



Case Study

Health and its determinants in West Central Scotland compared to Silesia in Poland



**Case study: Health and its determinants in West
Central Scotland compared to Silesia in Poland.**

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Please note that a detailed list of all the data and sources used to produce this case study, including formal citations, is provided in the Appendix to the main report. However, we would like to acknowledge the use of:

- UK data archive material (for access to data from the Scottish Health Survey; Scottish Household Survey; the Labour Force Survey; 2001 Census (Standard Area Statistics). Note also that Census output is Crown copyright and is reproduced with the permission of the Controller of HMSO and the Queen's Printer for Scotland.
- Other UK and European datasets (Polish Population and Housing Census 2002; the Central Statistical Office of Poland (GUS); the Social Structure in Poland: Polpan Study; Eurostat; Eurobarometer; the Global Adult Tobacco Survey (GATS) Poland; SoDa (Solar Radiation Data); The Electoral Commission; Polish National Electoral Commission).

Executive Summary

This case study – along with three others – accompanies the report entitled: *Health and its determinants in Scotland and other parts of post-industrial Europe: the 'Aftershock of Deindustrialisation' study - phase two.*

The case study presents the results of analyses of routine administrative and survey data for two post-industrial regions: West Central Scotland (WCS) and Silesiaⁱ in Poland. This is part of a larger set of analyses exploring the reasons behind the poor health profile of WCS in comparison to other parts of Europe that have also experienced the economic, social and health impact of post-industrial decline.

This case study is more limited in scope and data availability than the others, being based on analysis of routine web-based data rather than in-depth collaborative research. However, its main findings are that:

- **Life expectancy** in Silesia improved at a faster rate than in WCS between 1995 and 2007. Over this period, the gap in male life expectancy between these two regions reduced from 3.3 to 2.3 years, while the gap in female life expectancy disappeared.
- Measures of **health and function** fail to provide clear insights into WCS's poor health outcomes. Adults in WCS report higher levels of life satisfaction and are more likely to rate their general health as good/very good than their counterparts in Silesia. The percentage of adults reporting a long-term limiting illness is similar in both regions.
- **Socio-economic** factors alone do not appear to explain WCS's poor health status relative to Silesia. The 1990s saw a deterioration in labour market conditions in the Polish region, and an improvement in WCS, as

ⁱ The first *Aftershock* report analysed mortality for the Katowice *voivodship* which existed between 1975 and 1998. Due to changes to boundaries and data collection issues, in this report we use the Silesia *voivodship* to represent this region: this includes the Katowice area but is slightly larger.

measured by unemployment, employment and workless households. Survey data also suggest that adults in WCS are less likely to perceive their household income as inadequate compared to those in Silesia. More children in WCS live in affluent households, and fewer live in 'low affluence' households, than is the case in Silesia.

- Levels of **income inequality** were higher in WCS than in Silesia. Although relative poverty rates were higher in WCS, the difference was not statistically significant.
- Compared to Silesia, the WCS **population** is characterised by an excess of younger working-age females over working age males; a slightly higher dependency ratio; lower population density; and higher fertility rates.
- There are differences in **social** indicators of the two regions. WCS has a higher percentage of 'vulnerable' (lone parent and single-person) households and lower marriage rates compared to Silesia. WCS exhibits more polarisation in educational attainment, with a higher proportion of adults with no/low qualifications but also a higher proportion with tertiary level qualifications. Data on **social capital** are mixed. Religious affiliation and regular attendance at religious ceremonies is much higher in Silesia, although voter turnout and interest in politics compares unfavourably with the Scottish region.
- In terms of the **physical environment**, WCS has lower exposure to sunshine (and therefore vitamin D) than Silesia. Overcrowding is relatively higher in the Polish region. Perceived neighbourhood safety is slightly higher among men in WCS (no regional differences were observed for women).
- Data on **health behaviours** are limited. However, male smoking rates were significantly higher in the Polish region, but female smoking rates significantly higher in WCS.

