Health and Wellbeing in Glasgow and the GoWell Areas – deprivation based analyses

One of two complementary, quantitative analysis based reports from the GoWell ecological monitoring group

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GoWell is a collaborative partnership between the Glasgow Centre for Population Health, the University of Glasgow and the MRC Social and Public Health Sciences Unit, sponsored by Glasgow Housing Association, the Scottish Government, NHS Health Scotland and NHS Greater Glasgow & Clyde.

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Background and aims

GoWell is a research and learning programme that aims to investigate the impact of investment in housing, regeneration and neighbourhood renewal on the health and wellbeing of individuals, families and communities in Glasgow over the next ten years.

The remit of the ecological team is to assist the overall GoWell project to understand developments in the 14 study areas by placing them in the context of wider trends and changes across the city of Glasgow.

With that in mind, and specifically in relation to the quantitative element of the group's analyses, four specific aims were developed:

1. To better understand patterns and trends in health and wellbeing-related factors across the city of Glasgow, in particular in relation to different socio-economic groupings.
2. Within the above, to clarify where the GoWell areas sit in the overall socio-economic spectrum of the city.
3. To profile the health status of the GoWell areas, and more generally that of areas of social housing (including areas of Glasgow Housing Association (GHA) housing) in the city.
4. To profile the health and wellbeing of residents of particular *housing types* in the city.

Aims three and four are addressed within an accompanying report by Sophie Turner, *Health and Wellbeing in GoWell and Social Housing Areas in Glasgow*[1].

This report addresses the first two aims listed above. Specifically, it seeks to answer the following questions, which are in effect the contents of the report:

1. What do we already know of general trends in health and health-related factors in Glasgow in recent decades?

2. What do more recent trends by more specific, narrowly defined, deprivation groupings show us?
3. How deprived are the GoWell areas? And where precisely do they fit within the pattern of deprivation seen across the city?
4. Which other areas of Glasgow are similar to GoWell areas in terms of their levels of deprivation (and, by association, health status)?

Health and wellbeing in Glasgow

There is no lack of data sources on which to draw to describe health and wellbeing in Glasgow. Two sets of detailed community (small area) profiles covering Glasgow neighbourhoods have been produced in the last four years[2, 3], while the *Let Glasgow Flourish (LGF)* report[4] – published by the Glasgow Centre for Population Health (GCPH) in 2006 – presented over 300 different indicators of health and health-related factors for the Glasgow and West of Scotland area. A summary of the main findings of *LGF* has been published separately as part of GCPH's 'Findings' series of Briefing Papers[5]. The findings are re-visited here briefly, as important background to the analyses contained within this report.

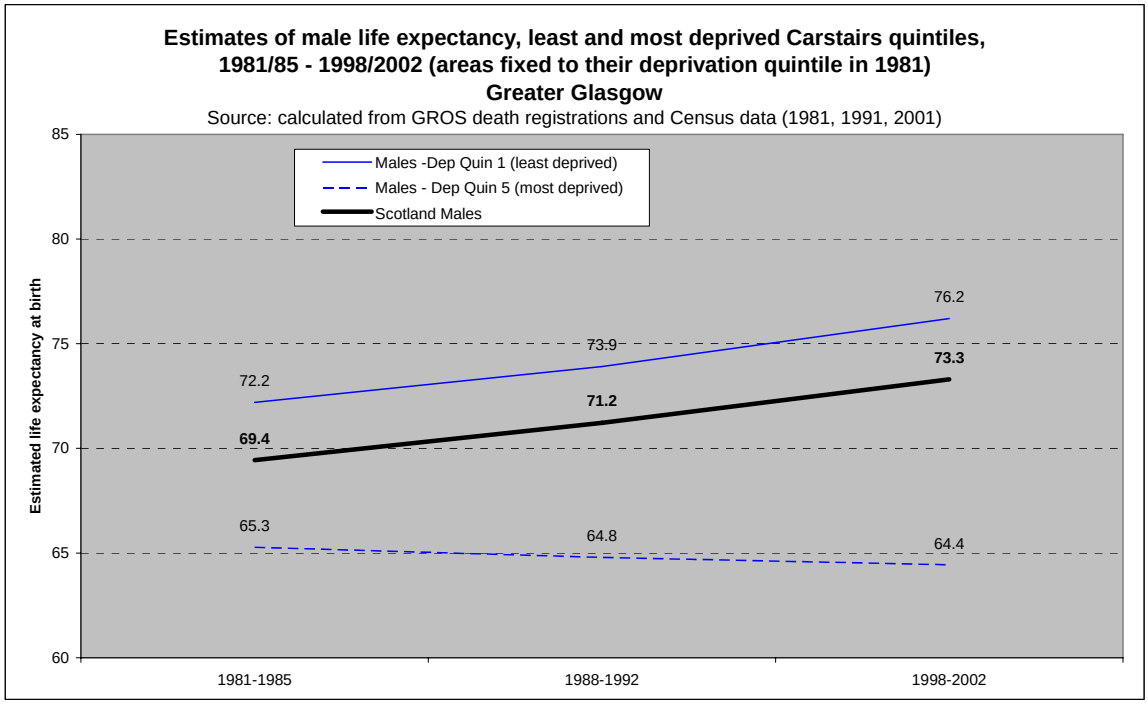
LGF highlighted that Glasgow is a city that has undergone a dramatic transformation in recent decades. As late as the 1970s, Glasgow was still an industrial and manufacturing city. The economic depression of that period destroyed many of these jobs and it has taken time for the city's economy to recover. During recovery, the social class and employment profile of the city's population changed significantly. Glasgow is now a predominantly 'middle class' city with a strong emphasis on service industries.

LGF captured the health and social trends that emerged from this transformation. Some indicators showed improvement (e.g. overall life expectancy and death rates of major diseases like heart disease and cancer) but others have deteriorated. For example:

- inequalities between the most advantaged and least advantaged areas have resisted interventions and in many cases become worse;
- high levels of worklessness persist, caused in no small measure by high levels of invalidity;
- there are emerging epidemics of obesity, alcohol-related harm, health problems related to drug addiction, some mental health problems and sexually transmitted infections.

The issue of widening inequalities is best summarised by Figure 1 below, showing the clearly widening gap in life expectancy between those living in the least and most deprived areas of Greater Glasgow[i] at the start of the 1980s. Note that the Figure presented shows data for males; however, the overall picture for females is similar, although inequalities are narrower overall.

Figure 1



This Figure shows that in contrast to the least deprived quintile of the population – and indeed to the country as a whole - male life expectancy in the *most* deprived quintile did not improve over the 20 year period. There is an argument to be made, therefore, that in health terms these areas are effectively being 'left behind'.

It is reasonable to assume that the residents of the majority of the GoWell study areas fall into this 'most deprived' section of the Greater Glasgow population. However, due to the methodology employed to define the population groupings used in this analysis, it is

[i] This relates to the boundaries of the NHS Greater Glasgow health board prior to its expansion in April 2006 to include the Clyde region.

difficult to absolutely confirm this. Therefore, for the purposes of the ecological monitoring of the GoWell project, we require a more specific set of analyses to be carried out, not only with regard to deprivation and life expectancy, but also in relation to other health and wellbeing-related indicators. The results of all these analyses are reported in the next two sections of this report.

Patterns and trends by deprivation decile

In this section we present trends in a number of key health and wellbeing-related indicators, broken down by a more narrowly defined set of Glasgow-specific deprivation groupings than was used in *LGF*. These are deciles of 'income deprivation' for the city of Glasgow alone. Where the GoWell areas lie in relation to this spectrum of deprivation is the focus of the next section of the report.

A full definition of 'income deprivation' is included in Appendix 2. Briefly, however, this indicator – taken from the Scottish Index of Multiple Deprivation (SIMD)[6, ii] – describes the total population of an area who are either in receipt of, or dependent on someone in receipt of, a number of income-related benefits. It is therefore a proxy for those living in relative poverty. For the purposes of the analyses presented in this section of the report, we have divided Glasgow into ten equally-sized groups (deciles), ranked according to the proportion of the population in each classed as 'income deprived'.

As with previous analyses, reports and publications (including *LGF*), the work presented here conforms to a broad understanding of health and its important determinants. Trends are therefore presented under the following headings:

- life expectancy (as an overall health outcome)
- population demographics
- behaviours - drugs and alcohol
- mental health and function
- poverty/prosperity
- social environment – education
- social environment – crime
- physical environment – housing

[ii] As outlined in Appendix 2, the income deprivation domain of the SIMD was used because an exactly matching deprivation measure needed to be constructed for each GoWell study area (see next section of report) and the income domain of SIMD is relatively easy to calculate. However, it should be noted that in any case the majority of the domains used to derive the overall SIMD deprivation index are in fact very highly correlated.

- child and maternal health

However, to prevent an unwelcome excess of data and graphs, the analyses are limited to presentation and discussion of, in most cases, *one or two* example indicators per heading, all derived from routine administrative sources. This restriction is further justified by the fact that previous analyses of these kinds of data have demonstrated the high levels of correlation that exist between indictors of these domains. Therefore, the overall pattern seen for one indicator in a domain is likely to be the same as that seen for other indicators[2, 4, 7].

The full set of indicators presented is outlined in Table 1 below.

Table 1

Domain	Indicator
Life expectancy	Life expectancy at birth
Population demographics	Population (and population change)
	Lone parent households
Behaviour - Drugs and Alcohol	Alcohol-related deaths
	Drug-related deaths
Mental Health and Function	Suicide
	Incapacity benefit and severe disability allowance claimants
Poverty - prosperity	Income deprivation
	Children in workless and low-income families
Social environment - education	School-based educational attainment
Social environment - crime	Serious violent crime
Physical environment - housing	Overcrowding
Child/maternal health	Infant mortality
	Smoking during pregnancy
	Breastfeeding
	Teenage pregnancy

Methodological note

All data sources and methodologies are fully listed in Appendices 1 and 2. However, it is worth briefly clarifying the following here:

- the deprivation deciles were based on income deprivation levels (from the 2006 Scottish Index of Multiple Deprivation (SIMD)) and total population for Glasgow City datazones[iii] only;
- the analyses are, therefore, based on measures of deprivation relative to Glasgow City only, and are thus fundamentally different from other published deprivation classifications based on the distribution of values across all Scotland;
- the basic 'unit of analysis' in the calculation of rates etc. was the datazone. Note that trends can only be shown back to 1996, as that is the earliest year for which datazone-based population denominator data are available;
- note finally that in showing trends by deprivation decile back to 1996, we are assuming that deprivation status (defined by the 2006 SIMD) has remained static, and clearly this may not always be the case.

Life expectancy

The 20 year trend in life expectancy by deprivation quintile within Greater Glasgow between the start of the 1980s and the beginning of the 21st century was shown in Figure 1 above. Figure 2 below shows a continuation of this trend for males between 1996 and 2005, but here presented by Glasgow City income deprivation decile (with deciles 1, 5 and 10 shown). This shows that the gap between males in the least and most deprived areas of Glasgow continues to widen – from 13.2 years in 1995/97 to 14.5 years in 2003/05. For females (Figure 3) the gap (of 8.2 years) remains constant over the period, rather than widens, thanks primarily to a slight decrease in life expectancy in the least deprived decile between 2000/02 and 2003/05[iv].

[iii] Datazones are small geographical areas created by the former Scottish Executive with average populations of around 700 people.

[iv] Note that although confidence intervals are not shown in Figure 3, the analysis confirmed that this decrease in the least deprived decile is not a statistically significant one.

Figure 2

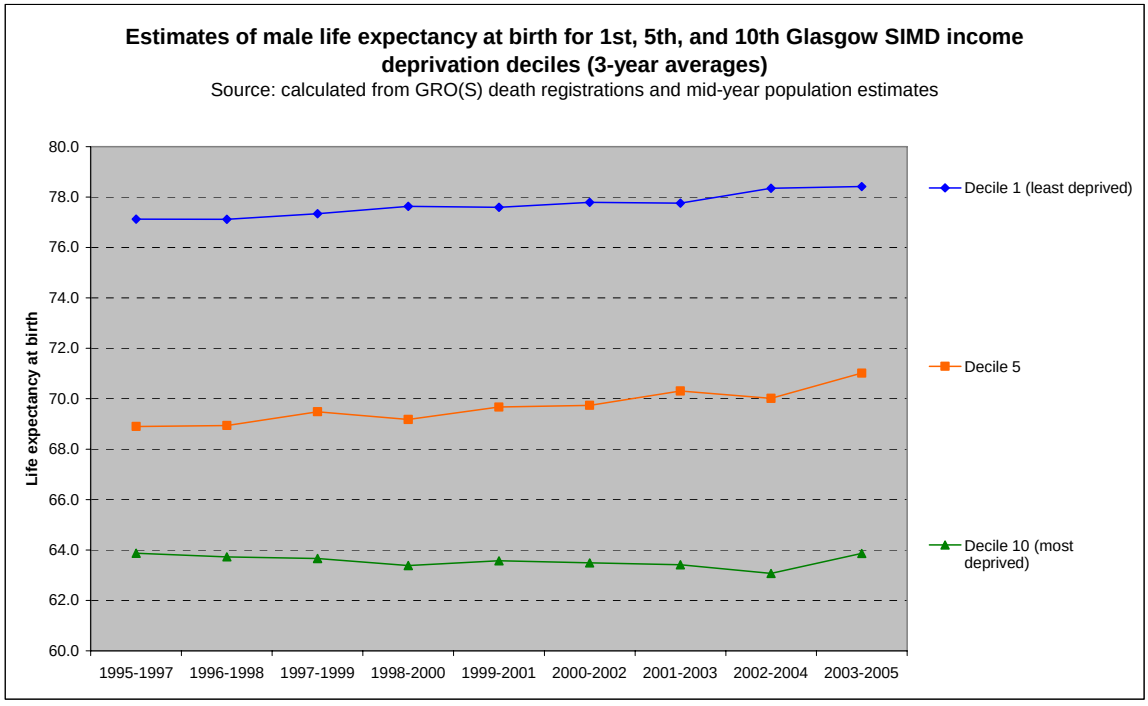
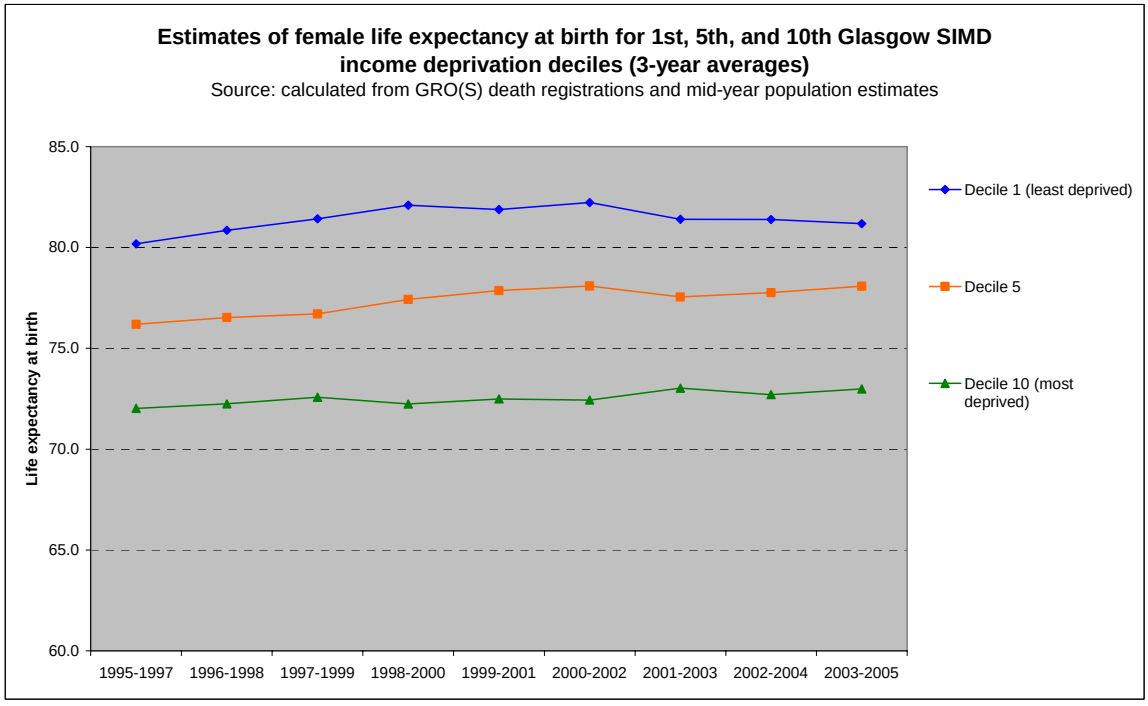


Figure 3



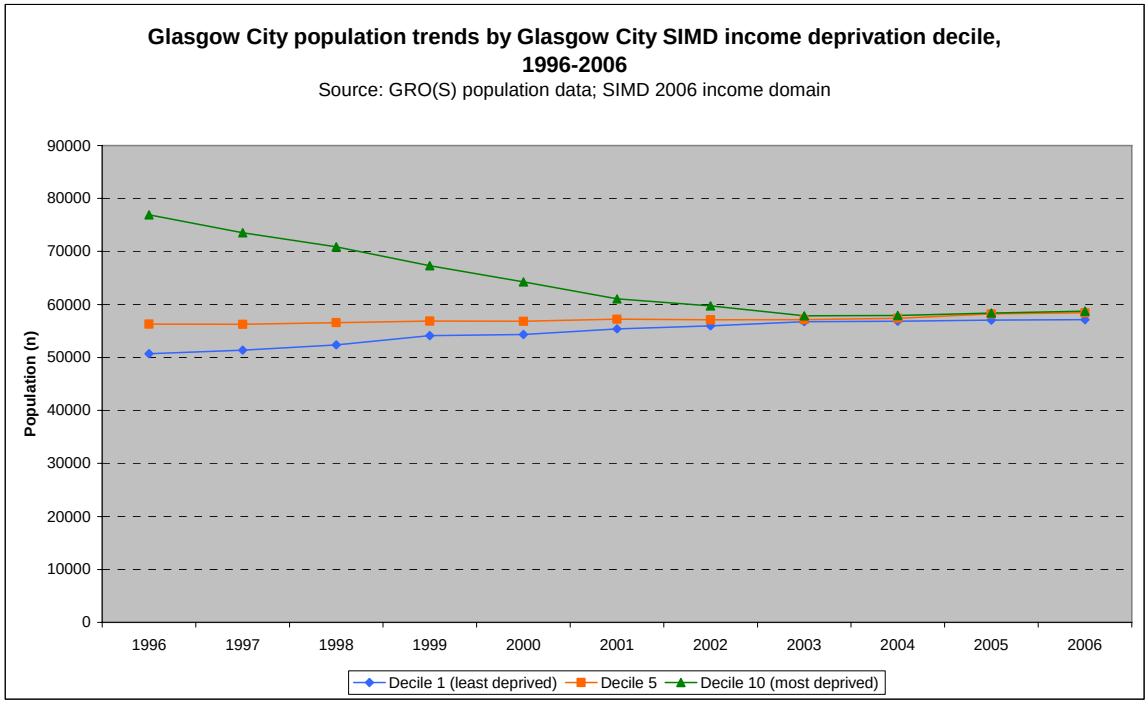
Population demographics – total population

Many of Scotland's (and indeed the UK's) most deprived neighbourhoods have been characterised by falling population in recent decades. This has been discussed in a number of publications[8, 9], and was highlighted specifically for Glasgow in *LGF*.

