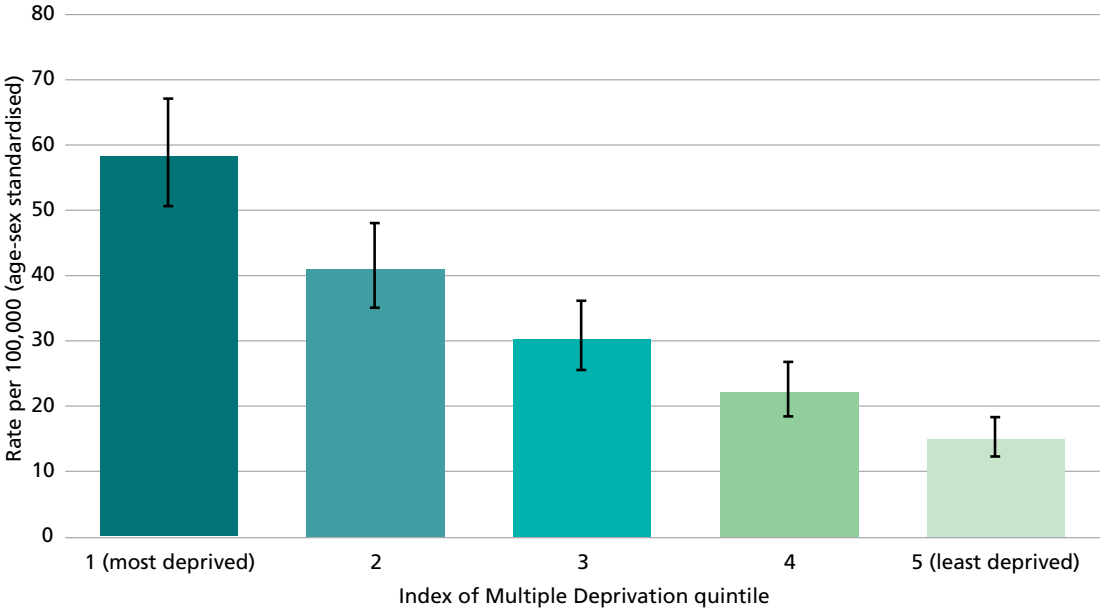
Figure 19: Deaths from respiratory diseases, all ages, rate per 100,000 by index of multiple deprivation quintile, long term trend, Croydon lower super output areas, 1995-2007



Source: Office for National Statistics death registration data

Chronic obstructive pulmonary disease makes a major contribution to excess deaths in deprived areas. This is especially the case amongst men. Figure 20 shows that the death rate from chronic obstructive pulmonary disease is nearly three times as high in the most deprived quintile of lower super output areas compared to the least deprived quintile. The most deprived quintile has a death rate from chronic obstructive pulmonary disease of 58.3 per 100,000 population (95% confidence interval: 50.5 to 67.0). The death rate in the least deprived quintile is 14.9 per 100,000 population (95% confidence interval: 12.2 to 18.2).

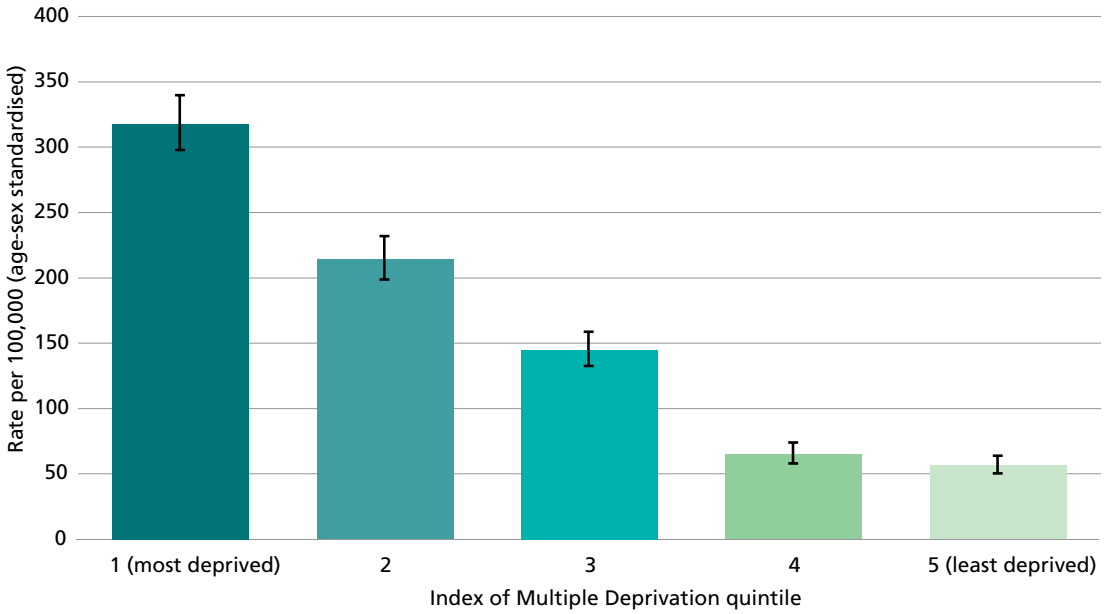
Figure 20: Deaths from chronic obstructive pulmonary disease, all ages, rate per 100,000 by index of multiple deprivation quintile, Croydon lower super output areas, 2002-2007