- The few indicators of **child and maternal health** for which comparable data for both regions were available (births to teenage mothers, low birth-weight babies) showed that WCS compares unfavourably relative to Silesia.

1.0 Introduction

1.1 Background

This case study accompanies the report *Health and its determinants in Scotland and other parts of post-industrial Europe: the 'Aftershock of Deindustrialisation' study - phase two* and provides more in-depth comparisons between West Central Scotland (WCS) and Silesia in Poland. Its scope is limited to comparisons of routine data on health determinants and outcomes in these two regions: for a discussion of the historical, cultural and social context in which these differences should be viewed, readers should refer to the main report.

In the first *Aftershock* reportⁱⁱ, we showed that life expectancy is increasing at a slower rate in WCS than other post-industrial European regions¹. This, the second of four case studies, compares health and its determinants in more detail in WCS and the Polish region of Silesia, to provide more detailed insights into the reasons behind these trends.

As noted earlier, this case study is more limited than the other case study reports in both its scope and in terms of the availability of comparable data for the Polish and Scottish regions. Rather than the product of collaborative research (as is the case with the other three regions), the data presented in this report was accessed from routine (web-based) resources.

For reasons outlined in more detail below, this Polish region was referred to as 'Katowice' in the first *Aftershock* report.

ⁱⁱ The first stage of this research was published in the 2008 report by the Glasgow Centre for Population Health and NHS Health Scotland entitled '*The Aftershock of Deindustrialisation – trends in mortality and other parts of post-industrial Europe*'. On the basis that the effects of post-industrial decline are often blamed for Scotland's – and particularly West Central Scotland's (WCS) – enduring poor health status, that first stage of research sought to: (a) identify other regions in Europe which had experienced comparable levels of deindustrialisation; and (b) collect and analyse long-term trends in mortality for all the identified regions. The results showed that mortality was generally lower in the other regions compared to WCS, and was improving faster.

1.2 Why compare these two regions?

Silesia (Śląskie in Polish) is the most urbanised and industrial region in Poland. Located in Southern Poland (Figure 1), the region covers 12,300 square kilometres and is home to 4.7m people². The Polish region was one of a number of European regions highlighted in the first *Aftershock* report. Silesia and WCS both share an industrial heritage: in 1980-81, almost half of people in employment in these regions worked in industry. They have also experienced deindustrialisation, though in Silesia's case this was delayed until the collapse of communism.

Figure 1ⁱⁱⁱ



However, they also differ in some important respects. The political and social context in which their economies operated diverged sharply after World War II, as communism was imposed on Poland between 1945 and 1989. Deindustrialisation also occurred later in Silesia than in WCS. What is especially interesting is the rapid increase in life expectancy in the Polish

ⁱⁱⁱ Note map is not to scale.

region after 1990 against a backdrop of rising unemployment, poverty and inequality³. Finally, as noted in the main report, Silesia (along with Limburg in the Netherlands) is a partial exception to other de-industrialised regions, because its levels of poverty and unemployment compare favourably to the national (Polish) average^{iv}. Comparing health outcomes and determinants between these two regions may help shed light on how WCS can more effectively improve its health.

1.3 Aim and approach

As with the main report and the other case studies, our aim here is to respond to two key questions:

1. Can WCS's relatively slower rate of health improvement be explained purely in terms of socio-economic factors (poverty, deprivation etc.)?
2. Do comparisons of other health determinant information identify important differences between WCS and other regions?

The approach taken here was to assemble a range of comparable social, economic and health-based data for Katowice/Silesia and WCS (and where possible, sub-regions). Indicators were grouped beneath the headings used in the main report. These included:

- Health and function, covering aspects such as life expectancy and self-assessed health and well-being;
- Prosperity and poverty;
- Population-related factors;
- The Social environment (including educational attainment, and vulnerable households);
- The Physical environment;
- Health behaviours;

^{iv} Although in the context of a Polish full-time employee earning a third of their counterparts in the UK, after adjusting for the relative cost of goods and services (See Eurostat: http://epp.eurostat.ec.europa.eu/portal/page/portal/labour_market/earnings/database).