Figure 4 below shows the significant decrease in the population of the most deprived decile in Glasgow: between 1996 and 2006 the population fell by 24%. Other notable decreases occurred in deciles 9 (-8%), 8 (-9%), and 7 (-5%). In the least deprived decile (decile 1), the total population increased by around 13%, while in deciles 2-5 there were modest increases of around 3.5% to 4%.

However, these trends are slightly difficult to interpret, and can be considered 'artificial' to a degree. This is because the deprivation deciles were based on 2005 data, and by definition, therefore, each of the ten groupings were 'forced' to have an equal proportion of the total population of the city in that year. However, it should be emphasised that the overall trend of falling population in the city's most deprived areas still holds true.

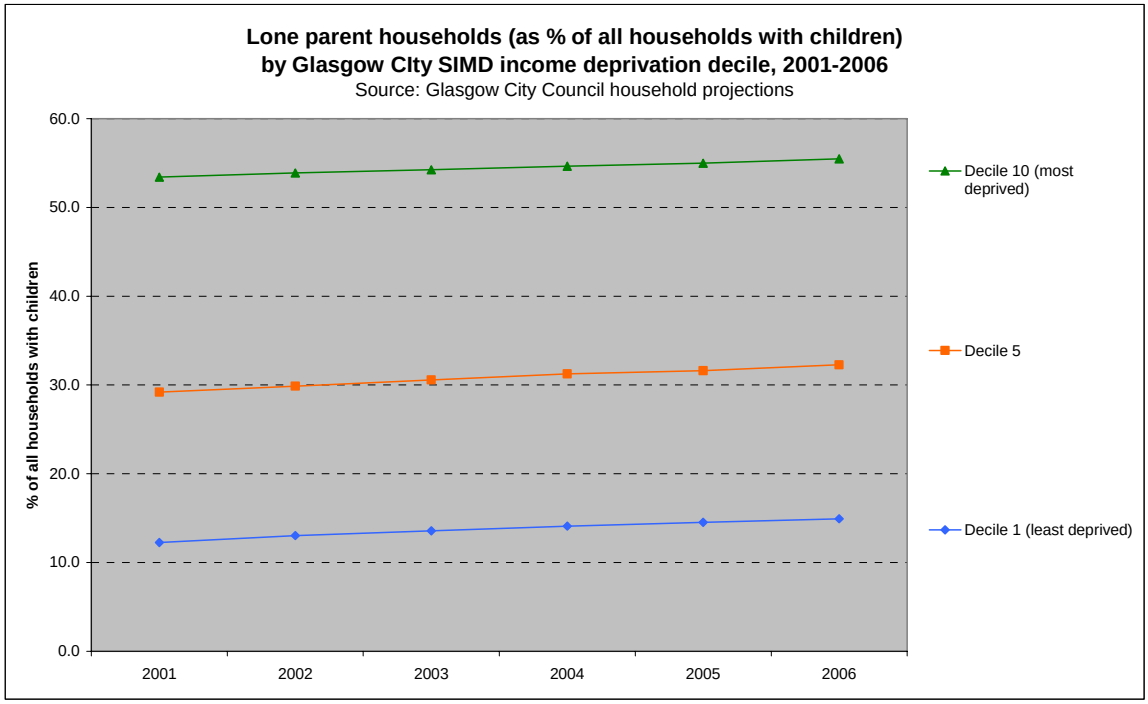
Figure 4



Population demographics - lone parent households

LGF highlighted the rising trend in the number of lone parent households (as a proportion of all households with children) in the West of Scotland, and particularly Glasgow. Figure 5 shows this continuing upward trend by deprivation decile. Rates are increasing across all deciles, with the proportions around four times higher in the most deprived decile than in the least deprived decile.

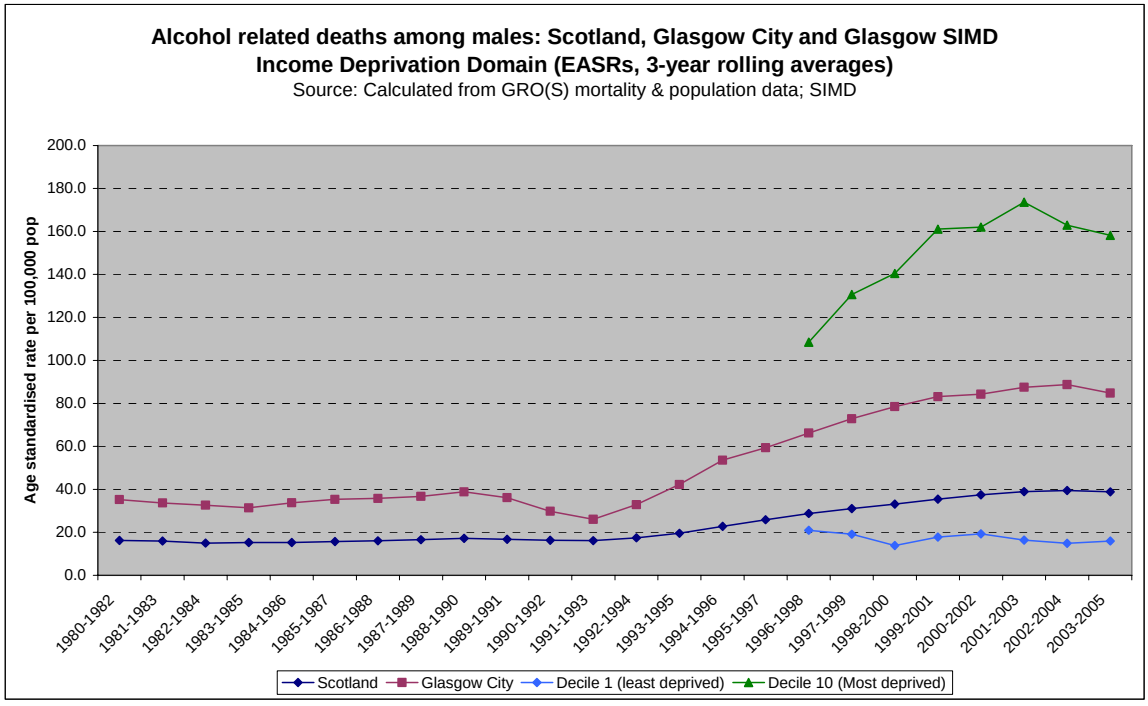
Figure 5



Behaviour - alcohol-related deaths

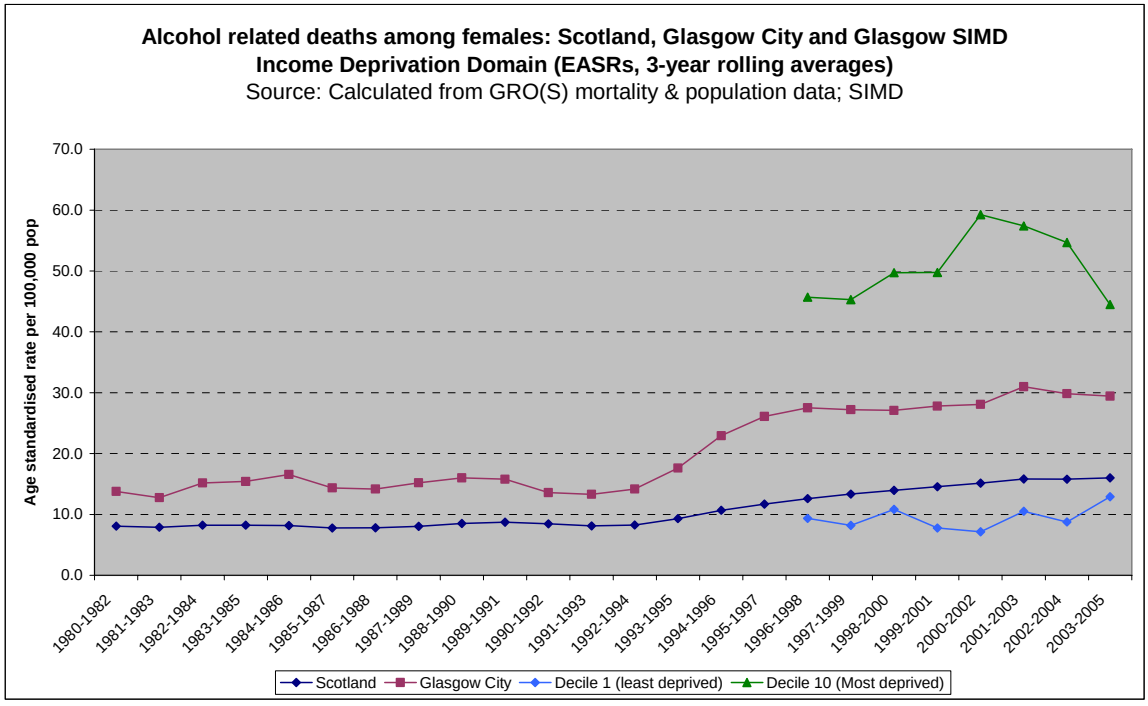
The striking rise in alcohol-related deaths in the Glasgow area since the start of the 1990s was highlighted in *LGF*; indeed, nationally, the increase in alcohol-related harm across the whole country has been the focus of a great deal of attention in recent times[10, 11, 12, 13]. Trends in male alcohol-related deaths for Scotland, Glasgow City, and SIMD income deprivation deciles 1 and 10 are shown in Figure 6. Between the start of the 1990s and 2001/03, male alcohol-related deaths in the city more than trebled. Between 1996 and 2001/03, there was a city-wide increase of around 30%. However, while this shorter period saw a small *decrease* in deaths in the least deprived decile, deaths in the most deprived decile *increased* by around 60%, further widening the gap between the least and most deprived population groups.

Figure 6



The overall picture for alcohol-related deaths among females is similar, although based on smaller numbers of deaths. Trends for females for Scotland, Glasgow and deciles 1 and 10 are shown in Figure 7. It is notable, however, that among females in the most deprived decile there has been a larger decrease in rates in the last 2-3 years than was the case with males in the same decile.

Figure 7



Finally, it is worth clarifying what these *rates* equate to in terms of the actual *numbers* of deaths in the city. Since 2001, on average there have been more than 300 alcohol-related deaths per year in Glasgow City alone. The equivalent figure for the most deprived decile was 55, while in the least deprived it was only 8. However, it is important to note that these unquestionably represent an underestimate of the true extent of alcohol-related mortality, as the data presented here include only those deaths classed as directly related to alcohol (e.g. alcoholic cirrhosis of liver), and with an alcohol diagnosis as the *principal* cause of death. The figures, do not include deaths from accidents involving alcohol (including road accidents), alcohol-fuelled violence or the many cancers (e.g. cancer of oesophagus) and other causes (e.g. acute pancreatitis) which are known to be indirectly attributable to alcohol consumption[14, v]. They also do not include deaths where alcohol was listed as a secondary, rather than the primary cause of death.

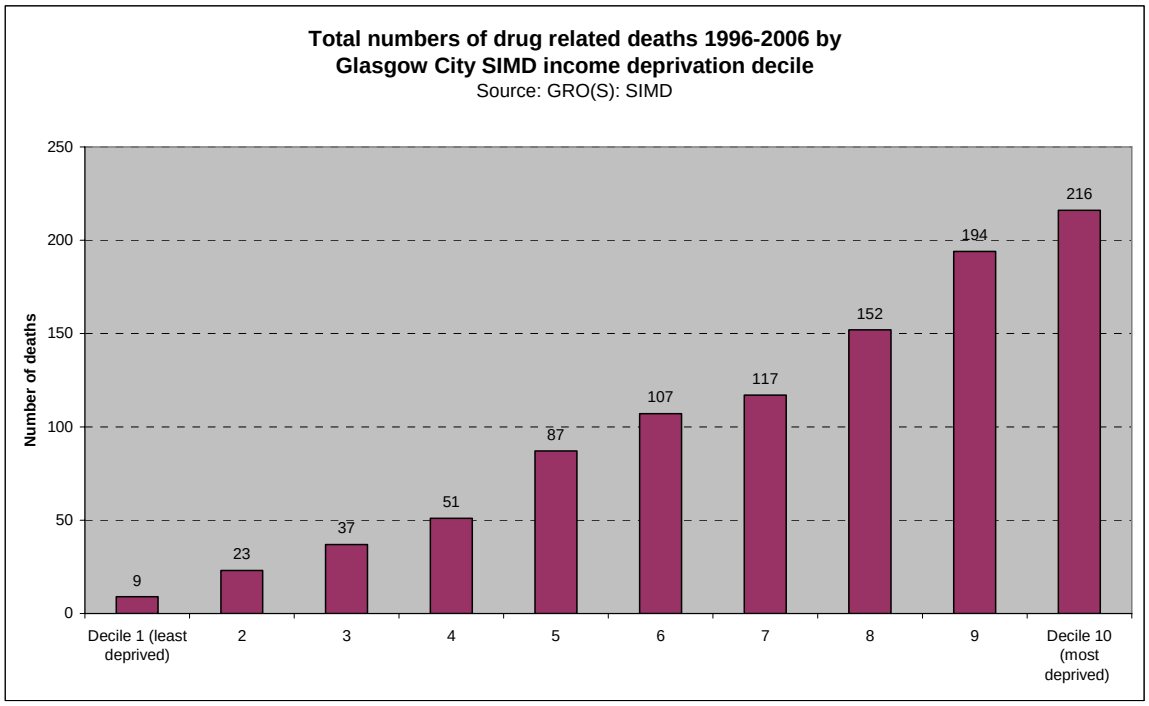
[v] Note that of course these cited conditions can also be caused by non-alcohol related factors.

Behaviour - drug-related deaths

As with alcohol-related harm, the influence of illegal drugs on health and other aspects of society in Glasgow was highlighted in *LGF*. This included the fact that drug-related deaths in the Greater Glasgow area had increased by a third between 1996 and 2004, and that in some deprived communities of the city, more than 10% of the adult population were estimated to be 'problem drug users'.

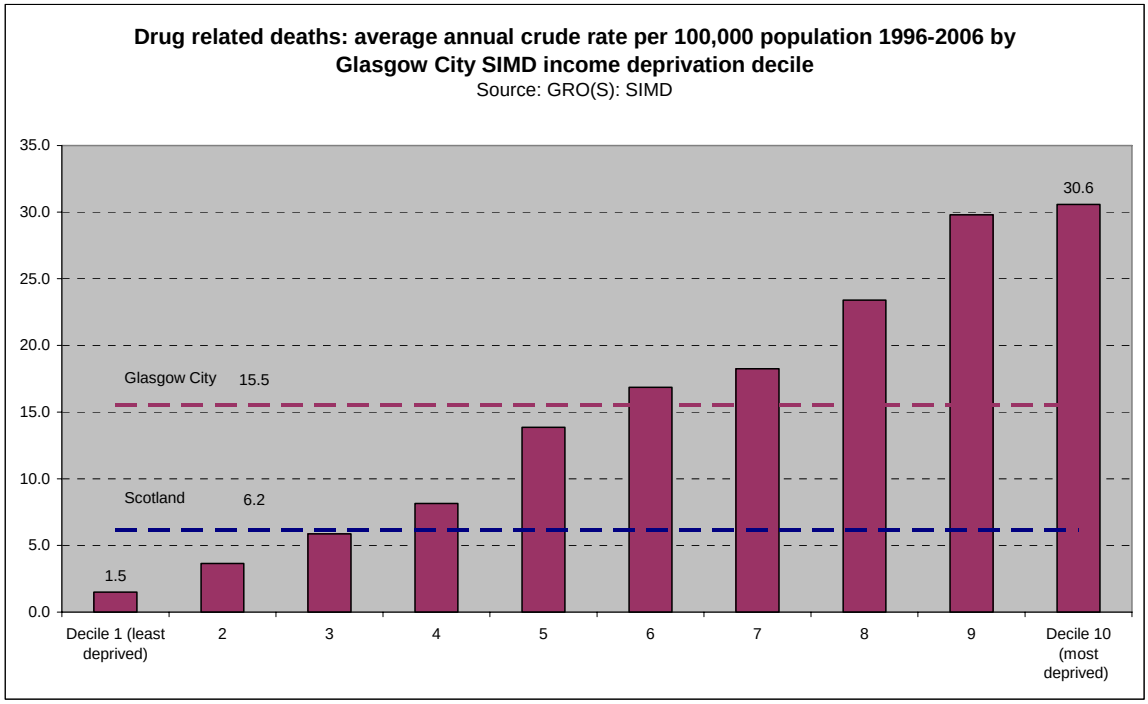
Updated analyses show that between 1996 and 2006, there were almost 1,000 officially recorded drug-related deaths in Glasgow City. This equates to almost 30% of the total figure for Scotland. Figure 8 shows that of this total number of 993 Glasgow City deaths, almost 60% were recorded for people living in Glasgow deprivation deciles 8, 9 and 10.