Source: Office for National Statistics death registration data

Hospital emergency admissions for chronic obstructive pulmonary disease follow a clear gradient with the highest rates in the most deprived areas (Figure 21). The chronic obstructive pulmonary disease emergency admission rate for the most deprived quintile of lower super output areas is over five times higher than for the least deprived quintile. The emergency admission rate is 317.7 per 100,000 population (95% confidence interval: 297.4 to 339.3) in the most deprived quintile. The rate is 56.2 per 100,000 population (95% confidence interval: 49.7 to 63.4) in the least deprived quintile.

Figure 21: Emergency hospital admissions for chronic obstructive pulmonary disease, all ages, rate per 100,000, Croydon lower super output areas, 2004/05-2008/09



Source: Secondary Uses Service data

What would make the most difference in narrowing the gap?

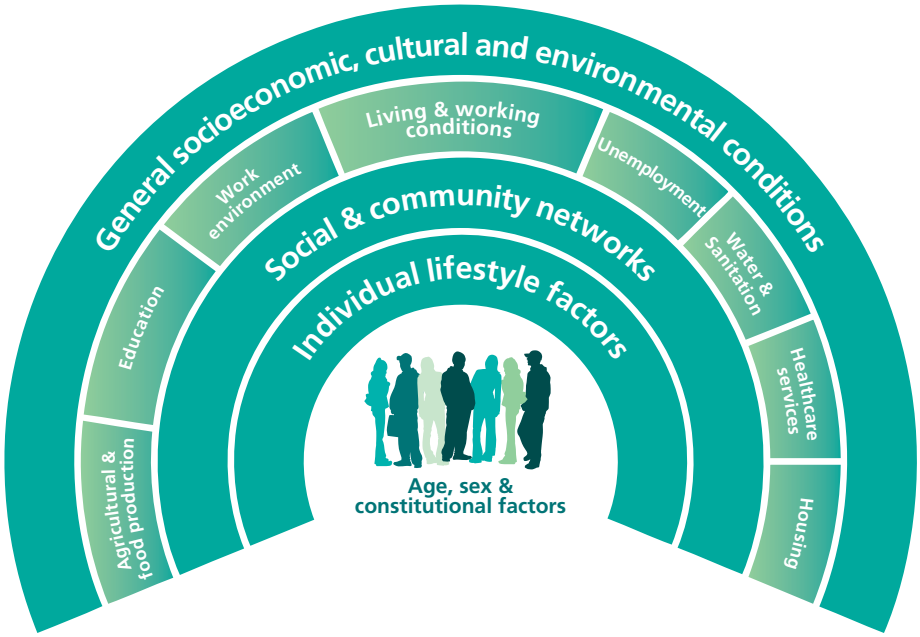
Social determinants of health

There are a wide range of factors that determine health and which can generate health inequalities. These include individual lifestyles, but also include a range of broader determinants such as family and social support, living and working conditions, educational attainment and economic prosperity (Figure 22).

The evidence base for the effectiveness of interventions to address social determinants on health inequalities is lacking. This does not mean that interventions which focus on social determinants are ineffective, just that there is little robust evidence available to demonstrate that they are effective. However evidence from systematic reviews shows that certain categories of intervention may impact positively on health inequalities, in particular interventions in the fields of housing and the workplace.[19]

19 Bambra, C., Gibson, M., Sowden, A., Wright, K., Whitehead, M. & Petticrew, M. Tackling the wider social determinants of health and health inequalities: evidence from systematic reviews. *Journal of Epidemiology & Community Health*. 2009. Published online doi:10.1136/jech.2008.082743.