- Child and maternal health.

Many of the limitations of this approach – such as gaps in the data, cultural differences (e.g. in household car ownership or home ownership), and variation in the history and context of deindustrialisation – have been noted in the main report. They apply equally to this case study.

1.4 Geographies

In both the main report and the four case studies, we have tried – wherever possible – to present data for the precise geographical definitions of the regions used in the first *Aftershock* report (see Appendix 1 of that report for more details). However, one of the limitations of the use of routine data is that this is not always possible. For the Polish region we present data in this report both for Katowice, but also (and most often) for Silesia (Box 1) . For WCS we define WCS as comprising the same eleven local authority areas used in the first *Aftershock* report^v: On occasion, however, a number of ‘proxy’ geographies have been used to represent WCS (e.g. Greater Glasgow (and Clyde) Health Board area^{vi}, Strathclyde region^{vii}, South Western Scotland^{viii}).

^v East Ayrshire, East Dunbartonshire, East Renfrewshire, Glasgow City, Inverclyde, North Ayrshire, North Lanarkshire, Renfrewshire, South Ayrshire, South Lanarkshire, and West Dunbartonshire.

^{vi} The Greater Glasgow and Clyde Health Board area comprises six local authorities (East Dunbartonshire, East Renfrewshire, Glasgow City, Inverclyde, Renfrewshire and West Dunbartonshire) plus parts of North and South Lanarkshire. The former Greater Glasgow Health Board, which existed before 2006, covered Glasgow City, East Dunbartonshire and parts of West Dunbartonshire, East Renfrewshire, North and South Lanarkshire.

^{vii} Strathclyde region includes the 11 local authorities of West Central Scotland plus Argyll & Bute.

^{viii} South Western Scotland comprises the 12 local authority areas of the former Strathclyde region, plus Dumfries and Galloway.

Box 1 Boundary changes and the Katowice/Silesian region

The ideal geography for analysis of the Katowice/Silesian region would be the Katowice region ('voivodship') which existed in Poland between 1975 and 1999 (and was the basis for the analyses undertaken in the first *Aftershock* report). Administrative boundary changes and the way in which much of the Polish data are collected make this difficult to achieve. In this report, the region is generally represented by the Silesia *voivodship* which was created in 1999: this includes the old Katowice *voivodship*, but is slightly larger. However, there are a few exceptions to this rule: some (pre-1999) time series data use the old Katowice boundaries, while health behaviour data is presented for 'South Poland' comprising Silesia plus the neighbouring *voivodship* of Małopolska. Where this is the case it has been noted in the text.

At a *sub-regional* level, the main unit of analysis chosen for WCS was the Community Health Partnership (CHP) (Community Health and Social Care Partnerships within Glasgow)^{ix}. In 2006, there were 15 CHPs in WCS, with populations ranging from 81,000-323,000. The comparable Silesia geography was the county ('powiat'), with populations ranging from 55,000-315,000. Some smaller *powiats* were merged to narrow this range to 75,000-315,000. This approach produced a final list of 44 districts (Figure 2). Silesia *powiats*/merged *powiats* are shown in orange and WCS CHPs in blue.