Figure 8



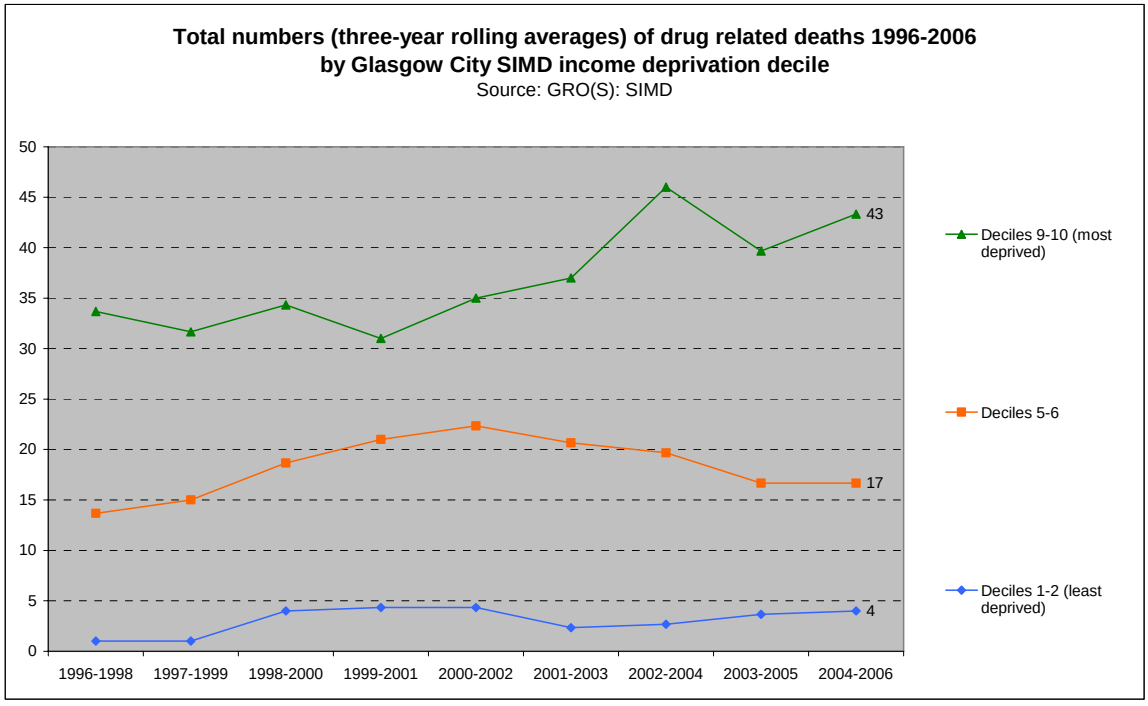
Expressed as a rate per head of total population, Figure 9 shows that the rates in the majority of Glasgow deprivation deciles (3-10) matched or exceeded the overall drug-related death rate for the whole country.

Figure 9



Finally, Figure 10 shows the widening gap between numbers of such deaths recorded in the most deprived deciles and elsewhere. While the trend in absolute numbers is relatively flat in both the least deprived and 'middle' deciles, numbers in the most deprived two deciles have been increasing. This Figure also shows that in the most recent period for which we have data (2004-06) there were on average 43 drug-related deaths across deciles 9-10 each year; this contrasts with an average of just four deaths per year across deciles 1 and 2.

Figure 10



Drug-related deaths are derived from a detailed analysis of death certificates undertaken by the General Register Office for Scotland. A similar methodology is employed in other parts of the UK. However, a number of commentators have recently pointed out that these figures are likely to considerably underestimate the true numbers of drug-related deaths[15]. Therefore, as with alcohol-related harm, these figures do not represent the full extent of the problem in the city.

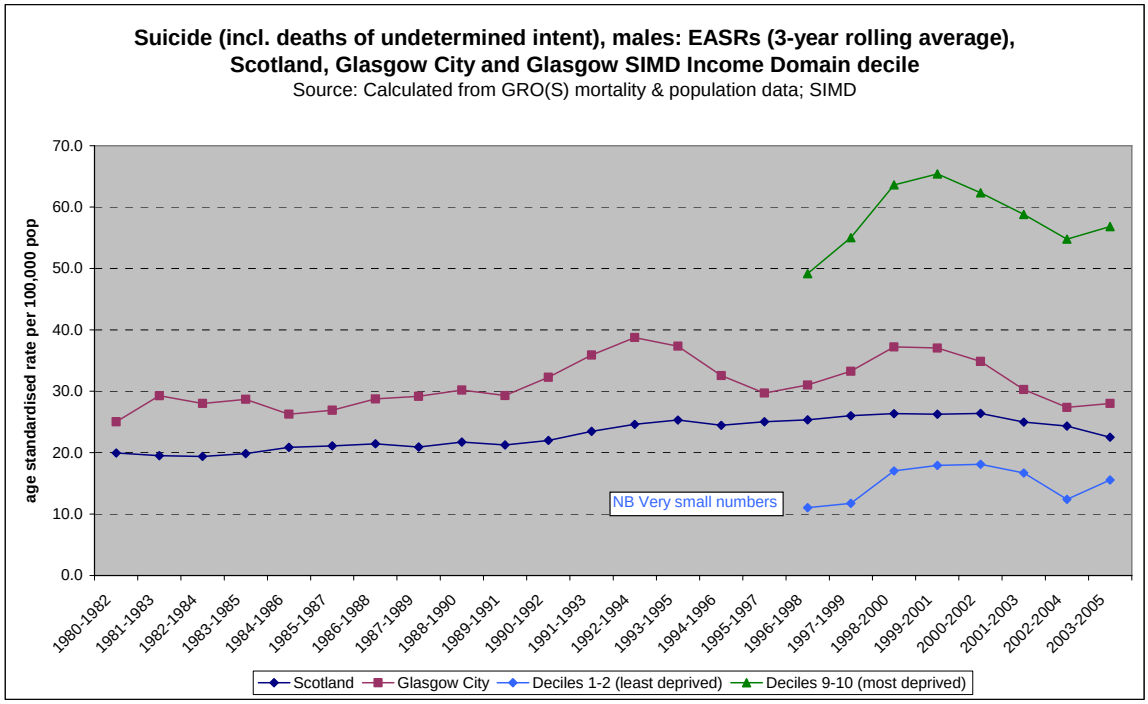
Mental health and function - suicide

Suicide remains the leading cause of death among young men in Scotland[16]. Trends by deprivation across the Greater Glasgow area between 1981 and 2001 showed rising rates, with the greatest increases in areas of greatest deprivation[17]. Figure 11 shows more recent trends in male suicides between 1996 and 2005 by Glasgow-based deprivation decile, with only the least and most deprived deciles shown. Analyses of suicide by decile are based on relatively small numbers – especially in the less deprived deciles – and so considerable fluctuations in rates are visible in this Figure. However, the overall

picture is still a familiar one: rates in the most deprived decile are more than four times higher than in the least deprived decile, and there is no evidence of the gap narrowing.

The overall picture for females (not presented here) is generally similar, although based on much smaller numbers.

Figure 11

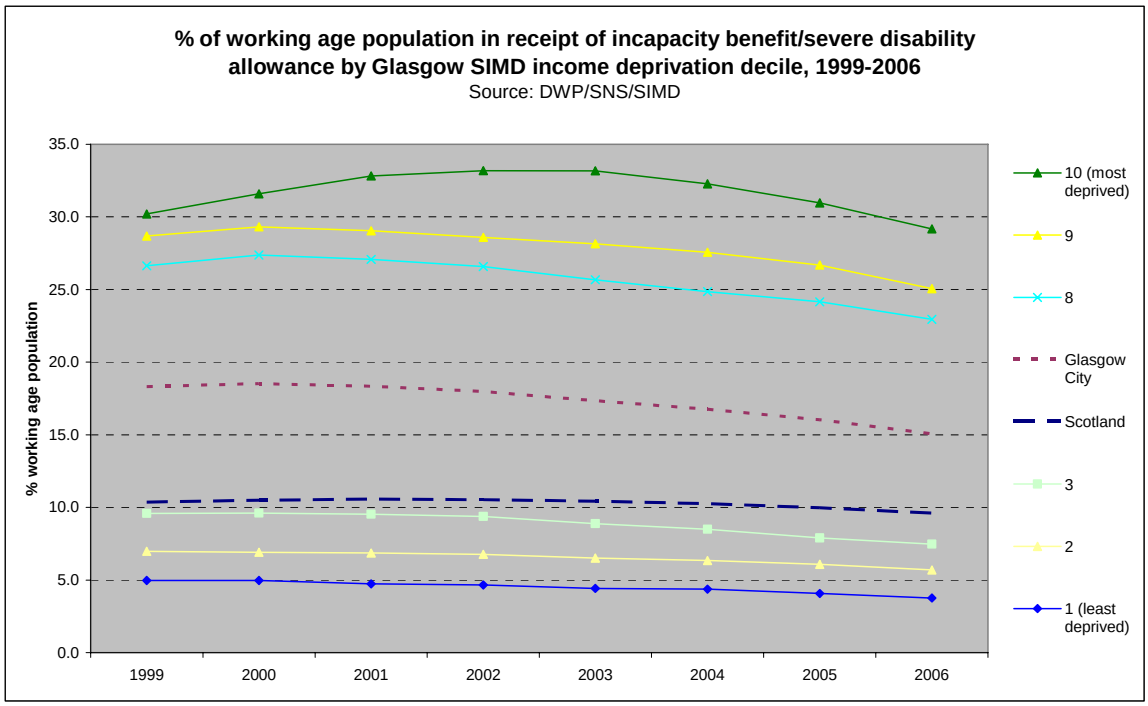


Mental health and function - incapacity benefit and severe disability allowance

Recent in-depth analyses of trends in incapacity benefit[18] showed that while Glasgow still has a strikingly high proportion of its working age population claiming incapacity benefit – 16% in 2005 – that figure has fallen in recent years, due principally to a reduction of new claimants. Figure 12 shows trends in incapacity benefit as well as disability living allowance (combined together as an approximation for those unable to work due to illness or disability) by Glasgow City income deprivation decile between 1999 and 2006. While this confirms the decline in the proportions of the working age population claiming these benefits, it is notable that the decrease in the most deprived decile appears to have taken place 3-4 years after the other sections of the population. As

a result the gap between that decile and the others has widened over time. It is also notable that rates in the most deprived decile are almost eight times higher than in the least deprived decile.

Figure 12



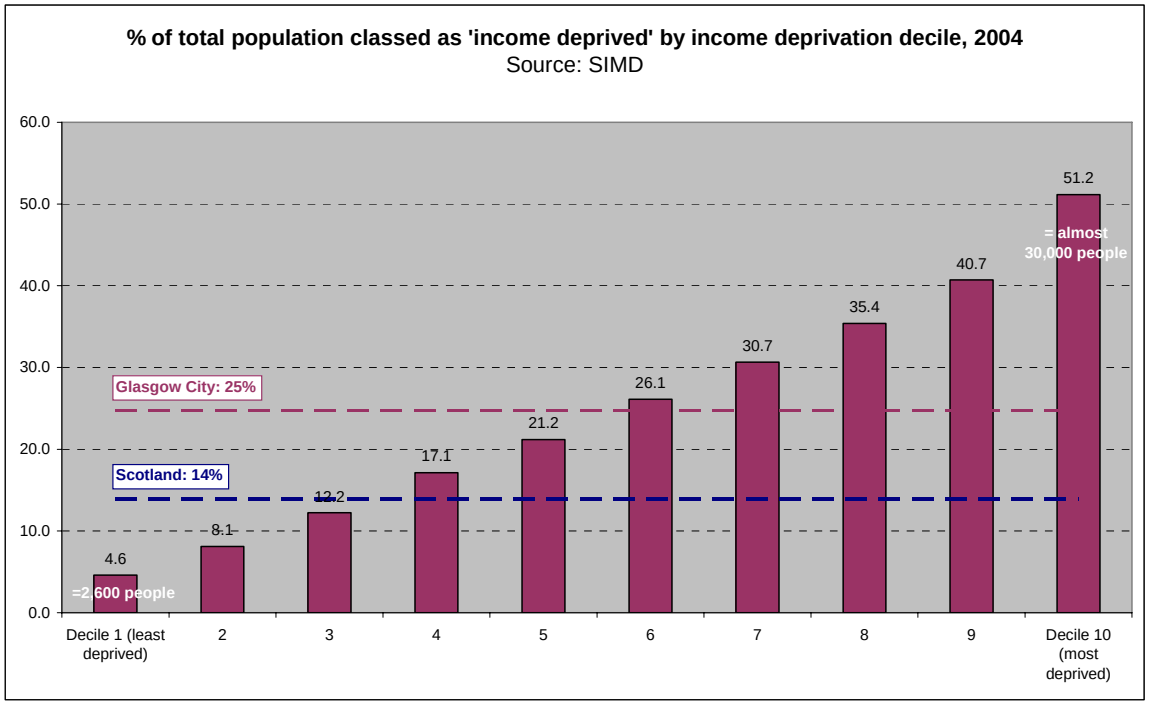
Poverty/prosperity - income deprivation

As outlined above, the income deprivation domain of the SIMD was used to create the Glasgow City-based deciles on which this entire section of analysis is based. This was done by ranking the small areas (datazones) of the city in terms of the amount of income deprivation in each, and then dividing those areas into ten groups of equal population size (deciles).

Figure 13 presents additional analysis of these deciles, showing that in decile 1 (least deprived), just under 5% of people living in these small areas are classed as income deprived. This equates to around 2,600 people. In contrast, in the most deprived group of datazones, over half the population fall into this category – almost 30,000 people in total.

Figure 13 also shows that the overall percentage for Glasgow (25%) is almost twice that of the whole country (14%). It is also noticeable that in seven of the ten Glasgow City deciles, levels of income deprivation exceed the overall Scotland figure. This highlights the difference between a Scotland-based and a Glasgow-based deprivation classification. For example, areas classed as lying in deprivation deciles five and six on a Glasgow basis would be classed as decile nine on a Scotland basis.

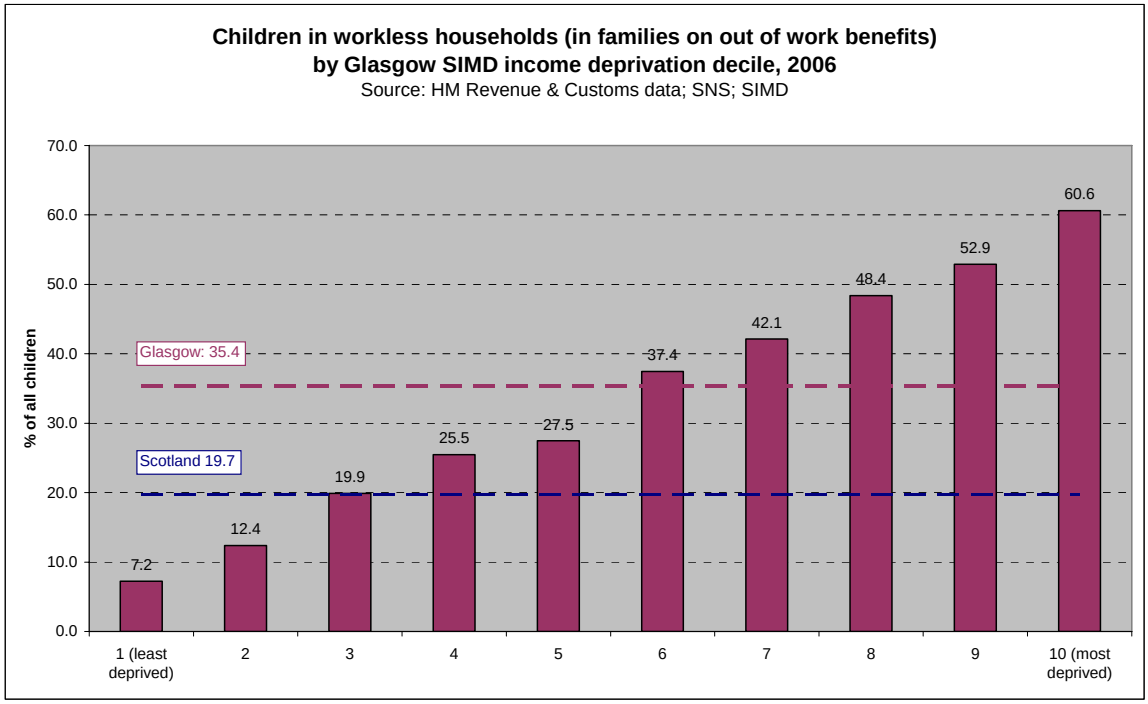
Figure 13



Poverty – children in workless and low- income families

Two additional income related indicators can be examined here in a Glasgow context. Figure 14 shows, again broken down by Glasgow City deprivation decile, the percentage of children in the city who live in workless households (as at 2006). Nationally, one in five children fall into this category. The equivalent figure for Glasgow is more than one in three, ranging from around 7% (decile 1) to more than 60% (decile 10).