Figure 22: Factors which impact on health



Source: adapted from Dahlgren & Whitehead (1991)[20]

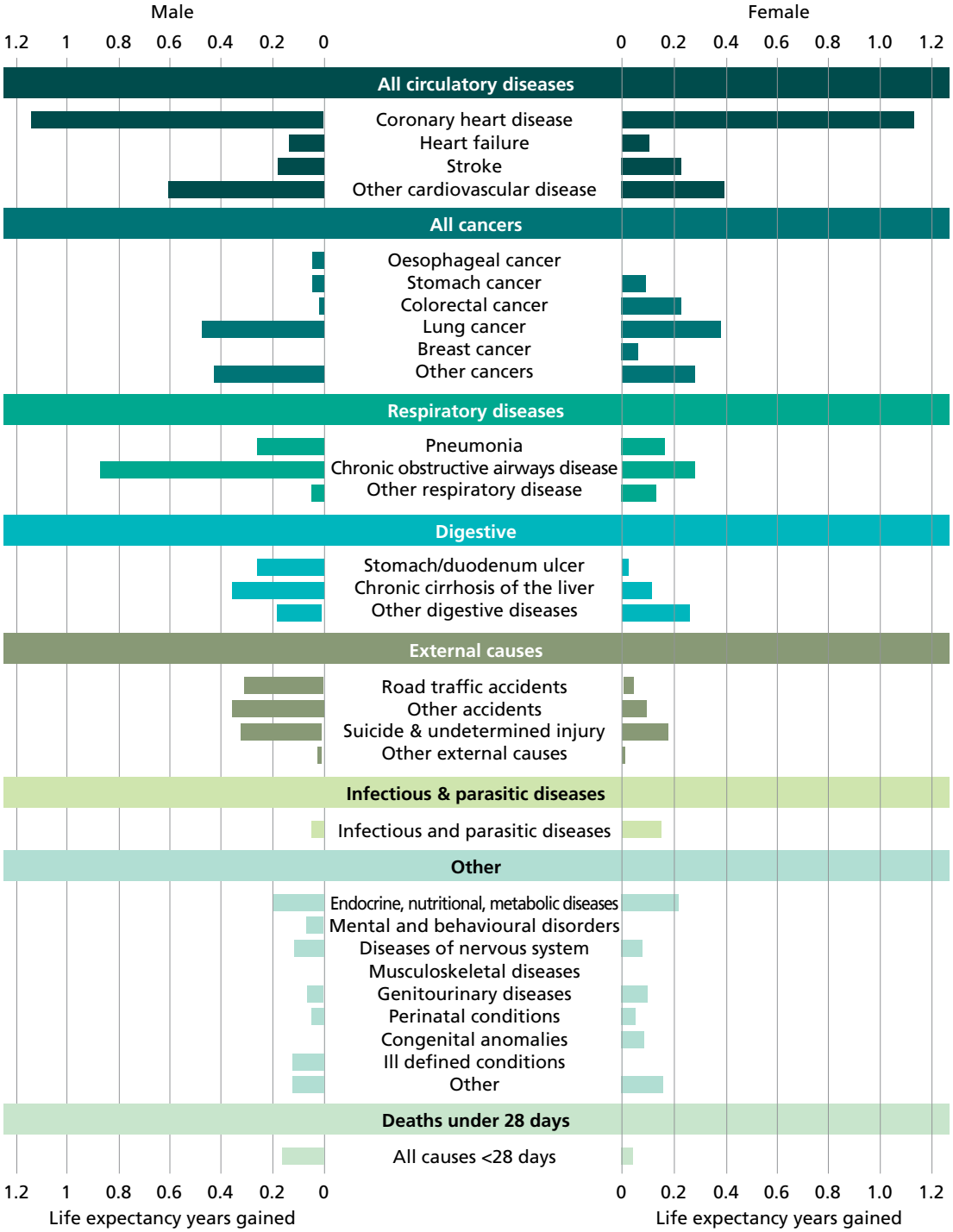
Modelling the effects of interventions

The Association of Public Health Observatories and Department of Health have developed a set of health inequalities intervention tools to support primary care trusts and local authorities tackle health inequalities. The tools are designed to support evidence based local service planning and commissioning, including joint strategic needs assessments. They can be found on the London Health Observatory website at www.lho.org.uk/LHO_Topics/Analytic_Tools.