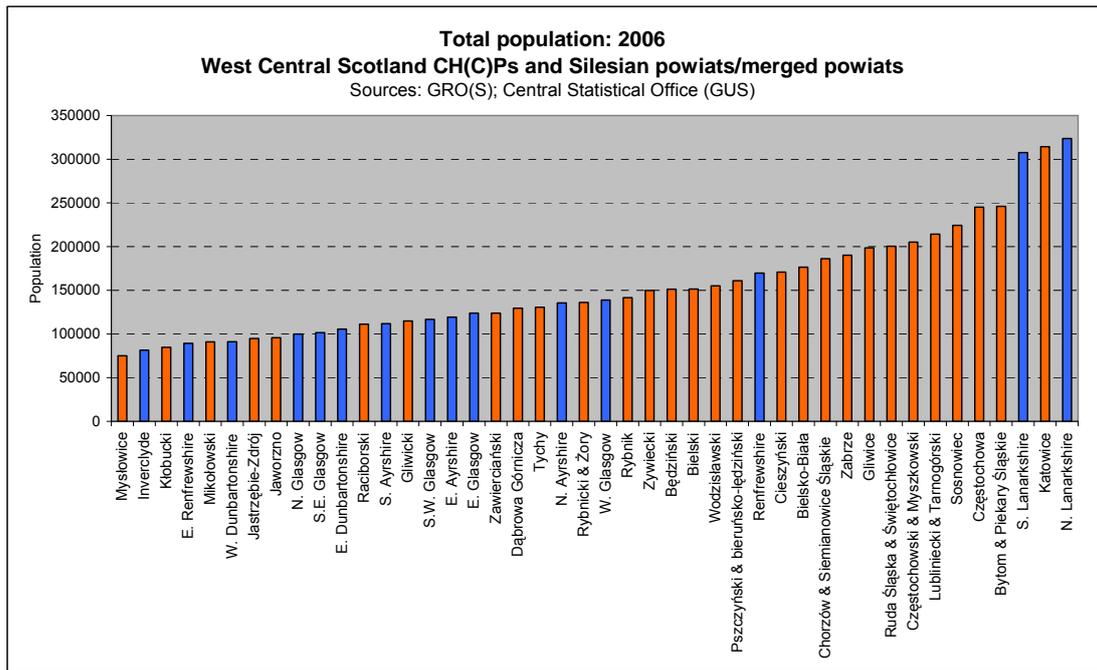
Again, there are a few exceptions to this rule, where data limitations made it necessary to compare parliamentary constituencies (for voter turnout) or NUTS 3^x geographies (low birth-weight babies).

^{ix} Note that at the start of this project, there were five Community Health Partnerships in Glasgow City (referred to as Community Health and Care Partnerships (CH(C)Ps), although in this report we use the generic CHP abbreviation used elsewhere in WCS. However, in 2010 the boundaries of the Glasgow areas were redrawn, with the number of CHP areas reduced to three. This report presents data based on the old (five) boundaries.

^x Nomenclature of Units for Territorial Statistics III (NUTS 3) regions of the EU have populations in the range 150,000 to 800,000.



Figure 2



1.5 Data sources and limitations

As in the other case studies, we drew on a diverse range of data sources to compare health in the two regions. These included administrative data (e.g vital statistics on births and deaths), health surveys, census data and other household surveys (e.g the Polpan Survey^{xi} and the European Social Survey^{xii}). Triangulating data in this way imposes a number of limitations. Sample sizes from the Polish surveys were often small compared to Scottish surveys. Care was taken to ensure that concepts (e.g unemployment, employment) and questions (e.g measurement of daily smoking) were as directly comparable as possible. However, any findings must also be interpreted in light of the different cultures and public policies at work in the two regions.

^{xi} The Polish Panel Survey (Social Structure in Poland: POLPAN) is a panel sample of Polish citizens. There have been five waves of the survey since 1988 (in 1988, 1993, 1998, 2003 and 2008), with a sample size of nearly 6,000 people in 1988 and c. 1,700 in 2003.

^{xii} Established in 2002, the European Social Survey (ESS) is a biennial multi-country survey covering over 30 nations. Its aim is to measure and explain trends in attitudes, beliefs and values across countries in Europe and its close neighbours.

2.0 Health and Function: a further analysis of health outcomes in the regions

In this section we revisit trends in life expectancy in the two regions, examine mortality data at a sub-regional level and compare self-reported measures of health and well-being, including subjective general health, limiting health problems and life satisfaction, in WCS and Silesia.