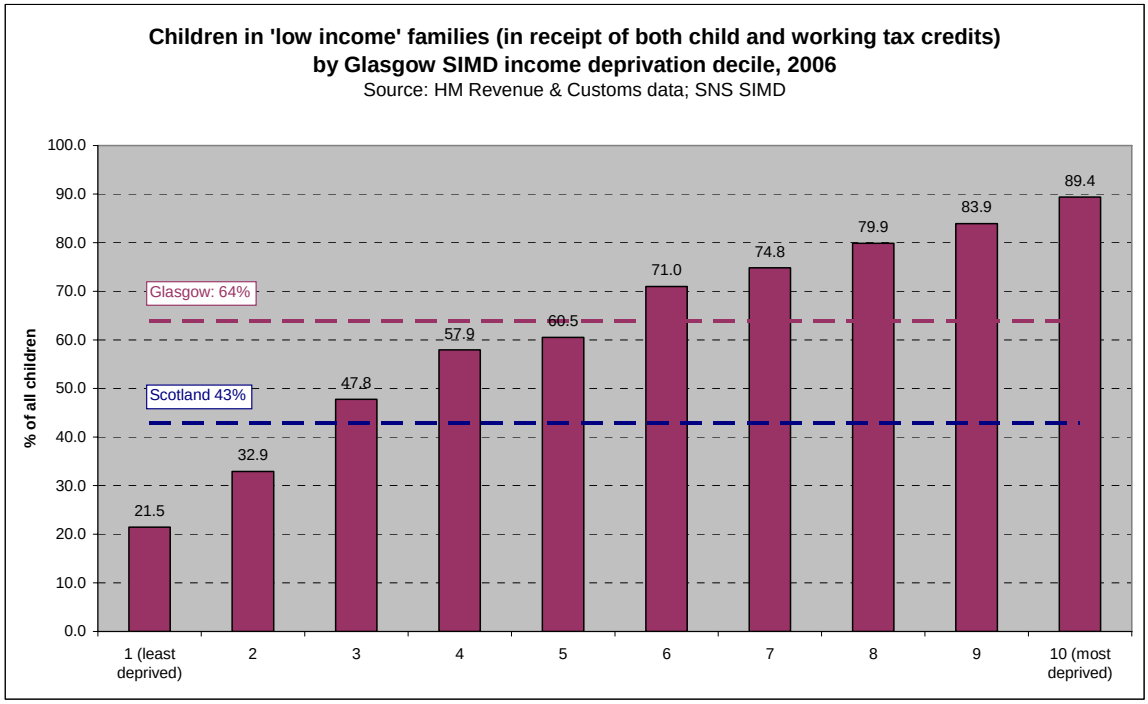
Figure 14



These figures are based on HM Inland and Revenue data for children in families on 'out of work' benefits. To this we can add the numbers of children classed as living in 'low-income' families. This relates to families in receipt of both child tax credits and working tax credits, and replicates an analysis produced recently for the End Child Poverty organisation by the Centre for Economic and Social Inclusion[19]. The results, presented in Figure 15, suggest that in Glasgow a staggering 64% of children live in such 'low-income' families, with figures ranging from just over 20% in the least deprived decile to almost 90% in the most deprived decile. The national figure is also high – 43%. It should be noted that this is a different measure of 'low-income' to that normally used by the UK and Scottish governments.[vi]

[vi] The 'low-income' threshold for the data presented above equates to approximately 70% or less of median household income before housing costs. The official government measure is 60% or less of median household income before housing costs. As an example, according to official government calculations, a lone parent with 2 children would be in poverty if their gross weekly income was below £260 per week (around £13,500 per annum), whereas the equivalent figure based on this higher threshold would be £304 per week (approximately £15,800 p.a.). For a two-parent family with two children, the equivalent figures are £332 per week (£17,260 p.a.) for the official government measure, and £388 per week (£20,180 p.a.) based on this lower threshold.

Figure 15



Social environment - educational attainment

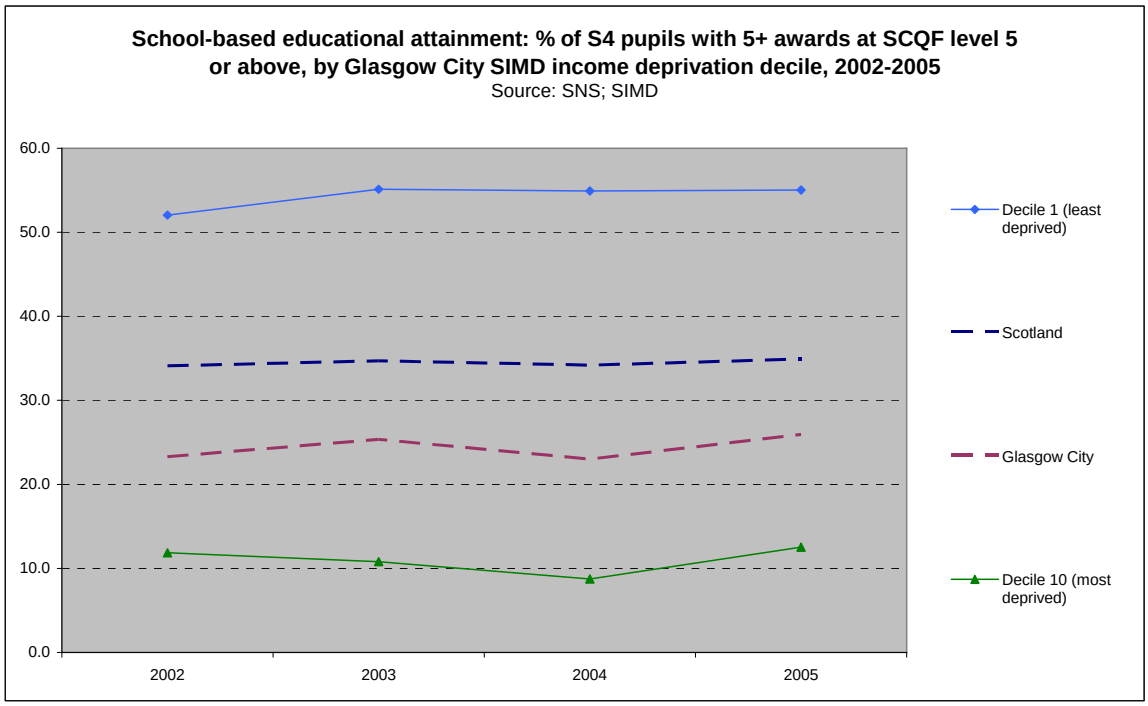
So far we have shown clear and persistent gaps between the least and most deprived deciles of Glasgow for: life expectancy; lone parent households; alcohol and drug-related harm; suicide; incapacity benefit; and poverty. We can show a very similar picture in relation to different levels of educational attainment. The example used here is for school-based attainment, specifically the proportion of S4 pupils with five or more awards at SCQF[vii] level 5 or above. Other measures could have been used which show a similar picture.

Figure 16 shows that in the least deprived areas of Glasgow, more than four times as many pupils achieve this level of educational attainment than pupils in the most deprived areas: in the latter a little over 10% of pupils fall into this category, while in the least

[vii] SCQF stands for the Scottish Credit and Qualification Framework (SCQF), which brings together different sets of qualifications into one comprehensive and integrated framework. SCQF classifies various Scottish educational qualifications within comparable 'levels'. Level 5 includes Standard Grades credit level. Further details are included in Appendix 1.

deprived decile, the figure is 55%. Although there has been some fluctuation, the gap between the two deciles in 2005 is identical to the gap in 2002.

Figure 16

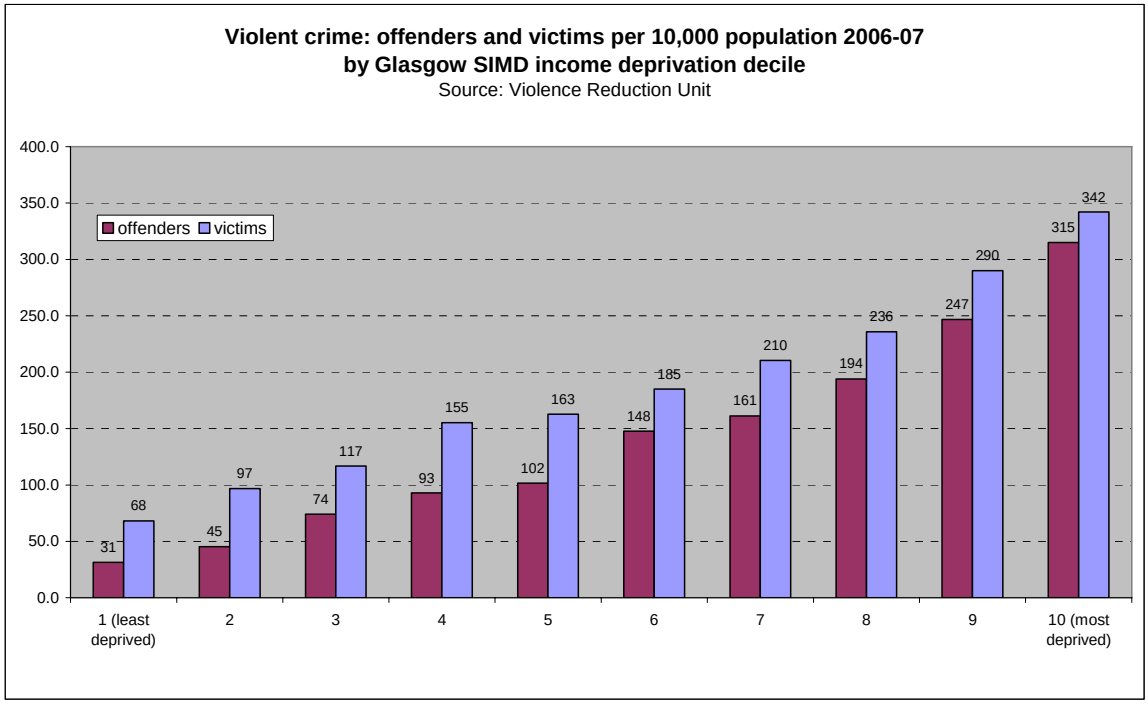


Social environment - violent crime

The *LGF* report included a detailed analysis of crime patterns and trends in Glasgow City. This included analyses by age, gender, location and different crime types. It highlighted that in certain deprived areas of Glasgow, almost 10% of residents had been convicted of a violent offence in a three year period (2002-05); and over the same time period, between 12% and 17% of residents of these areas had been the victims of a violent crime[viii]. Figure 17 shows similar victim and offender data, but for a period of a single year, not three years. The figures are presented per 10,000 resident population, and are again broken down into income deprivation deciles across the city.

[viii] Offences that are classified as 'violent offences' include: murder, attempted murder, serious assault, simple assault and possession of an offensive weapon.

Figure 17



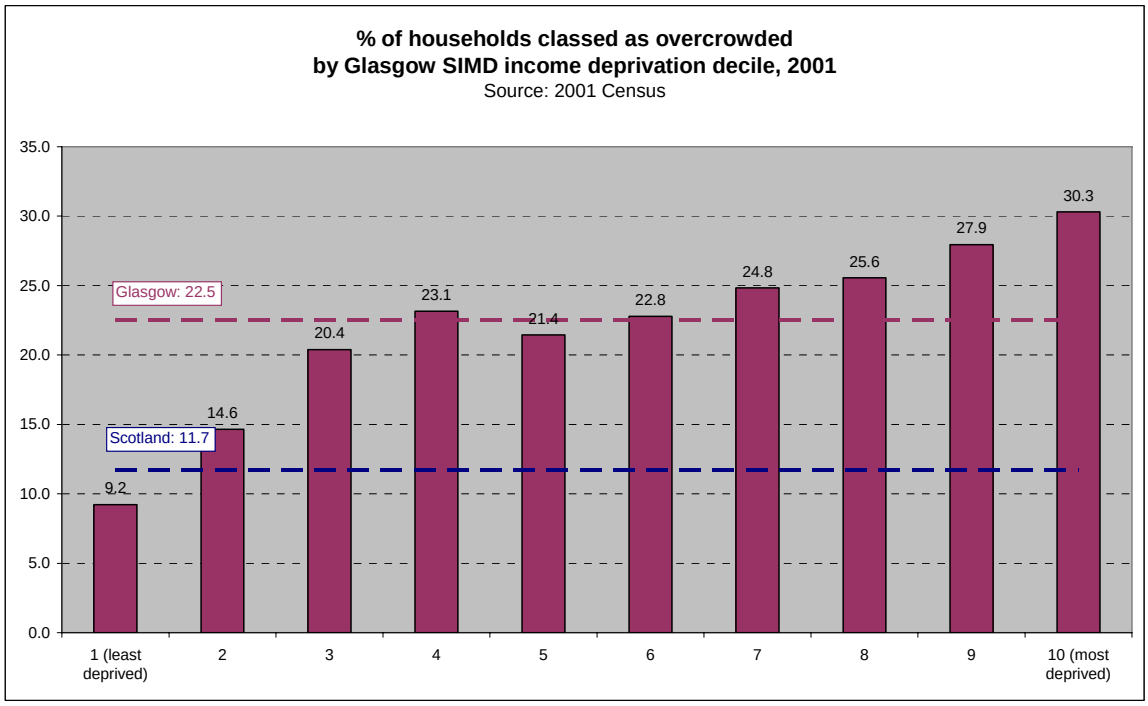
This Figure shows that the rate of offenders in the most deprived decile is ten times that in the least deprived decile. The five-fold gap between deciles 1 and 10 for rates of victims is narrower, but clearly still striking.

Physical environment - overcrowding

The environment in which people live and work can influence health both directly (through toxic, allergenic, or infectious agents) and indirectly through influencing behaviours (e.g. availability of a local environment in which to walk or cycle) and through affecting mental health and wellbeing (which in turn may affect and be affected by physical health). The physical environment domain is, therefore, a very broad one, and includes a vast range of indicators that are relevant to health: for example, pollution, climate, traffic, housing, green space. It may appear rather disingenuous, therefore, to select only one indicator from such a wide-ranging topic. However, overcrowding is a useful indicator of current living conditions, and for that reason has been included as a component of a number of deprivation indices with the UK. As a housing-based indicator, it is also particularly pertinent in the context of GoWell.

As shown in *LGF* and elsewhere[20], the proportion of the population in both Scotland and Glasgow living in overcrowded households has fallen dramatically in the last 20-25 years. Despite this, there remain huge variations in rates of overcrowding across Glasgow. To illustrate this, Figure 18 presents the proportion of households classed as overcrowded at the last census, split by Glasgow income deprivation decile. Although – as is the case with all the analyses presented here – there is a clear deprivation gradient, there is perhaps less variation across the middle deciles than is seen with some of the other indicators. However, there is still more than three-fold variation in rates between the least and most deprived deciles.

Figure 18



Child and maternal health - infant mortality

The steady decline in infant mortality rates in Glasgow and elsewhere in Europe over the past two hundred years has been dramatic, and reflects improvements in housing, sanitation, immunisation, healthcare and various other public health-related issues that took place over that time. In the middle of the 19th century one in five Glaswegian

children died in their first year of life. The most recent figure for Glasgow is around five in every thousand.

Figure 19 shows that while the overall Glasgow City figure varies by deprivation grouping, there is certainly not as clear a deprivation gradient as can be seen for the other health-related indicators presented in this section. Furthermore, Figure 20 shows that over the last decade there has been a slight narrowing of the gap between the two least, and two most, deprived deciles.

Figure 19

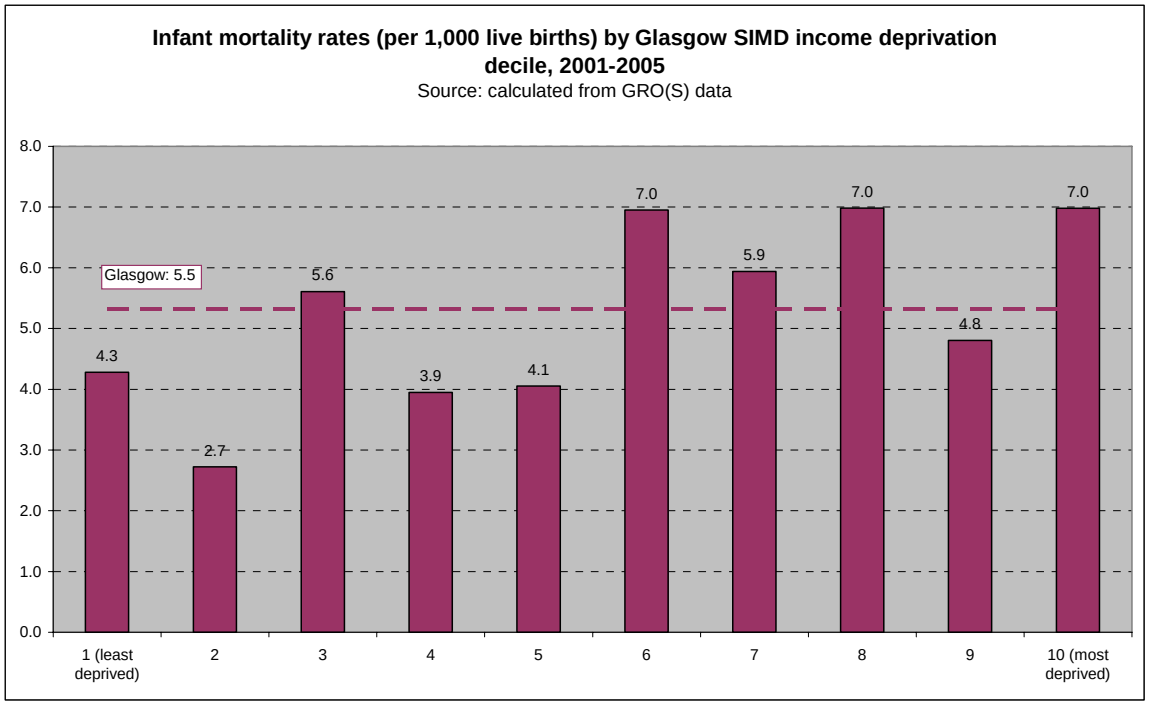
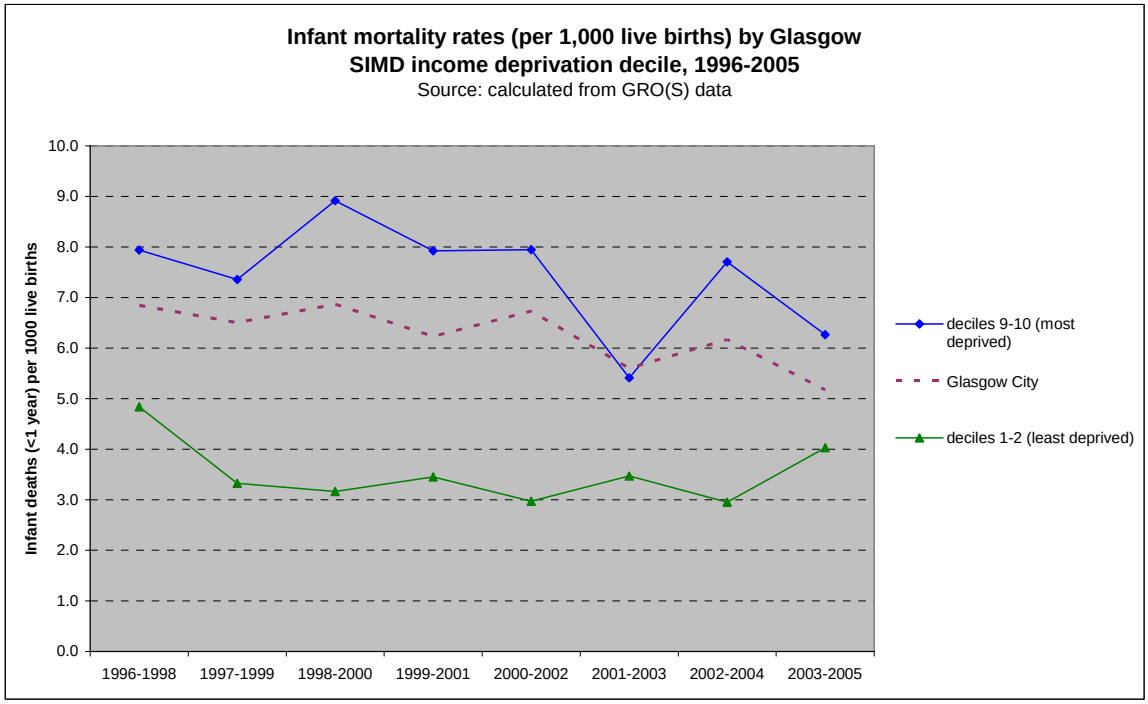