Figure 23 shows the increases in life expectancy in years that would occur in the most deprived quintile if it had the same mortality rate as the least deprived quintile for each cause of death separately. The chart shows those diseases where the most deprived quintile has a greater mortality rate than the least deprived, in other words where there is excess mortality. The chart only shows diseases where there is excess mortality in the most deprived quintile of the local authority in relation to the least deprived. If there is no excess mortality, no bar is shown on the chart.

20 Dahlgren, G. & Whitehead, M. *Policies and strategies to promote social equity in health*. Stockholm: Institute for Futures Studies. 1991.

Figure 23: Life expectancy years gained if the most deprived fifth had the same mortality rate as the least deprived fifth for each cause of death, Croydon



Source: London Health Observatory health inequalities intervention toolkit

The health inequalities intervention toolkit also allows NHS primary care trusts and local authorities to estimate the effect on their life expectancy rates if certain evidence based interventions are increased. The tool allows the user to model the effect of interventions to increase the number of smoking quitters, reduce the number of infant deaths, and reduce the number of people with undiagnosed or uncontrolled hypertension. The main lesson learned from such modelling is that interventions need to be of sufficient scale to make a measurable difference to life expectancy overall or on the gap between the most and least deprived areas. For example, over 4,000 smoking quits would be needed to increase life expectancy by 0.1 years in the most deprived areas in Croydon. For this reason work to reduce smoking prevalence in deprived areas, for example through prevention interventions, should sit alongside efforts to meet local quit targets.

Reducing smoking prevalence

Smoking is a major contributory factor for circulatory diseases, cancers and respiratory diseases. Given that these are significant causes of the excess mortality between the most and least deprived areas, reducing smoking prevalence should be a central element of a strategy to reduce health inequalities. Public health guidance from the National Institute for Health and Clinical Excellence (NICE) recommends the targeting of NHS stop smoking services to deprived communities.[21]

Preventing and treating circulatory diseases

Circulatory diseases are influenced by a variety of social determinants such as food production, an environment that encourages physical activity and access to education. They are also influenced by behavioural factors such as diet, physical activity and smoking.

In more than 90% of cases, the risk of a first heart attack is related to nine potentially modifiable risk factors.[22] These include smoking, poor diet, insufficient physical activity and alcohol consumption. They also include high blood pressure, high blood cholesterol, obesity and overweight, diabetes, and psychosocial stress linked to people's ability to influence the circumstances in which they live and work. Reducing the risks by, for example, reducing cholesterol or blood pressure levels, stopping smoking and improving dietary intake can rapidly reduce the likelihood of developing circulatory diseases.

The National Institute for Health and Clinical Excellence recommend smoking cessation and identifying people at risk of cardiovascular disease in deprived areas and prescribing them statins as two cost effective interventions.[23] However, they also point out that health inequalities are so deeply entrenched that providing better health services can only be one element of a broader strategy to address variations in health outcomes.

The Department of Health released proposals for vascular risk assessment in 2008.[24] The evidence cited in the proposals suggests that for those who stop smoking, vascular risk is reduced by 35%; for those who take recommended levels of physical activity, risk is reduced by 14%; weight management may reduce risk by 36%. National Institute for Health and Clinical Excellence guidance for population level cardiovascular disease prevention is due to be released in March 2010. Recommendations for identifying and targeting high risk populations will be outlined in this guidance. The Department of Health has also announced the start of *NHS health checks* in April 2009. The programme will be aimed at people aged between 40 to 74 years in England, who will be invited for a free health check to identify their risk of diseases such as coronary heart disease, stroke, diabetes and kidney disease.

Interventions which rely on people deciding to change their behaviour are likely to vary in effectiveness. For example, people who are disadvantaged might find it more difficult to change than affluent people. They may also find it more difficult to access services. As a result, some interventions that focus solely on changing behaviour may inadvertently increase health inequalities.

21 *National Institute for Health and Clinical Excellence. Smoking cessation services in primary care, pharmacies, local authorities and workplaces, particularly for manual working groups, pregnant women and hard to reach communities.* NICE public health guidance 10. London: National Institute for Clinical Excellence. 2005.