2.1 Life expectancy and mortality

2.1.1 Trends in life expectancy in the two regions

In the first *Aftershock* report, trends in male and female life expectancy for the Katowice region and WCS were presented for the period 1975-2005. They showed that life expectancy improved at a faster rate in Katowice than WCS during the 1990s for both sexes. Here we show updated trends (for a shorter time series, 1995-2007) comparing the larger Silesian region against WCS. Similar trends are evident. Between 1995 and 2007, the gap in male life expectancy between Silesia and WCS fell from 3.3 years to 2.3 (Figure 3). Over the same period, the regional gap in female life expectancy disappeared (Figure 4).

Figure 3

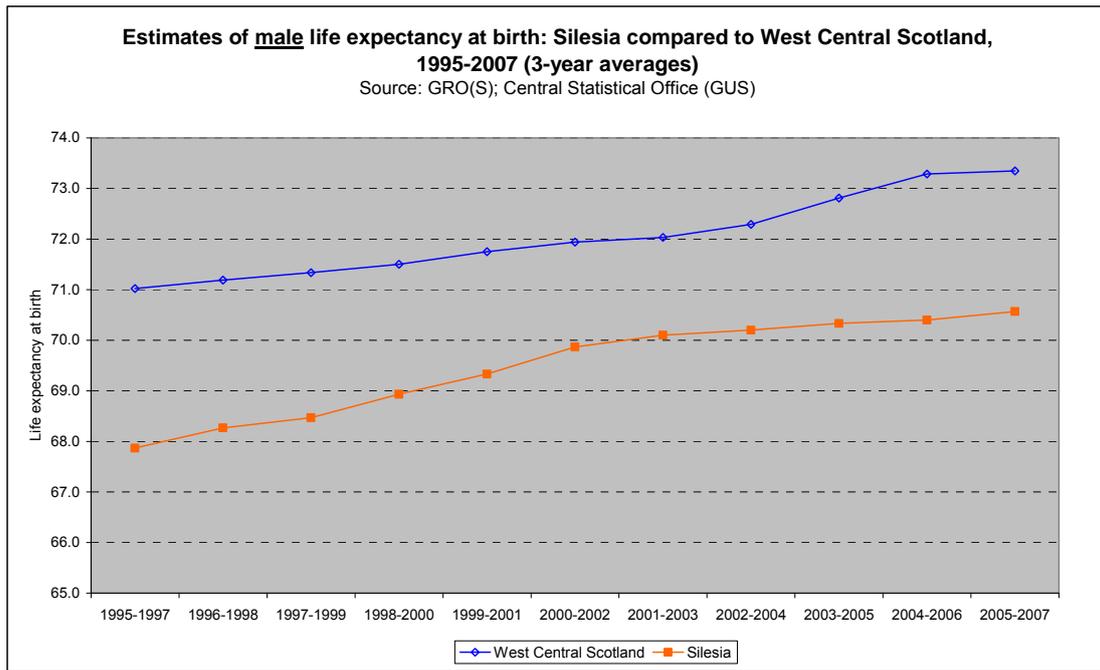
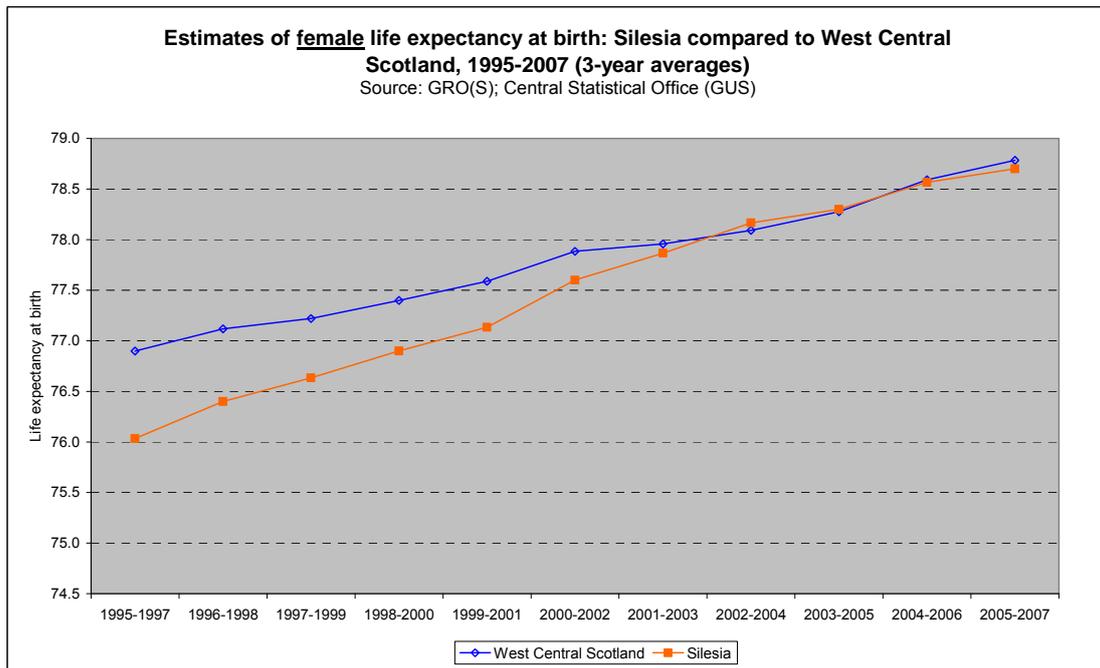