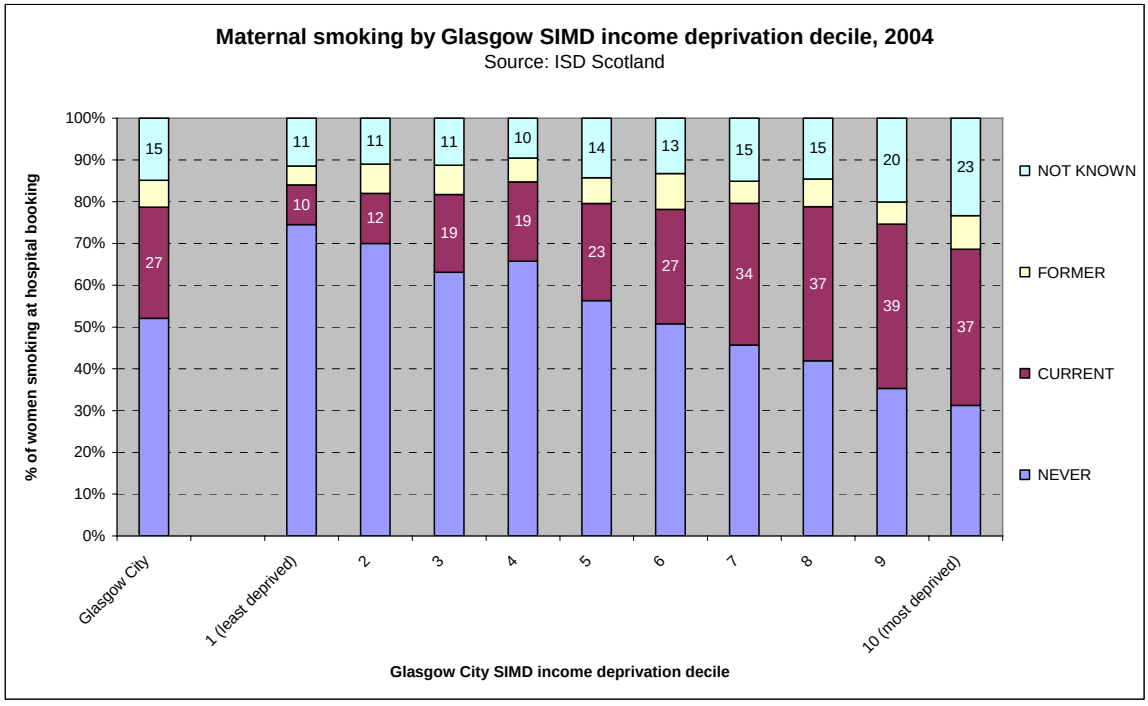
Figure 20



Child and maternal health – smoking during pregnancy

Nationally, around a quarter of pregnant women smoke during pregnancy. The figure for Glasgow City in 2004 was similar, at 27%. As Figure 21 shows, however, rates within the city range from 10% of pregnant women in the least deprived decile to 37% in the most deprived decile. These figures, which are recorded at first hospital booking, are likely to be an underestimate however. This is for two reasons: first, the figures are self-reported, and a recent report for Scotland suggests that self-reported smoking status underestimates true smoking prevalence by six percentage points: thus the 'official' Scottish figure of 24% is more likely to be around 30%[21]. Second, in Glasgow in particular there are currently a number of data quality issues affecting this indicator, with certain hospitals recording significantly higher rates of "don't knows" in recent years – and as Figure 21 shows, higher proportions of "don't knows" are recorded for women in the most deprived areas. This is discussed in more detail in a recent GCPH report[22]. For this reason, trends by decile are not presented here. Despite these data quality issues, trends in smoking during pregnancy are still likely to be falling across all or most parts of the city.

Figure 21

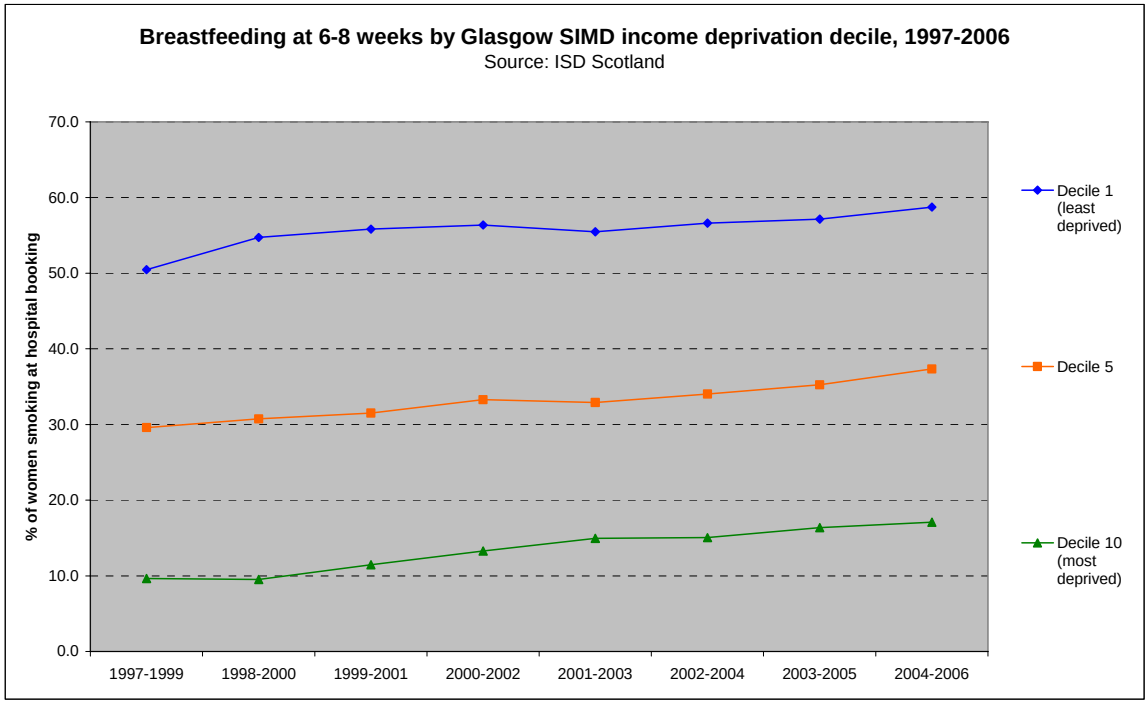


Child and maternal health – breastfeeding

Another indicator of maternal and child health considered here is breastfeeding. Analysed by Glasgow City income deprivation decile, Figure 22 shows that rates of breastfeeding across all parts of Glasgow City increased between 1997/99 and 2004/06[ix].

[ix] Note that this definition of breastfeeding includes babies exclusively breastfed or fed mixed breast and bottle.

Figure 22



At a city level, the proportion of babies being breastfed at 6-8 weeks has increased from 27% in 1997/99 to 35% in 2004/06. Although a huge difference in rates between the least and most deprived deciles is still obvious (59% of babies compared to 17% respectively), the gap has narrowed: the ratio of least deprived/most deprived has reduced from 5.2 to 3.4. This is a result of greater improvements in the most deprived compared to the least deprived deciles. For example in deciles one, two and three the *percentage increase* between 1997/99 and 2004/06 was: 16%, 23% and 21% respectively. In deciles 8, 9 and 10 the equivalent increases were: 56%, 70% and 77%. These increases are likely to be influenced by higher rates of breastfeeding among the asylum seeker population, which data included in Sophie Turner's report profiling the GoWell areas suggests is likely to be the case.

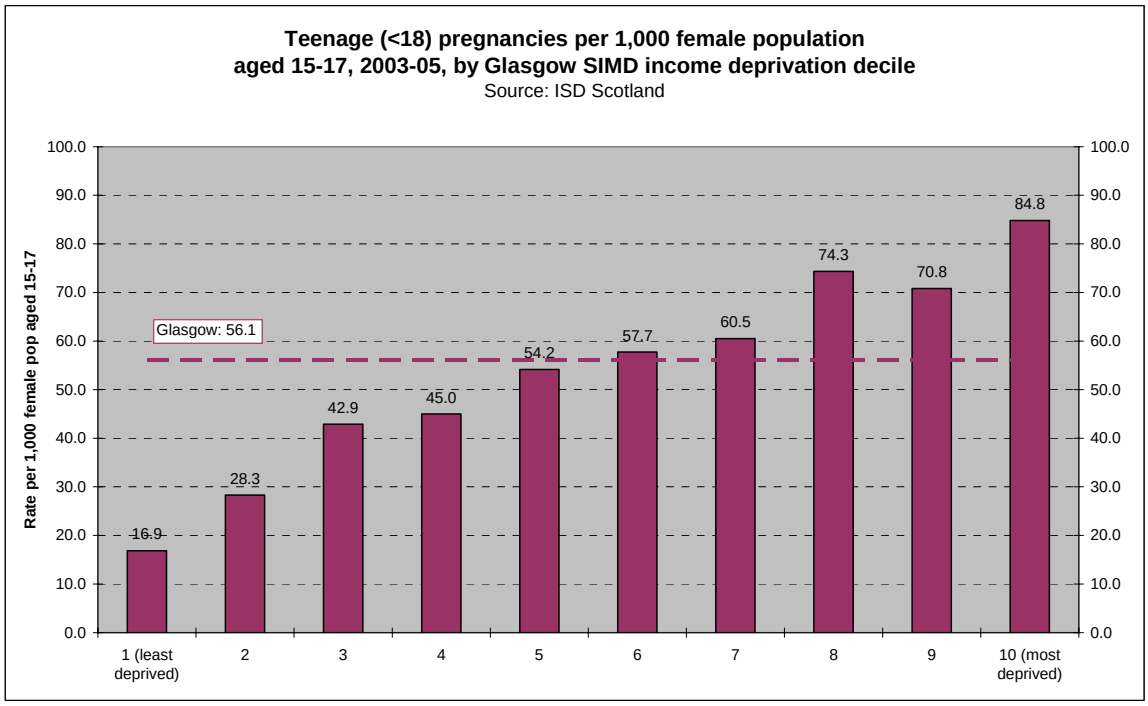
Despite the welcome increase in rates of breastfeeding across the city, it should be noted that the previous Scottish Government's national breastfeeding target was to increase rates to 50% by 2005. In this regard, rates for Glasgow clearly fall well short. Note that

the new government's breastfeeding target is based on slightly different criteria and data, and so is not considered here[x].

Child and maternal health – teenage pregnancy

The final indicator presented in this section is teenage pregnancy. As with breastfeeding and smoking during pregnancy, *LGF* highlighted both a generally improving trend across the city, but also enormous variations in rates between the least and most deprived communities. Figure 23 reflects the latter, showing rates per 1,000 female population[xi] by Glasgow City income deprivation decile: for the period 2003/05, rates in the most deprived decile were five times those of the least deprived decile.

Figure 23

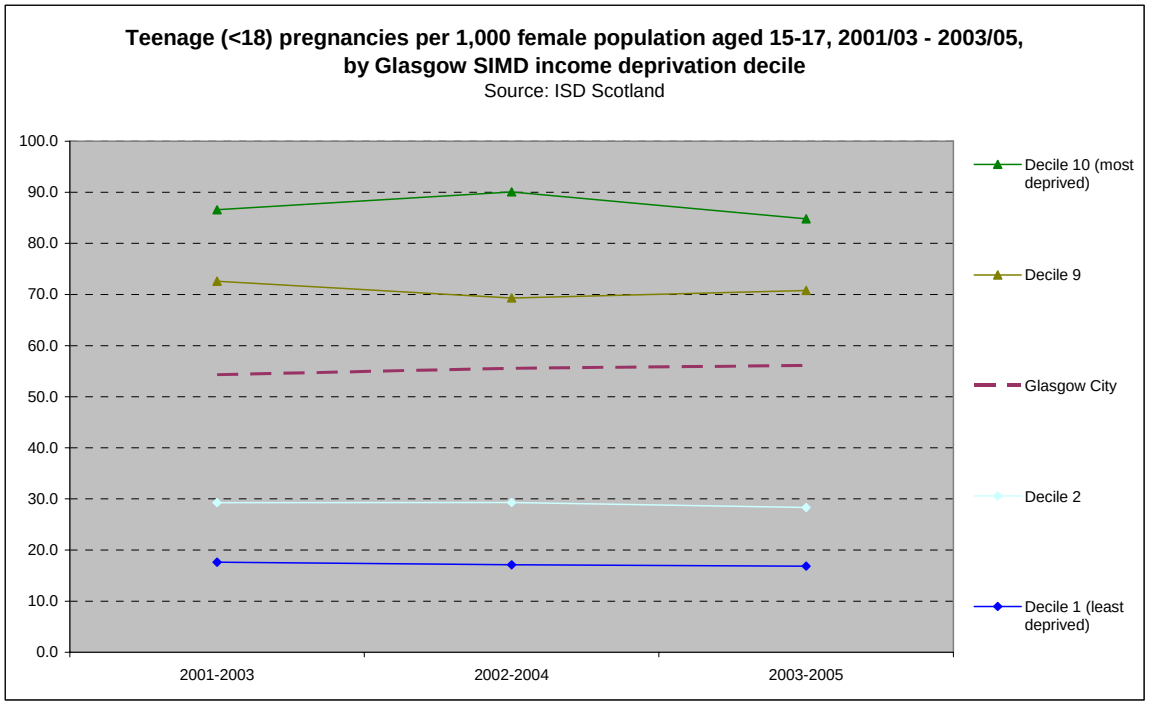


[x] The new target is to increase the proportion of newborn children *exclusively* breastfed at 6-8 weeks in Scotland from 26.2% in 2006/07 to 32.7% in 2010/11 (an increase of 25%). The previous target was not based on exclusive breastfeeding.

[xi] Although the numerator for this indicator is pregnancies in females aged 13-17, the population denominator is females aged 15-17. This is to ensure compatibility with other small area-based publications such as the community profiles.

Unfortunately only very limited trend data are available for this indicator by decile. Figure 24 shows that for three recent points in time (2001/03, 2002/04. 2003/05) there has been generally very little change in rates across the city, and the gap between the least and most deprived deciles is the same at the start of the period as it is at the end. However, this is for a relatively short period of time. The trend for Glasgow City shown in *LGF* was generally downward for the period of analysis – 1991/92 to 2002/03. However, more recent data[23] show a slight increase in rates for the years 2004, 2005 and 2006.

Figure 24



Summary

In summary, this section presents an updated set of analyses for a number of key indicators that were previously presented in the *LGF* report. The overall findings are not very different to those outlined in *LGF*: striking variation in rates in all indicators across the different socio-economic groups in the city, with persistent and – with few exceptions – widening inequalities between those groups over time.

However, the unit of analysis presented here is much narrower: Glasgow City-specific deprivation deciles. What is of particular interest to the GoWell study is to clarify where in this spectrum of deprivation the individual GoWell areas lie. This is the focus of the next section of this report.

How deprived are the GoWell areas?

There are five different types of GoWell study area, encompassing 14 separate communities (see Appendix 3 for full details). Precise levels of deprivation in these study areas, and an estimation of where the areas lie within the overall spectrum of deprivation in the city, cannot be ascertained from routinely published data. This is because the geographical units used in the calculation of deprivation indices in Scotland do not match, or fit within, the boundaries of the GoWell areas. To overcome this, it was necessary to create an income deprivation index for each area, based on very small geographical units, and using identical data to that employed in the SIMD income domain. The latter was of course used in the creation of the income deprivation deciles described in the previous section.

A detailed description of the methodology employed in this task is outlined in Appendix 2. However, a very brief overview is additionally included below.

Methodological overview

- Sets of very small geographical units (census output areas[xii]) were derived to define each GoWell area. These were required because these were the smallest geographical units for which aggregated deprivation data could be supplied.
- Income deprivation data[xiii] were then obtained from the Department of Work and Pensions (DWP) for each set of areas. The data and relevant time periods matched exactly those used in the calculation of the 2006 SIMD income deprivation domain.
- Population denominator data were obtained from the GP registration based Community Health Index (CHI). The CHI data were adjusted by age and sex to control for known levels of 'inflation'. This approach mirrors the methodology employed in the use of CHI for NHS resource allocation purposes.[24] Population data

[xii] Output areas are the smallest geographical level at which census data are published. The average population size is around 120.

[xiii] Full details of the components of the income deprivation domain are listed in Appendix 2, but, briefly, are based on a combination of adults in receipt of income-related benefits (e.g. income support, job seekers allowance) and children dependent on recipients of such benefits. Data are for 2005.

were further adjusted to exclude the asylum seeker population, since that group is ineligible for the DWP benefits used to derive the measure of income deprivation.