22 Yusuf, S., Hawken, S., Ôunpuu, S., Dans, T., Avezum, A., Lanas, F., McQueen, M., Budaj, A., Pais, P., Varigos, J., Lisheng, L. Effect of potentially modifiable risk factors associated with myocardial infarction in 52 countries (the INTERHEART study): case-control study. Lancet. 2004; 364; 937-952.

23 National Institute for Health and Clinical Excellence. Reducing the rate of premature deaths from cardiovascular disease and other smoking-related diseases: finding and supporting those most at risk and improving access to services. NICE public health guidance 15. London: National Institute for Clinical Excellence. 2008.

24 Department of Health. Putting prevention first - vascular checks: risk assessment and management. London: Department of Health. 2008.

Preventing and treating respiratory diseases

Stopping people starting smoking and helping smokers quit are key elements in the prevention of chronic obstructive pulmonary disease (COPD) and other respiratory diseases. It will also help reduce the severity and exacerbation of the disease once established. Other measures include flu and pneumococcal vaccination. Access to an *expert patient* or similar self management programme can benefit individuals with chronic obstructive pulmonary disease and other respiratory diseases.

Preventing and treating cancers

Preventing and treating cancers would make a major contribution to narrowing the gap in mortality between the most and least deprived areas in Croydon. Stopping people starting smoking and helping smokers quit are key elements in the prevention of lung cancer as well as in a number of other cancers. Screening, early detection and early treatment also play a role in reducing deaths from some cancers, including breast and cervical cancer.

What is being done to address health inequalities in Croydon?

Strategy and service development

Croydon's joint health improvement plan *Improving health and wellbeing: our plan for a healthy Croydon 2008-11*. It sets out 7 priorities including:

- identify and narrow unfair differences in health between different parts of the borough and different groups of people

In order to deliver this priority the plan sets out key actions relating to social determinants of health including household income, employment, educational achievement and skills, early years support, and access to public services.

Reducing health inequalities as measured by the index of multiple deprivation is one of ten priority outcomes for NHS Croydon. In the *Commissioning Strategy Plan 2009-14* NHS Croydon commits to 'focus on the areas of greatest potential health gain: children & young people, smoking, and on key determinants of health improvement and inequalities'.

There are a number of targets in Croydon's local area agreement with central government which can be expected to impact on health inequalities.[25] These include targets addressing lifestyle factors such as smoking, childhood obesity and adult participation in sport; and factors which address the broader determinants of health such as early access to maternity services, increasing the number of young people from low income backgrounds progressing to higher education, and increasing the take up of formal child care by low income families.

NHS Croydon is proposing to establish six networks of health centre developments as set out in the *Primary and Community Strategy*. These new service models, including one GP led health centre, will serve population clusters of 50,000 to 70,000 residents. The design of each service model will reflect the needs of the population cluster based on detailed portraits of health need supported by health impact assessment. The development of a new model of primary care offers the opportunity to build in measures to address health inequalities.

25 www.croydon.gov.uk/contents/departments/democracy/pdf/croydonlaa.pdf

Smoking reduction

The NHS Croydon *stop smoking service* is a treatment programme operating at three levels. Level 1 entails provision of information about smoking and health and services available to help smokers to quit. In Croydon, level 1 training has been mandatory for all front line health services staff since April 2008. Key groups of council front line staff have also started training to level 1. Level 2 involves the provision of one to one support and advice by trained community stop smoking advisors. Following increased investment in the stop smoking service from November 2007, there are now five specialist stop smoking advisers in the service who provide level 2 advice. There are also twenty five general practices and around fifty pharmacies providing a level 2 service. Other level 2 provision includes new contracted workplace and community services from April 2009; *Croydon Walk In Centre*; neighbourhood clinics; and a service for pregnant women and young families. Level 3 provision includes specialist intensive support for smokers by the specialist smokers' clinic. All of the specialist advisers in the team are trained to level 3 and can run stop smoking support groups. Since early 2008 stop smoking groups have been set up as need has been identified around the borough.

Clients from New Addington and Fieldway, two of the most deprived wards in Croydon, only made up 11-13% of the service's clients over the last four years. Adult smoking prevalence in these areas is 35 to 40% according to GP data. Croydon's most dependent smokers, in terms of numbers of cigarettes smoked each day, also live in these areas. The service's quit rate is highest in Coulsdon and Shirley, areas with relatively low smoking prevalence.