Figure 4



2.1.2 Age and cause-specific mortality

In the first *Aftershock* report, differences in patterns of mortality between Katowice and WCS were highlighted for the period 1980-1982 and 2003-2005. The main findings of these analyses were:

- Mortality rates for children aged 0-14 were higher in Katowice in the early 1980s but fell at a faster rate than WCS over time. Rates in the Polish region for this age group are now very similar to those in WCS.
- In the 1980s, mortality rates for younger working-age adults in Katowice were consistently higher than WCS. However, in the 1990s rates in Katowice fell steadily while those in WCS increased (driven principally by external causes (especially suicide) and chronic liver disease). By 2003-2005, mortality rates for this age group were similar in the two regions.
- For middle-aged males (aged 46-64), mortality rates were consistently lower in WCS than in Katowice. There was some fluctuation over time – for this age group, mortality rates in Katowice rose in the 1980s and fell in the 1990s. For middle-aged women, mortality rates in WCS were fairly similar to those in Katowice throughout, though the causes of death differ.
- Male mortality rates among the elderly (aged 65+) in Katowice deteriorated relative to WCS in the 1980 but improved in the 1990s. The difference in mortality rates between the two regions is now similar to what it was in the early 1980s.
- Both regions provide examples of dramatic improvement in mortality from selected causes: for example IHD/stroke (WCS), male lung cancer (WCS), stomach cancer (Katowice) and suicide (Katowice).

- In 1982-1984, WCS had higher rates of mortality than Silesia from stroke and IHD and a lower rate of mortality from chronic liver disease. By 2003-2005, this position had reversed.

Further details of these analyses are available from the first *Aftershock* report.

2.1.3 Sub-regional mortality

For men, there is evidence that mortality in WCS is more polarised than in Silesia. Of the 15 CHPs, six have male mortality rates that are lower than the 'best' Silesian districts. However, the five Glasgow CHPs have mortality rates that are comparable to the 'worst' Silesian districts (Figure 5). For women, a different picture emerges: only two WCS CHPs have mortality rates below those seen in Silesia districts, while female mortality rates in North Glasgow are even higher than those observed in the 'worst' districts in Silesia (Figure 6).