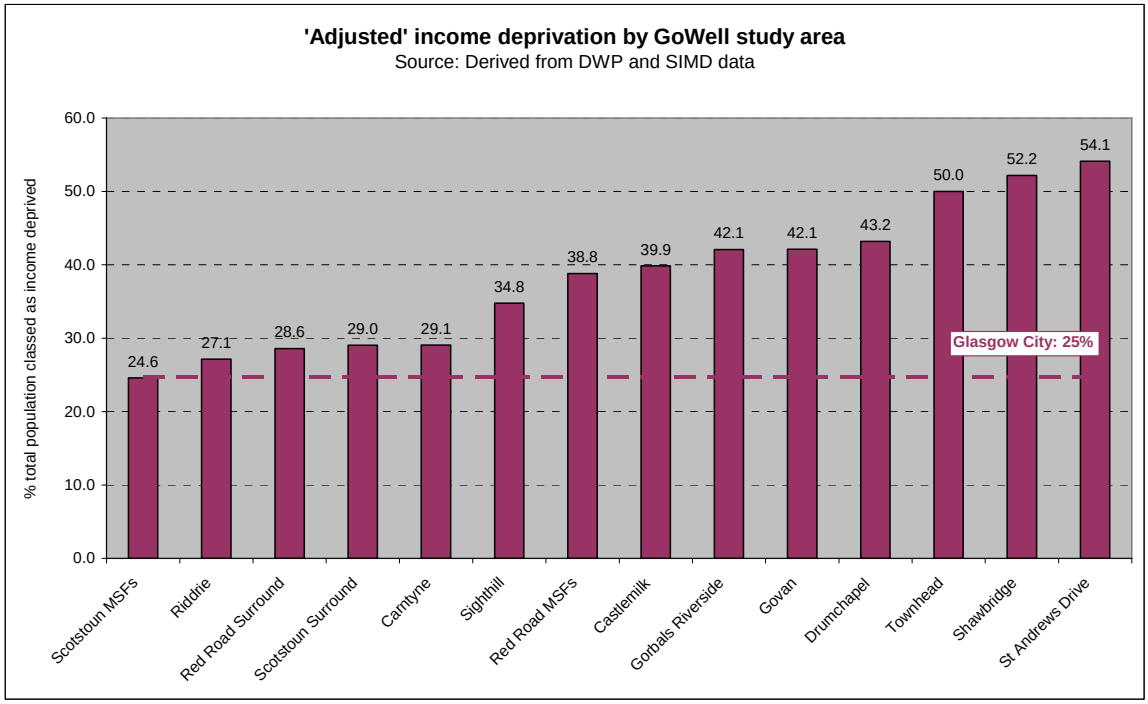
See Appendix 2 for further details of the methodology employed, and also for details of various comparisons and population size checks carried out to assess and ensure accuracy.

Some of the broader issues relating to this methodology are discussed further below.

Results

Figure 25 presents 'adjusted'[xiv] income deprivation levels by GoWell area. This shows that the proportion of the population classed as 'income deprived' in each area ranges from in excess of 50% (St Andrews Drive: 54%; Shawbridge: 52%; Townhead: 50%) to around 25% (Scotstoun MSFs).

Figure 25



[xiv] See methodological note above and Appendix 2. The main adjustment relates to the exclusion of the estimated number of asylum seekers from the population denominator.

The same data are presented in Figure 26 but with the cut-off points from the Glasgow City-based income deprivation deciles superimposed. These are the same deciles used in the analysis of indicators in the previous section.

Figure 26

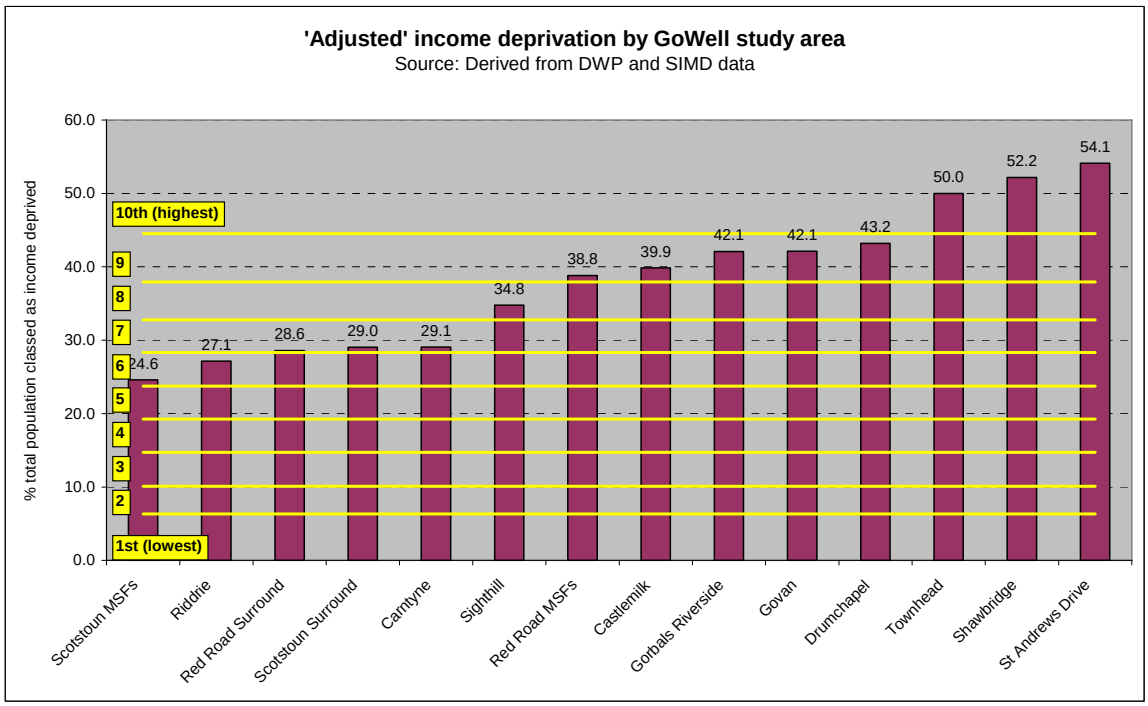


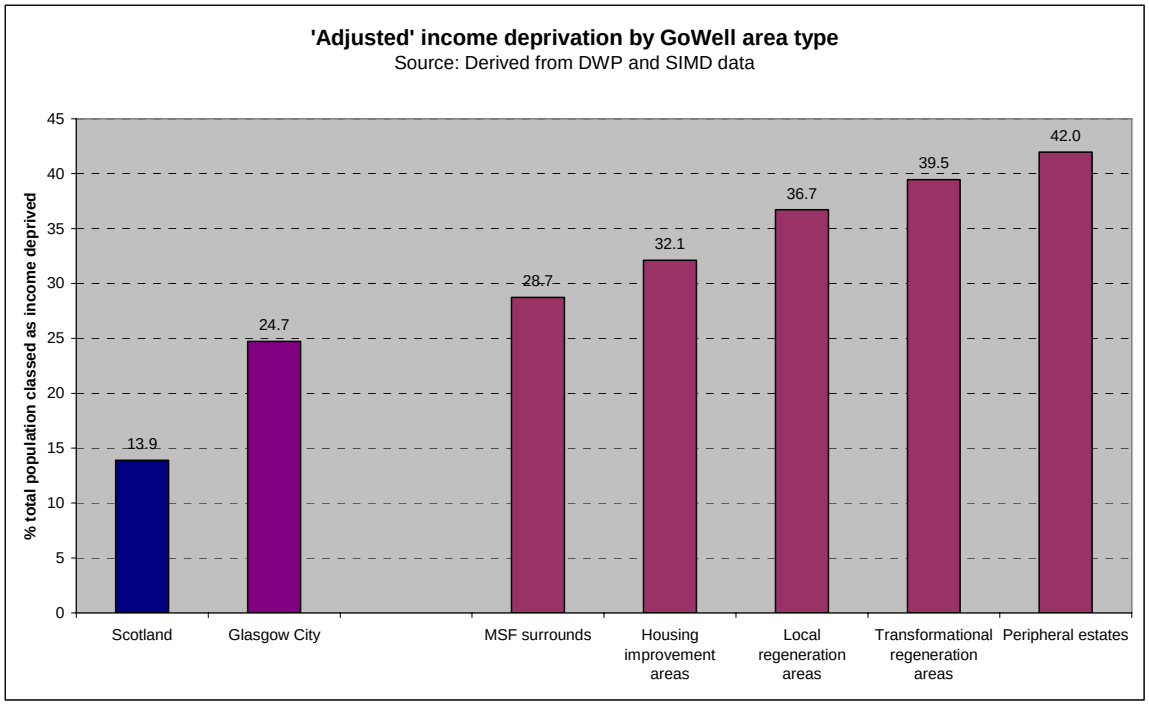
Figure 26 shows that of the 14 GoWell study areas, eight sit within deciles 9-10. Of the remaining six, one sits in decile 8, two in decile 7, and two in decile 6. Thus, this analysis confirms that, as a rule, the GoWell study areas are among the most deprived in Glasgow, but that there are a small number of exceptions to this. That said, it should be remembered that decile 6 in a Glasgow City context is still extremely deprived relative to Scotland. Levels of income deprivation for Glasgow stand at 25% of the total population; however, the equivalent figure for Scotland is 14%. Furthermore, the cut-off point for the most deprived 15% of Scottish datazones (a threshold used for the SIMD by the previous Scottish Government for various purposes) is that at least 25% of the population is income deprived. On that basis one could argue that *all* the GoWell areas are among the most deprived in the country. Clearly, therefore – and by definition – the

picture of 'relative' deprivation varies depending on the geographical context (e.g. Scotland versus Glasgow) in which it is viewed.

Deprivation by area type

Figure 27 shows the percentage of the total population classed as 'income deprived' by GoWell area type[xv]. As one would expect, this shows that all the types are highly deprived relative to both Glasgow and, especially, Scotland, and that the most deprived in this context are the Peripheral Estates and the Transformational Regeneration Areas.

Figure 27



Discussion note

The process of statistical adjustment outlined briefly above (and in full detail in Appendix 2) means that these adjusted income deprivation figures necessarily exclude the entire asylum seeker population in each area. In some study areas, asylum seekers account for more than 40% of the total population[25]. Clearly, therefore, in these cases

[xv] The area types are defined in Appendix 3.

this measure of 'deprivation' is highly artificial, given that it cannot reflect the true character and population of these areas.

Also, as mentioned in the methodological overview above (and provided in full detail in Appendix 2), a number of checks were carried out on the population denominator data used in the construction of the income deprivation index for each area. The results of these analyses suggest that the denominator data used are reasonably robust, but may incorporate some degree of inaccuracy in a handful of areas. The effect of this *may* be to underestimate levels of deprivation in the Gorbals to a degree, and overestimate levels in Townhead and – to a lesser extent – St Andrews Drive. This should be borne in mind when interpreting the results of the analysis[xvi]. Further details are outlined in Appendix 2.

[xvi] Comparisons of similarly derived CHI population data for 2001 with census population data for 2001 showed the adjusted CHI figure for the Gorbals to be around 20% higher than its census equivalent. It is difficult to ascertain how real this difference is, and to what extent it may have been affected by a census undercount, for example. However, if we accept that the CHI data was incorrect by this amount also in 2005, then the corresponding income deprivation figure would change to more than 50% rather than our originally derived figure of 42%. In contrast, the figure for Townhead would be around 42%, rather than our 50%, and the St Andrews Drive figure would be around 48% rather than 54%. The effects of such alterations would be small, however: Gorbals Riverside would fall into decile 10 instead of 9, Townhead would sit within 9 instead of 10, while the relative position of St Andrews Drive in decile 10 would remain unchanged.

Which areas in Glasgow are similar to the GoWell areas?

With a view to the long-term monitoring and evaluation of the effects of regeneration in the GoWell areas, it is clearly of interest to know which other areas in Glasgow are currently most similar to the study areas.

Although, as discussed in the previous section, the GoWell areas are on the whole relatively deprived in both a Glasgow and – particularly – a Scotland context, there is still two-fold variation in the rates of income deprivation across the 14 areas analysed. It is impossible, therefore, to match the study areas as a whole to other single areas in Glasgow. However, on the basis of the income deprivation deciles, it is possible to match groups of GoWell areas to sets of other areas in the city that are similarly deprived.

The recently updated community health profiles provide a range of health and wellbeing-related indicators for every 'neighbourhood' within Glasgow City. 'Neighbourhoods' are GHA-defined 'housing forum areas' with an average population size of approximately 10,000 residents (although population sizes vary considerably). Income deprivation (based on an identical definition of the measure calculated for the GoWell areas) is one of the indicators included in the profiles. Thus, we can easily compare levels of deprivation in neighbourhoods with that calculated for the GoWell areas.

Table 2 lists the Glasgow 'neighbourhoods' which sit within the income deprivation deciles discussed in the previous section. Area population, levels of income deprivation and corresponding GoWell areas (i.e. those with similar levels of deprivation) are also shown. The table highlights 14 'neighbourhoods' in the city which match the majority of GoWell areas in lying within deciles 8, 9 and 10. These obviously include a number of areas whose boundaries incorporate the study areas themselves (Drumchapel, Castlemilk, Greater Gorbals, Greater Govan, Haghill & Carntyne, Sighthill, Roystonhill & Germiston). However, other, additional areas are also included, such as Parkhead & Dalmarnock, Ruchill & Possilpark, Easterhouse, Springboig & Barlanark, Toryglen,

Lambhill & Milton, and more. All these areas are comparable to the majority of the GoWell areas in terms of the proportions of their populations classed as income deprived.

Table 2

Decile	Neighbourhood	Population	% income deprived	Similarly deprived GoWell areas (with adjusted % income deprived)
Decile 10	Parkhead & Dalmarnock	6,174	49.1%	Townhead (50%); Shawbridge (52%); St Andrews Drive (54%)
	Ruchill & Possilpark	9,100	42.6%	
Decile 9	Drumchapel	13,102	41.4%	Red Road MSFs (39%); Castlemilk (40%); Gorbals Riverside (42%); Govan (42%); Drumchapel (43%)
	Easterhouse	9,205	41.3%	
	Castlemilk	14,661	38.9%	
	Greater Gorbals	8,011	38.6%	
Decile 8	Springboig & Barlanark	13,145	37.3%	Sighthill (35%)
	Toryglen	5,047	36.1%	
	Lambhill & Milton	12,716	35.9%	
	Priesthill & Househillwood	8,344	35.9%	
	Ruchazie & Garthamlock	7,029	35.8%	
	Greater Govan	12,003	35.4%	
	Calton & Bridgeton	12,481	35.0%	
	Haghill & Carntyne	8,583	33.5%	
Decile 7	Tollcross & West Shettleston	15,497	32.6%	Red Road Surrounds(29%); Scotstoun Surrounds (29%); Carntyne (29%)
	Sighthill, Roystonhill & Germiston	12,764	32.4%	
	Balornock & Barmulloch	7,482	31.8%	
	Springburn	14,719	31.7%	
	Riddrie & Cranhill	10,769	31.6%	
	Corkerhill & North Pollok	4,582	30.1%	
	Blackhill & Hogganfield	3,598	29.4%	
Decile 6	Arden & Carnwadric	9,551	28.2%	Scotstoun MSFs (25%); Riddrie (27%)
	Ibrox & Kingston	12,931	27.0%	
	Govanhill	14,808	25.6%	
	Yoker & Scotstoun	12,472	24.7%	
	Maryhill Road Corridor	12,742	24.6%	
	North Cardonald & Penilee	13,664	24.2%	
	Pollokshields East	7,231	24.1%	
	North Maryhill & Summerston	12,261	24.0%	
	Dennistoun	10,638	23.8%	

Previous analysis of Scottish profiles data, as well as other relevant analyses[2,4], have shown that the types of health and wellbeing-related indicators included in the profiles are highly correlated on an area basis. Therefore, areas with high levels of mortality and morbidity tend to have correspondingly higher levels of, for example, unemployment, crime, poor educational attainment, vulnerable households, and poor child and maternal health. There are very few areas, if any, which buck the trend in this regard. It is reasonable therefore, to presume that the overall health and wellbeing profile of study areas such as Shawbridge, Drumchapel and Govan (all in income deprivation deciles 9 and 10) will be reasonably similar to areas such as Parkhead & Dalmarnock, Ruchill & Possilpark and Easterhouse (all also in deciles 9 and 10). This is useful in terms of providing additional reference points for monitoring and recording change in the GoWell areas.

Appendix 4 shows the community profiles 'data spines' – incorporating 65 separate indicators of community health and wellbeing – for these three comparator 'neighbourhoods' above (Parkhead & Dalmarnock, Ruchill & Possilpark and Easterhouse).

Conclusions and future plans

This report has served three purposes. It has:

1. quantified the extent of deprivation in the GoWell study areas;
2. identified other areas in Glasgow that currently experience similar levels of deprivation as the GoWell areas;
3. shown where GoWell areas fit within the overall spectrum of deprivation in the city, and in relation to patterns and trends of a number of indicators of health and wellbeing.

In terms of the first point, we now know that there is a spectrum in deprivation evident across the GoWell areas – but have confirmed that they are all among the most deprived areas in Scotland.

Second, the identification of similarly deprived areas is useful for future analyses and monitoring of change in the GoWell areas and elsewhere in the city.

The third point is particularly important. The indicators presented in the report are representative of the many facets of health and its determinants. All these aspects of health are important, and for many the gap between the most deprived parts of Glasgow (which include the majority of the GoWell study areas) and the least deprived areas is widening. This is important context in which to view the changes taking place in the study areas. For many indicators, 'success' may be simply to prevent the gap widening further in the first instance.

Future plans

Ecological monitoring is an important component of the GoWell project. Aside from the quantitative analyses presented in both this and its accompanying profiling report, the team has additionally produced a detailed summary and exploration of health and regeneration activities in Glasgow[26], while further qualitative work is currently underway aimed at better understanding and interpreting the changes occurring in the study areas by

means of gathering evidence from local key informants and reviewing local policies and plans. Further quantitative analyses are also planned around monitoring change in the areas pre- and post-regeneration, with particular emphasis on aspects such as population change, educational attainment and changes in deprivation. Further details are available on request.