Croydon established a tobacco control alliance in March 2008. This is accountable to the local strategic partnership through Healthy Croydon. It is responsible for delivery of Croydon's *tobacco control strategy*. The council's trading standards team are working closely with the police and HM Revenue and Customs to prevent sales of counterfeit and smuggled cigarettes. Work is also underway to develop local intelligence on niche and smokeless tobacco products, including shisha, chewing tobacco and electronic cigarettes. There is a rolling programme which identifies illegal sales of tobacco to under 16 year olds.

Circulatory diseases prevention and treatment

Services and projects to encourage and support people to be more physically active are delivered by a range of organisations including the council, Proactive South London (through the schools sports partnerships), as well as by the voluntary sector. They include the borough's sports and leisure facilities, parks and green spaces. The council also promotes active travel planning for schools and businesses. The council, through its place shaping role, facilitates walking and cycling through the planning and design of the built environment. Croydon's independent and third sectors also provide a wide range of services which aim to promote physical activity and healthy eating.

Weight management services include *Boost Croydon*, commissioned by NHS Croydon from MyTime Active. The programme has two components: a prevention programme, based in children's centres, for children aged 0-4, and a holistic weight management service for children aged 4-13.

In 2007 NHS Croydon began a staged approach towards vascular risk assessment through Local Enhanced Services (LES). Since 2007 the LES has provided incentives for GP practices to set up registers identifying people at high cardiovascular disease risk. Payment was for register identification, not subsequent risk management. The Local Enhanced Services agreement has been revised for 2009-10 in view of the forthcoming launch of vascular risk assessment by the Department of Health. Vascular risk assessment will target the 40-74 year old age group. Risk assessment should now incorporate a face to face discussion of risk, and appropriate onward referral for lifestyle services to reduce risk where necessary. It also incorporates body mass index (BMI) recordings. There are incentives to target men, people from ethnic minorities and patients with identified mental health problems or learning disabilities.

Targets in the *Quality and outcomes framework* for primary care include creating a coronary heart disease register, diagnosing and treating hypertension and hypercholesterolaemia, and documenting smoking status. A target for referrals to smoking cessation services has been recently introduced.

Cancer prevention and treatment

NHS Croydon is working to improve cancer outcomes through better access to screening services, including improved coverage for women aged 53-64. This includes establishing advice, guidance and new pathways for primary care practitioners to ensure optimum referral to screening programmes and appropriate advice and guidance for patients. Advocacy and patient support services have been commissioned targeting black and minority ethnic communities and other groups who have significantly lower uptake of screening and treatment programmes.

Respiratory diseases

A pulmonary rehabilitation education programme has been commissioned by NHS Croydon. An agreed care pathway has existed since 2006. Local guidance based on National Institute for Health and Clinical Excellence guidance has been in place since 2005. Patients in Croydon have access to an admission avoidance scheme and early discharge scheme via the community intermediate care service, which is a generic service for all patients with long term conditions. Long term oxygen therapy is provided by both community and hospital services and there is a limited register of patients in receipt of oxygen. There are no specific palliative care arrangements in place for chronic obstructive pulmonary disease patients.

Engaging communities

The National Institute for Health and Clinical Excellence recommends that individuals from the local community should be recruited to plan, design and deliver health promotion activities and to help address the wider social determinants of health.[26] NHS Croydon has made up to £500,000 available each year to support community and voluntary groups improve health and address health inequalities. The funding is allocated annually through the Healthy Croydon Partnership. *Croydon's health champions* programme is funded through the health inequalities budget and Department of Health Communities for Health funding. The programme has provided accredited training in community leadership for 45 individuals to champion health in their own family and community networks.

Since 1998 Croydon Council and NHS Croydon have jointly invested nearly £500,000 a year in projects to tackle the broader determinants of health through the *think tank* programme. The programme includes welfare rights advice, home safety and maintenance, and family support. Much of this work has now been mainstreamed into core business activity.

The Well London partnership is working in the Handcroft Road area of Broad Green, one of the most deprived areas in London. A detailed picture of the needs of the community has been put together using a range of data sources and community engagement activities. Well London is developing a series of projects and interventions with the community to improve physical health or mental wellbeing under five key themes: culture and tradition; healthy eating; mental health and wellbeing; open spaces; physical activity.

26 National Institute for Clinical Excellence. Community engagement to improve health. NICE public health guidance 9. London: National Institute for Clinical Excellence. 2008.