Figure 5

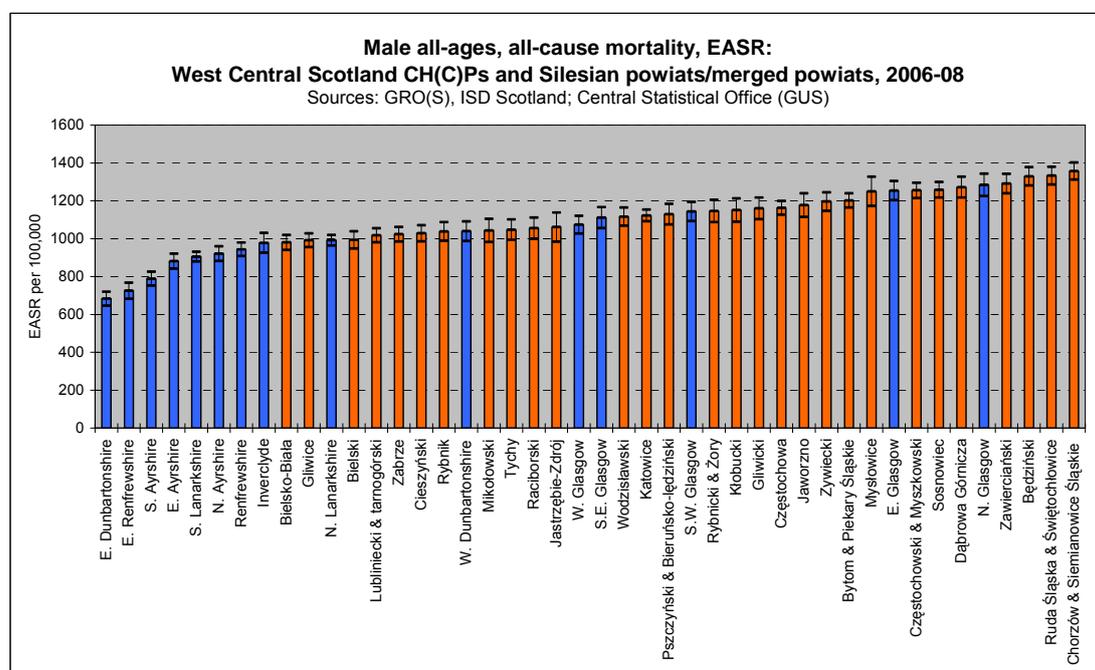
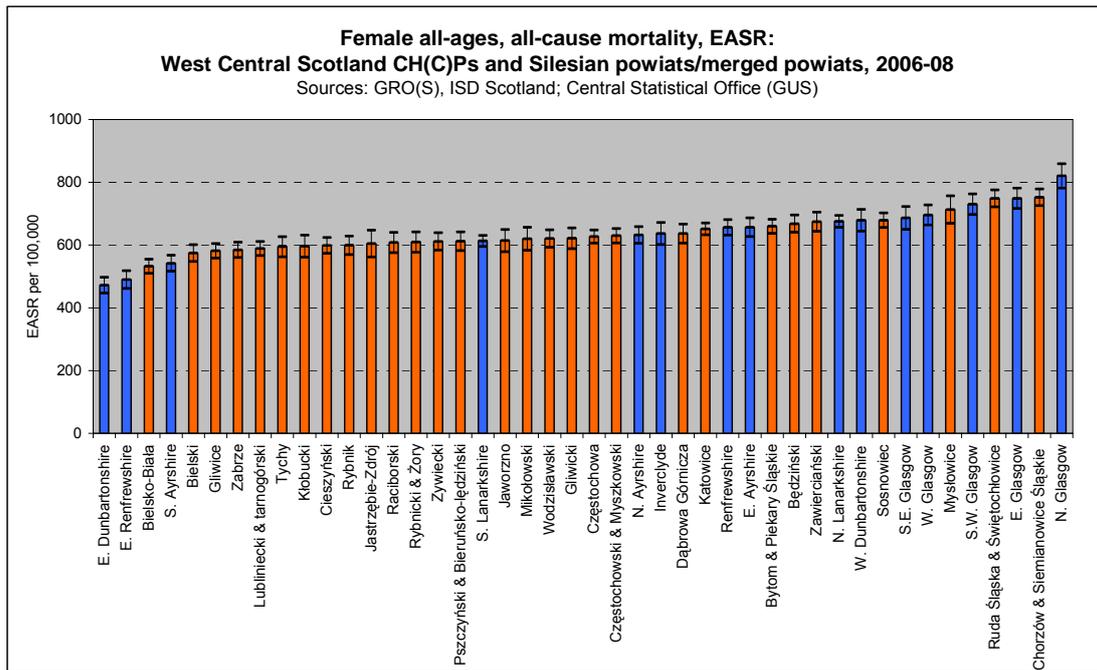