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Appendix 1: Definitions and sources

Note that in all cases the 'source' indicates the source of original raw data sets, which were then manipulated to provide required measures (e.g. standardised rates).

Figure	Description and notes	Source
1	Estimates of male life expectancy at birth by deprivation: least and most deprived Carstairs quintiles compared between 1981/85 - 1998/2002 (areas fixed to their deprivation quintile in 1981). Estimates were calculated using Chiang (II) methodology[27]. Taken from *Let Glasgow Flourish* report, and calculated from General Register Office for Scotland (GRO(S)) mortality and population data.	*Let Glasgow Flourish* report
2-3	Estimates of male and female life expectancy by Glasgow City-specific SIMD income deprivation decile. Estimates were calculated as above and presented as three year rolling averages for period 1995/97-2003/05 Deciles were created using income deprivation data from the 2006 Scottish Index of Multiple Deprivation (SIMD) for Glasgow City datazones only. The components of the SIMD income deprivation domain are listed in Appendix 2; however, more comprehensive details are available from the Scottish Government website at: http://www.scotland.gov.uk/Topics/Statistics/SIMD. Datazones were ranked on the proportion of the total population in each datazone classed as 'income deprived', and then divided into ten groupings of equal population size (deciles). Note these deciles were the basic unit of analysis used throughout the third section of the report ('patterns and trends by deprivation decile').	Calculated from GRO(S) mortality and population data
4	Total population by Glasgow City-specific SIMD income deprivation decile, 1996-2006.	GRO(S)
5	Lone parent households (expressed as a percentage of all households with children) by Glasgow City-specific SIMD income deprivation decile, 2001-2006. These estimates are calculated by Glasgow City Council, based on 2001 Census data, and updated based on change in housing stock since 2001. The household estimates by type have been calculated by applying the City-wide change by household type to the data zone household estimates.	Glasgow City Council Development and Regeneration Services

Figure	Description and notes	Source
6-7	Alcohol-related mortality, Glasgow and Scotland (1980-2005), and by Glasgow City-specific SIMD income deprivation decile (1996-2005). Deaths expressed as European age-standardised rates per 100,000 population, and presented as three-year rolling averages. Alcohol-related causes defined by ICD9 and ICD10 codes published by the Office for National Statistics[28], and selected on the basis of principal cause of death only.	Calculated from GRO(S) mortality and population data
8-10	Drug-related deaths by Glasgow City-specific SIMD income deprivation decile, 1996-2006, expressed as total numbers (Figures 8 and 10) and as an average annual crude rate per 100,000 population. The precise definition used in determining drug-related deaths is complex, combining information on causes – and underlying causes – of death in terms of ICD codes, with other, specific information on the type of drug known to be present in the body at the time of death. Further information is available on the GRO(S) website at: http://www.gro-scotland.gov.uk	GRO(S)
11	Deaths from suicide, Glasgow and Scotland (1980-2005), and by Glasgow City-specific SIMD income deprivation decile (1996-2005). Deaths expressed as European age-standardised rates per 100,000 population, and presented as three-year rolling averages. Deaths include causes of 'undetermined intent', and so defined as: ICD9 E950-E959, E980-E989; ICD10 X60-X84, Y10-Y34.	Calculated from GRO(S) mortality and population data
12	Recipients of incapacity benefit and severe disability allowance by Glasgow City-specific SIMD income deprivation decile, expressed as the percentage of working age population (males aged 16-64; females 16-59), 1999-2006.	Scottish Neighbourhood Statistics (SNS) (for access to Department of Work and Pensions (DWP) data); GRO(S) (for population denominator data)
13	Income deprivation by Glasgow City-specific decile. See notes to Figures 2-3.	DWP
14	Children in workless households by Glasgow City-specific SIMD income deprivation decile, 2006. Total number of children in families on out of work benefits expressed as a percentage of all children in receipt of child benefit. Data for children in families on out of work benefits obtained from HM Revenue and Customs Small Area data available at: http://www.hmrc.gov.uk/stats/personal-tax-credits/ctc-small-areas.htm; Child benefit denominator data obtained from SNS.	HM Revenue and Customs; SNS

Figure	Description and notes	Source
15	Children in 'low-income' families by Glasgow City-specific SIMD income deprivation decile, 2006. Total number of children in families on out of work benefits *combined with* total number of children in families in receipt of *both* Working Tax Credit *and* Child Tax Credit. Data are presented as a percentage of all children in receipt of child benefit. Data sources as above. Note also that this matches separately published data produced by the Centre for Economic and Social Inclusion for the End Child Poverty organisation. Note that the 'low income' threshold for the data presented above equates to approximately 70% or less of median household income before housing costs. The official government measure is 60% or less of median household income before housing costs. As an example, according to official government calculations, a lone parent with two children would be in poverty if their gross weekly income was below £260 per week (around £13,500 per annum), whereas the equivalent figure based on this higher threshold would be £304 per week (approximately £15,800 p.a.). For a two-parent family with two children, the equivalent figures are £332 per week (£17,260 p.a.) for the official government measure, and £388 per week (£20,180 p.a.) based on this lower threshold.	HM Revenue and Customs; SNS
16	S4 pupils with five or more awards at SCQF level 5 or above by Glasgow City-specific SIMD income deprivation decile, 2002-2005. SCQF stands for the Scottish Credit and Qualification Framework (SCQF), which brings together different sets of qualifications into one comprehensive and integrated framework. SCQF classifies various Scottish educational qualifications within comparable 'levels'. Level 5 includes Standard Grades credit level. A full description of this level is available from the SCQF website at: http://www.scqf.org.uk/AbouttheFramework/Levels.aspx	SNS
17	Violent crime offenders and victims by Glasgow City-specific SIMD income deprivation decile, 2006-07, presented as crude rates per 10,000 resident population. Data supplied by Strathclyde Police's Violence Reduction Unit on the residence (datazone) of victims and perpetrators of violent crime in a one-year period for Glasgow City. Offences that are classified as 'violent offences' include: murder, attempted murder, serious assault, simple assault and possession of an offensive weapon.	Violence Reduction Unit, Strathclyde Police
18	Overcrowded households by Glasgow City-specific SIMD income deprivation decile, 2001 Data presented as percentages of all households termed 'overcrowded' – the latter definition relates the actual number of rooms in a property to the number of rooms 'required' by the members of the household (based on the relationships between them and their ages).	2001 Census

Figure	Description and notes	Source
19-20	Infant mortality rates by Glasgow City-specific SIMD income deprivation decile, 2001-2005. Figure 19 shows the total number of deaths in the first year of life over the whole five-year period, expressed as a rate per 1,000 live births in the same period; Figure 20 presents average annual rates for rolling three-year periods.	GRO(S)
21	Maternal smoking by Glasgow City-specific SIMD income deprivation decile, 2004. Maternal smoking is recorded at hospital booking, and is expressed as a percentage of all admissions. As noted in the main text of the report, the figures may be affected by a number of data quality issues, and should be interpreted with caution.	ISD Scotland
22	Breastfeeding by Glasgow City-specific SIMD income deprivation decile, 1997-2006. Breastfeeding rates were recorded at the 6-8 week review. Includes exclusively breastfed or fed mixed breast and bottle.	ISD Scotland
23-24	Teenage (<18) pregnancy rates by Glasgow City-specific SIMD income deprivation decile, 2003-05 Pregnancies in those aged less than 18, but expressed as a crude rate per 1,000 female population aged 15-17. This definition was used in the community profiles, and was adopted in relation to issues of patient confidentiality for data presented at small area levels. Data presented as three-year rolling average annual rates.	ISD Scotland
25-27	'Adjusted' income deprivation by GoWell study area (Figures 24-25) and study area type (Figure 27). See Appendix 2 for detailed definitions and methodology. Note also that full details on the income domain of the Scottish Index of Multiple Deprivation are available from the Scottish Government website at: http://www.scotland.gov.uk/Topics/Statistics/SIMD.	DWP

Appendix 2: Methodological details of deprivation analysis of the GoWell study areas

Aim

To classify each GoWell area in terms of a measure of deprivation derived from the most recent (2006) Scottish Index of Multiple Deprivation (SIMD).

Methods

SIMD domain

The income domain of the SIMD was chosen, as the deprivation score for this domain is relatively easy to construct. However, the majority of the domains used to derive the overall deprivation index are in fact very highly correlated.

Indicators

The income domain is made up principally of Department of Work and Pensions (DWP) benefits data from 2005. Specifically, it is derived from the following:

- number of adults (aged 16-59) receiving Income Support (April 2005);
- number of adults (aged 60+) receiving Guaranteed Pension Credit (May 2005);
- number of children (aged 0-15) dependent on a recipient of Income Support (April 2005);
- number of adults receiving (all) Job Seekers Allowance (April 2005);
- number of children (aged 0-15) dependent on a recipient of Job Seekers Allowance (all) (April 2005).

The overall income domain score is derived from a simple sum of the above indicator counts divided by the total population. There is no overlap between the indicators, so the resulting domain score is the percentage of the total population affected by income deprivation.

Geography

SIMD data are calculated at datazone level (small areas with an average population size of around 750). However, GIS mapping showed that datazone boundaries do not fit at all well with the boundaries of the GoWell areas. One possible method of overcoming this obstacle would be to use 'weighted' datazone figures[xvii]. This method is inherently inaccurate, however, and for some areas (e.g. Townhead) can produce incorrect and entirely misleading results.

The ideal solution would be to obtain the relevant DWP data for aggregated sets of full unit postcodes, each set accurately mapped to a GoWell area. However, DWP no longer provide the data in this way. They do, however, provide the same data for aggregated *census output areas (OAs)* (small areas with an average population size of around 120).

Therefore, sets of output areas mapped to each GoWell area were derived. This was achieved by means of:

- use of a General Register Office for Scotland (GRO(S)) postcode-to-output area look-up file, based on a best-fit methodology[xviii];
- GIS analysis to check resulting allocation of output areas to GoWell postcodes;
- discussion with 'local experts' regarding output areas whose boundaries overlapped with other areas[xix].

[xvii] Initial analyses carried out for the GoWell project (and reported in a series of internal baseline reports) used data published at datazone level, but allocated proportionally to the GoWell study areas. In other words, if half the population of a datazone lay within a study area, a weighting of 0.5 was applied to the data for the whole datazone, and then used for the GoWell area. Such an approach can be problematic for a number of reasons, particularly if the housing and /or population characteristics of one half of the datazone is different to that of the other half.

[xviii] From the GRO(S): "the output area [assigned to each postcode unit] is determined by the postcode centroid and, in turn the centroid is positioned by the digitiser in the most populated part of the postcode. So in a general sense it is population weighted. Each postcode can only be allocated one output area but it follows that one output area may have several postcodes allocated to it."

[xix] There were obviously quite a few cases where output areas contained some of the GoWell area but also a chunk of the neighbouring non-GoWell area. However, often the neighbouring non-GoWell area contained little or no housing, or in cases where it did, often the housing was of the same type, and thus would be unlikely to affect the analyses greatly. The latter was particularly true of Govan, which was difficult to define in terms of output areas. Ultimately, only four output areas which were allocated to GoWell areas on the basis of the GRO(S) look-up file were excluded: one from Sighthill; two from St Andrews Drive; and one from Townhead.

A file consisting of the resulting output areas assigned to each GoWell area was provided to DWP, who in turn supplied the required indicator counts for each OA-defined GoWell area.

Population denominator

Small area population data for 2005 were required to enable calculation of income deprivation scores.

The GP registration based Community Health Index (CHI) is the only data source from which such small area data can be accessed outwith census years. However, CHI has the well-known disadvantage of inflated population estimates among certain age groups. To account for this, weights were derived based on age and sex specific comparisons of 2005 CHI data at Glasgow City local authority level with 2005 Glasgow City mid-year population estimates produced by GRO(S). The resulting weights were then applied to the CHI data on an age/sex basis for each GoWell area. This mirrors methodology employed in the use of CHI for NHS resource allocation purposes.

Weighted CHI population estimates were then calculated for each GoWell area, based on the same mapping of full postcode units to output areas derived for the provision of DWP data.

Clearly, however, it is difficult to know the extent to which age/sex differences in population size at the city level apply at the small area level. Further comparisons were therefore made in an attempt to verify the accuracy of the weighted CHI population estimates. For each (output area defined) GoWell area, comparisons were made between the 2005 weighted CHI data and the 2001 census data; and also between 2001 weighted CHI data and the 2001 census data.

Generally, the estimates compared reasonably well, although there were some exceptions. For example, in Sighthill and the Red Road MSF areas, the 2001 weighted CHI estimates were 20-25% higher than the census data. However, this is likely to relate to asylum

seekers (discussed further below) who started to arrive in the city in 2000 but who were not included in the census. It might also reflect an undercount from the census in some of the (even more) deprived areas in the city. In addition, 2001 weighted CHI estimates were also around 20% higher for the Gorbals, but were 20% and 10% lower in Townhead and St Andrews Drive respectively. The effect of this *may be* to *underestimate* levels of deprivation in the Gorbals, *overestimate* levels in Townhead and – to a lesser extent – St Andrew's Drive. This should be borne in mind when interpreting the results of the analysis.

Asylum seeker population

Asylum seekers are not entitled to claim the DWP benefits used in the calculation of the income deprivation figures. However, they *are* included in the CHI population denominator data derived from GP registration information. This is clearly very important given that in some GoWell areas in excess of 40% of the population fall into this category. Therefore, the population estimates in each area were further adjusted by applying data from the GoWell baseline survey on the proportion of the population of each area who were asylum seekers to the weighted CHI populations (NB the 'actual' area populations, not those based on output areas); the resulting figure was then deducted from the (output area defined) weighted CHI population estimates. This resulted in a set of 'adjusted' income deprivation figures shown in Figures, 25, 26 and 27.

Comparisons with community profiles data

Given all the statistical manipulation involved, the accuracy of these estimates may appear questionable. However, they are in fact likely to be reasonably representative of the true figures. Comparisons with identical data for similar (but generally larger) areas within Glasgow from the updated community profiles on the whole show very high levels of similarity. For example, the figure produced for the Castlemilk GoWell area (40%) is almost identical to the figure for the Castlemilk 'neighbourhood' (39%). Similarly, the GoWell figures for Drumchapel (43%), Sighthill (35%), Carntyne (29%) and Scotstoun MSFs (25%) are very similar to those of the neighbourhoods of Drumchapel (41%), Sighthill, Roystonhill & Germiston (32%), Haghill & Carntyne (33%) and Yoker &

Scotstoun (25%) respectively. Meaningful comparisons for the likes of St Andrews Drive and Townhead, however, cannot be made as the community profile neighbourhoods are so much larger. Where comparisons can be made, however, the figures tend to be reassuring.

Appendix 3: Description of the GoWell study areas

Area Type	Area Type Descriptions	Areas
Transformational Regeneration Areas	Dominated by multi-storey flats. Major investment is planned for the next 5-10 years. Large scale demolition and rebuilding will take place in an attempt to reconnect the neighbourhoods with surrounding areas. Total population 11,275.	Red Road MSFs (pop 3370)
		Shawbridge (pop 2367)
		Sighthill (pop 5538)
Local Regeneration Areas	Smaller pockets of post-war housing. A range of regeneration and restructuring on a smaller scale than transformational areas is planned. Total population 3,533.	Gorbals Riverside (pop 713)
		Scotstoun MSFs (pop 1907)
		St Andrews Drive (pop 913)
Housing Improvement Areas	Consist of a mixture of housing types – tenements, four-in-blocks, semi-detached houses and multi-storey flats. Significant internal and external housing improvements are required in these areas. Total population 9,647.	Carntyne (pop 2642)
		Govan (pop 1061)
		Riddrie (pop 4647)
		Townhead (pop 1297)
Peripheral Estates	Large-scale housing estates on the city boundary where incremental changes are taking place. Both areas have received regeneration investment in the past. Total population 14,836.	Castlemilk (pop 5284)
		Drumchapel (pop 9552)
MSF Surrounds	Neighbourhoods surrounding the multi-storey flats in Red Road and Scotstoun. They are included to help the study to measure whether area regeneration can affect neighbouring communities. Total population 13,296.	Red Road Surrounds (pop 9170)
		Scotstoun Surrounds (pop 4126)

Appendix 4: Community profiles 'spine charts' for three areas similar to the GoWell study areas

'Spine graphs' from the 2008 Community Health and Wellbeing profiles for three neighbourhoods comparable (in terms of deprivation) to the majority of the GoWell study areas are presented overleaf.

The three areas are: Parkhead & Dalmarnock, Ruchill & Possilpark and Easterhouse.

The *spine graphs* show how an area compares to Scotland[xx] on a range of indicators covering domains identical or similar to those presented in the third part of the report (i.e. population demographics, mortality, prosperity/poverty etc). For each of the 67 indicators included within these domains the percentage difference from the Scottish figure is displayed graphically, alongside the value of the indicator itself shown both as a number (e.g. a population of 1,284 children) and as a percentage or rate (e.g. children as a percentage of the total population). More detailed notes accompany excel workbooks for each indicator, which are available at: www.gcph.co.uk/communityprofiles.

[xx] For some indicators, where national information is not available, the comparator used is not Scotland but Greater Glasgow & Clyde or Glasgow City. This is marked on a column adjacent to the graph e.g. G for Glasgow City, etc.

Parkhead and Dalmarnock

	Indicator	Number	Measure			– (Below) Scottish Average (%)[1] (Above) +	Time Period	Defn
						-70 -60 -50 -40 -30 -20 -10 0 +10 +20 +30 +40 +50 +60 +70		
Population Demographics	Child population (aged 0-15)	1,284	20.7	%		+15	2006	1
	Adult population (aged 16-64)	3,901	62.9	%		-4		
	Elderly population (aged 65+)	1,015	16.4	%		0		
	Minority ethnic groups	45	0.6	%		-68	2001	2
	Asylum Seekers	42	0.7	%	G	-30	2007	3
	Life expectancy - males	-	62.8	yrs		-15	01-05	4
	Life expectancy - females	-	74.3	yrs		-6		
	Live births	73	1.2	cr		+9	2006	5
	Households - Single adults	1,518	46.4	%	G	+8	2005	6
	Single parents	556	57.0	%*	G	+50		
Mortality	Deaths all ages (5 yrs)[2]	548	1,336.7	sr		+70	01-05	7
	Coronary heart disease deaths in under 75s (5 yrs)[2]	67	189.7	sr		+148		
	Cancer deaths in under 75s (5 yrs)[2]	75	211.7	sr		+44		
	Cerebrovascular disease deaths in under 75s (5 yrs)[2]	18	45.1	sr		+86		
Drugs, Alcohol and Smoking	Alcohol related and attributable hospital patients[3]	155	2,545.0	sr		+291	04-06	8
	Alcohol related deaths (5 yrs)[2]	47	148.5	sr		+447	01-05	9
	Estimated smokers (16+)	2,376	44.0	%		+62	03-04	10
	Drug related hospital patients[3]	21	394.2	sr		+407	04-06	11
	Drug related deaths (10 yrs)[4]	21	299.9	cr2		+375	97-06	12
Hospitalisation & Injury	Patients registered with cancer[3]	43	526.3	sr		+25	02-04	13
	Heart disease patients[3]	82	1,134.7	sr		+59	04-06	14
	Cerebrovascular disease patients[3]	33	411.0	sr		+118		
	Emergency medical admission patients[3]	705	10,688.1	sr		+71		
	Multiple admission patients[3]	161	2,299.6	sr		+88		
	Unintentional Injury patients[3]	144	2,285.3	sr		+126		
	Patients prescribed statins	1,984	27.8	%		+52	2006	15
	Road accident casualties - adults[3]	28	5.6	cr3		+39	01-04	16
	Assault discharges[3]	29	4.6	cr3		+349	04-06	17
Mental Health & Function	Suicide (5 yrs)[2]	11	40.7	sr		+159	01-05	18
	Self assessed health (classified as "Not Good")	1,620	23.2	%		+128	2001	19
	First hospital admission - psychiatric[3]	26	404.8	sr		+58	02-04	20
	Patients prescribed drugs for anxiety /depression	917	12.8	%		+59	2006	21
	Incapacity Benefit & SDA Claimants	1,250	32.9	%		+242	2007	22
	Long-term limiting illness	2,537	36.3	%		+79	2001	23
Social Work	Clients aged 0-15	155	12.1	%	G*	+69	2007	24
	Clients aged 16-64	438	11.2	%	G*	+151		
	Clients aged 65+	272	26.8	%	G*	+51		
Prosperity - Poverty	'Income deprived'	3,031	49.1	%		+253	2006	25
	'Employment deprived'	1,534	41.5	%		+223	2006	26
	Workless	1,910	50.3	%		+242	2006	27
	JSA - Unemployment	260	7.0	%		+152	2007	28
	Households without access to car/van	2,824	79.1	%		+131	2001	29
	Children in workless households	1,018	60.7	%		+231	2001	30
	Social grade E - benefit, unemployed, lowest grade	3,041	56.5	%		+152	2001	31
	Workplaces	181	49.0	cr3		-9	2005	32
	Employees[5]	4,700	128.0	cr		+71	2005	33
Educ-ation	Primary school attendance	-	91.0	%		-4	05/06	34
	S4 Pupils with 5+ GCSE equivalents	26	32.1	%		-44	05/06	35
	Adults without qualifications	3,164	64.2	%		+93	2001	36
Crime	Serious violent crime[3]	39	63.7	cr4		+334	04-06	37
	Domestic abuse incidents[3]	147	237.6	cr4		+178	04-06	38
	Vandalism[3]	209	339.1	cr4	G∞	+26	04-06	39
	Drug Offenders[3]	137	221.4	cr4	G∞	+120	04-06	40
Housing & Transport	Housing type - tenements	2,138	56.1	%	G	+13	2006	41
	House prices	-	57,576	£		-57	2006	42
	Housing tenure - Owner Occupiers	553	14.4	%	G	-72	2007	43
	Overcrowding	1,138	31.9	%		+171	2001	44
	Travelling to work by foot/bike or public transport	2,109	71.9	%		+61	2001	45
Child & Maternal Health	Smoking during pregnancy (3 yrs)[2]	85	36.3	%		+50	02-04	46
	Breastfeeding (at 6 - 8 week review)	5	9.2	%		-75	04-06	47
	Low birth-weight babies (3 yrs)[2]	10	4.7	%		+90	02-04	48
	Immunisation uptake at 24 mths - MMR	-	87.8	%		-3	04-06	50
	-all excl. MMR	-	94.6	%		-1		
	Dental hospital admissions for children[3]	26	2.0	cr		+77	03-06	51
	Teenage pregnancy - under 18 years (3 yrs)[2]	47	101.7	cr3		+152	02-04	52
	Road accident casualties - children[3]	6	4.2	cr3		+50	01-04	16
						-70 -60 -50 -40 -30 -20 -10 0 +10 +20 +30 +40 +50 +60 +70		

Notes

1. The graph shows the "measure" (e.g. crude rate, percentage, years of life) expressed as a percentage below or above the Scottish measure, but using a range from a minimum of -70% to a maximum of +70% only. The actual plus/minus percentage value is shown in bold to the right of the graph. This is calculated as the area 'measure' minus the Scottish measure, divided by Scottish measure and multiplied by 100.

2. Numbers presented over a period of years (e.g. 5 years for mortality) but rates are annual average rates.

3. Average annual numbers and rates. 4. Numbers and rates presented over a period of years (e.g. 10 years for drug deaths).

5. Employee numbers based on location of business, not residence area of employees.

Key

cr - crude rate per 100 population; cr2 - crude rate per 100,000 population; cr3 - crude rate per 1,000 resident population; cr4 - crude rate per 10,000 resident population; cr5 - crude rate per 1,000 live births; sr - age-sex standardised rate per 100,000 population; yrs - years; %* - single parent households as % of households with children. Defn - see table of definitions

The 6th column of the spine chart indicates where an indicator is not compared to the Scottish average but with a local alternative: G - Glasgow City average; G* - average of Glasgow, E & W Dunbartonshire, Renfrewshire & East Renfrewshire; GGC - Greater Glasgow and Clyde (excluding Lanarkshire parts); shading on an indicator bar also indicates where a 'local' comparator is used.

n/a: data not available (usually due to lack of coverage) or cannot be calculated. In addition, for particular indicators where the number of cases is below five and not zero, the range is shown i.e. '1-4'. NB If the number of teenage pregnancies is in the range '1-4' the rate is suppressed to avoid possible disclosure.

Ruchill and Possilpark

	Indicator	Number	Measure			– (Below) Scottish Average (%)[1] (Above) + -70 -60 -50 -40 -30 -20 -10 0 +10 +20 +30 +40 +50 +60 +70	Time Period	Defn
Population Demographics	Child population (aged 0-15)	1,771	19.4	%		+7	2006	1
	Adult population (aged 16-64)	5,950	65.0	%		-1		
	Elderly population (aged 65+)	1,430	15.6	%		-5		
	Minority ethnic groups	134	1.5	%		-27	2001	2
	Asylum Seekers	24	0.3	%	G	-73	2007	3
	Life expectancy - males	-	63.4	yrs		-14	01-05	4
	Life expectancy - females	-	72.1	yrs		-9		
	Live births	122	1.3	cr		+23	2006	5
	Households - Single adults	2,244	47.1	%	G	+10	2005	6
	Single parents	779	56.0	%*	G	+48		
Mortality	Deaths all ages (5 yrs)[2]	826	1,412.5	sr		+80	01-05	7
	Coronary heart disease deaths in under 75s (5 yrs)[2]	82	175.8	sr		+130		
	Cancer deaths in under 75s (5 yrs)[2]	127	271.7	sr		+85		
	Cerebrovascular disease deaths in under 75s (5 yrs)[2]	32	62.8	sr		+159		
Drugs, Alcohol and Smoking	Alcohol related and attributable hospital patients[3]	174	1,922.8	sr		+191	04-06	8
	Alcohol related deaths (5 yrs)[2]	33	72.1	sr		+166	01-05	9
	Estimated smokers (16+)	3,387	47.3	%		+74	03-04	10
	Drug related hospital patients[3]	20	242.1	sr		+212	04-06	11
	Drug related deaths (10 yrs)[4]	32	350.0	cr2		+454	97-06	12
Hospitalisation & Injury	Patients registered with cancer[3]	62	582.0	sr		+38	02-04	13
	Heart disease patients[3]	100	969.9	sr		+36	04-06	14
	Cerebrovascular disease patients[3]	37	339.9	sr		+81		
	Emergency medical admission patients[3]	947	9,690.7	sr		+55		
	Multiple admission patients[3]	219	2,159.7	sr		+77		
	Unintentional Injury patients[3]	165	1,781.1	sr		+76		
	Patients prescribed statins	2,652	25.2	%		+38	2006	15
	Road accident casualties - adults[3]	26	3.6	cr3		-10	01-04	16
	Assault discharges[3]	28	3.0	cr3		+194	04-06	17
Mental Health & Function	Suicide (5 yrs)[2]	19	45.5	sr		+190	01-05	18
	Self assessed health (classified as "Not Good")	2,091	22.9	%		+125	2001	19
	First hospital admission - psychiatric[3]	47	522.9	sr		+104	02-04	20
	Patients prescribed drugs for anxiety /depression	1,346	12.8	%		+58	2006	21
	Incapacity Benefit & SDA Claimants	1,615	28.0	%		+191	2007	22
	Long-term limiting illness	3,153	34.5	%		+70	2001	23
Social Work	Clients aged 0-15	296	16.7	%	G'	+133	2007	24
	Clients aged 16-64	676	11.4	%	G'	+154		
	Clients aged 65+	319	22.3	%	G'	+26		
Prosperity - Poverty	'Income deprived'	3,880	42.6	%		+207	2006	25
	'Employment deprived'	2,056	36.7	%		+186	2006	26
	Workless	2,605	45.1	%		+207	2006	27
	JSA - Unemployment	430	7.7	%		+175	2007	28
	Households without access to car/van	3,596	77.8	%		+127	2001	29
	Children in workless households	1,286	60.8	%		+231	2001	30
	Social grade E - benefit, unemployed, lowest grade	3,590	51.3	%		+129	2001	31
	Workplaces	252	45.0	cr3		-17	2005	32
	Employees[5]	3,400	61.6	cr		-18	2005	33
Educ-ation	Primary school attendance	-	92.1	%		-3	05/06	34
	S4 Pupils with 5+ GCSE equivalents	34	27.6	%		-52	05/06	35
	Adults without qualifications	4,116	63.0	%		+90	2001	36
Crime	Serious violent crime[3]	36	39.9	cr4		+172	04-06	37
	Domestic abuse incidents[3]	129	141.4	cr4		+65	04-06	38
	Vandalism[3]	414	454.9	cr4	G∞	+69	04-06	39
	Drug Offenders[3]	367	403.3	cr4	G∞	+300	04-06	40
Housing & Transport	Housing type - tenements	2,608	50.8	%	G	+2	2006	41
	House prices	-	99,835	£		-25	2006	42
	Housing tenure - Owner Occupiers	1,292	24.8	%	G	-51	2007	43
	Overcrowding	1,459	31.5	%		+169	2001	44
	Travelling to work by foot/bike or public transport	2,882	74.0	%		+66	2001	45
Child & Maternal Health	Smoking during pregnancy (3 yrs)[2]	157	45.2	%		+86	02-04	46
	Breastfeeding (at 6 - 8 week review)	21	18.7	%		-49	04-06	47
	Low birth-weight babies (3 yrs)[2]	12	3.9	%		+59	02-04	48
	Immunisation uptake at 24 mths - MMR	-	89.6	%		-1	04-06	50
	-all excl. MMR	-	98.6	%		+3		
	Dental hospital admissions for children[3]	36	2.0	cr		+74	03-06	51
	Teenage pregnancy - under 18 years (3 yrs)[2]	45	76.9	cr3		+90	02-04	52
	Road accident casualties - children[3]	8	4.5	cr3		+60	01-04	16

Notes

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The 6th column of the spine chart indicates where an indicator is not compared to the Scottish average but with a local alternative: G - Glasgow City average; G* - average of Glasgow, E & W Dunbartonshire, Renfrewshire & East Renfrewshire; GGC - Greater Glasgow and Clyde (excluding Lanarkshire parts); shading on an indicator bar also indicates where a 'local' comparator is used.

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Easterhouse

	Indicator	Number	Measure			− (Below) Scottish Average (%)[1] (Above) +	Time Period	Defn
						-70 -60 -50 -40 -30 -20 -10 0 +10 +20 +30 +40 +50 +60 +70		
Population Demographics	Child population (aged 0-15)	2,154	23.3	%		+29	2006	1
	Adult population (aged 16-64)	5,895	63.8	%		-3		
	Elderly population (aged 65+)	1,190	12.9	%		-21		
	Minority ethnic groups	69	0.7	%		-66	2001	2
	Asylum Seekers	0	0.0	%	G	-100	2007	3
	Life expectancy - males	-	67.3	yrs		-9	01-05	4
	Life expectancy - females	-	73.8	yrs		-7		
	Live births	154	1.7	cr		+54	2006	5
	Households - Single adults	1,394	34.5	%	G	-19	2005	6
	Single parents	776	48.7	%*	G	+28		
Mortality	Deaths all ages (5 yrs)[2]	575	1,215.8	sr		+55	01-05	7
	Coronary heart disease deaths in under 75s (5 yrs)[2]	51	128.7	sr		+68		
	Cancer deaths in under 75s (5 yrs)[2]	108	261.7	sr		+79		
	Cerebrovascular disease deaths in under 75s (5 yrs)[2]	22	50.6	sr		+109		
Drugs, Alcohol and Smoking	Alcohol related and attributable hospital patients[3]	161	1,921.6	sr		+194	04-06	8
	Alcohol related deaths (5 yrs)[2]	29	67.5	sr		+149	01-05	9
	Estimated smokers (16+)	3,642	49.8	%		+83	03-04	10
	Drug related hospital patients[3]	21	267.7	sr		+244	04-06	11
	Drug related deaths (10 yrs)[4]	23	228.8	cr2		+262	97-06	12
Hospitalisation & Injury	Patients registered with cancer[3]	52	543.3	sr		+29	02-04	13
	Heart disease patients[3]	103	1,184.9	sr		+66	04-06	14
	Cerebrovascular disease patients[3]	30	329.5	sr		+75		
	Emergency medical admission patients[3]	866	9,603.0	sr		+54		
	Multiple admission patients[3]	194	2,138.6	sr		+75		
	Unintentional Injury patients[3]	160	1,763.0	sr		+74		
	Patients prescribed statins	2,738	26.6	%		+46	2006	15
	Road accident casualties - adults[3]	26	3.7	cr3		-8	01-04	16
	Assault discharges[3]	39	4.3	cr3		+313	04-06	17
Mental Health & Function	Suicide (5 yrs)[2]	13	26.3	sr		+68	01-05	18
	Self assessed health (classified as "Not Good")	1,831	18.3	%		+80	2001	19
	First hospital admission - psychiatric[3]	36	396.0	sr		+55	02-04	20
	Patients prescribed drugs for anxiety /depression	1,335	13.0	%		+60	2006	21
	Incapacity Benefit & SDA Claimants	1,355	23.5	%		+144	2007	22
	Long-term limiting illness	2,928	29.2	%		+44	2001	23
Social Work	Clients aged 0-15	294	13.6	%	G*	+91	2007	24
	Clients aged 16-64	582	9.9	%	G*	+120		
	Clients aged 65+	284	23.9	%	G*	+35		
Prosperity - Poverty	'Income deprived'	3,806	41.3	%		+198	2006	25
	'Employment deprived'	1,843	32.7	%		+154	2006	26
	Workless	2,370	41.1	%		+179	2006	27
	JSA - Unemployment	355	6.3	%		+125	2007	28
	Households without access to car/van	3,068	71.2	%		+108	2001	29
	Children in workless households	1,532	52.7	%		+187	2001	30
	Social grade E - benefit, unemployed, lowest grade	3,255	45.3	%		+102	2001	31
	Workplaces	164	29.1	cr3		-46	2005	32
	Employees[5]	2,200	39.5	cr		-47	2005	33
Educ-ation	Primary school attendance	-	93.4	%		-2	05/06	34
	S4 Pupils with 5+ GCSE equivalents	50	42.4	%		-27	05/06	35
	Adults without qualifications	4,087	58.9	%		+77	2001	36
Crime	Serious violent crime[3]	52	56.9	cr4		+288	04-06	37
	Domestic abuse incidents[3]	150	163.0	cr4		+91	04-06	38
	Vandalism[3]	386	419.0	cr4	G∞	+55	04-06	39
	Drug Offenders[3]	202	219.8	cr4	G∞	+118	04-06	40
Housing & Transport	Housing type - tenements	2,949	66.4	%	G	+34	2006	41
	House prices	-	113,934	£		-15	2006	42
	Housing tenure - Owner Occupiers	1,386	30.9	%	G	-39	2007	43
	Overcrowding	1,406	32.6	%		+178	2001	44
	Travelling to work by foot/bike or public transport	3,417	70.0	%		+57	2001	45
Child & Maternal Health	Smoking during pregnancy (3 yrs)[2]	154	39.6	%		+63	02-04	46
	Breastfeeding (at 6 - 8 week review)	19	15.9	%		-56	04-06	47
	Low birth-weight babies (3 yrs)[2]	12	3.6	%		+44	02-04	48
	Immunisation uptake at 24 mths - MMR	-	87.9	%		-3	04-06	50
	-all excl. MMR	-	96.2	%		0		
	Dental hospital admissions for children[3]	43	1.9	cr		+69	03-06	51
	Teenage pregnancy - under 18 years (3 yrs)[2]	45	66.1	cr3		+64	02-04	52
	Road accident casualties - children[3]	9	3.5	cr3		+27	01-04	16
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