Figure 6



2.2 Self-reported measures of health and wellbeing

2.2.1 General health

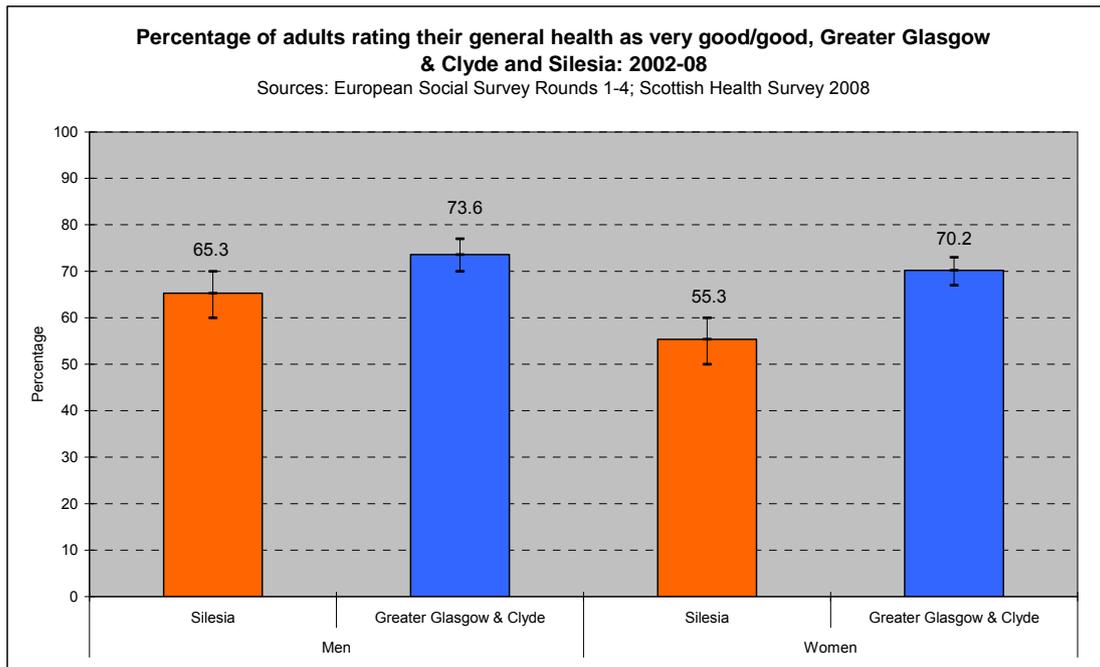
Self-reported health has been shown to be a good predictor of future ill-health and mortality. However, as noted in the main report, we should be cautious about the extent to which self-reported health is influenced by cultural factors.

Using the European Social Survey (2002-2008) and the 2008 Scottish Health Survey, we can compare self-rated health in Silesia and Greater Glasgow and Clyde (as a proxy for WCS). The question used in both surveys asks respondents to rate their general health on a five-point scale (*very good, good, fair, bad or very bad*). Comparisons are made between the percentages of adult men and women in each region who rated their health as good/very good.

As shown below (Figure 7), adults in WCS were significantly more likely to rate their general health as good/very good than their counterparts in Silesia. The difference was more pronounced for women than for men.



Figure 7



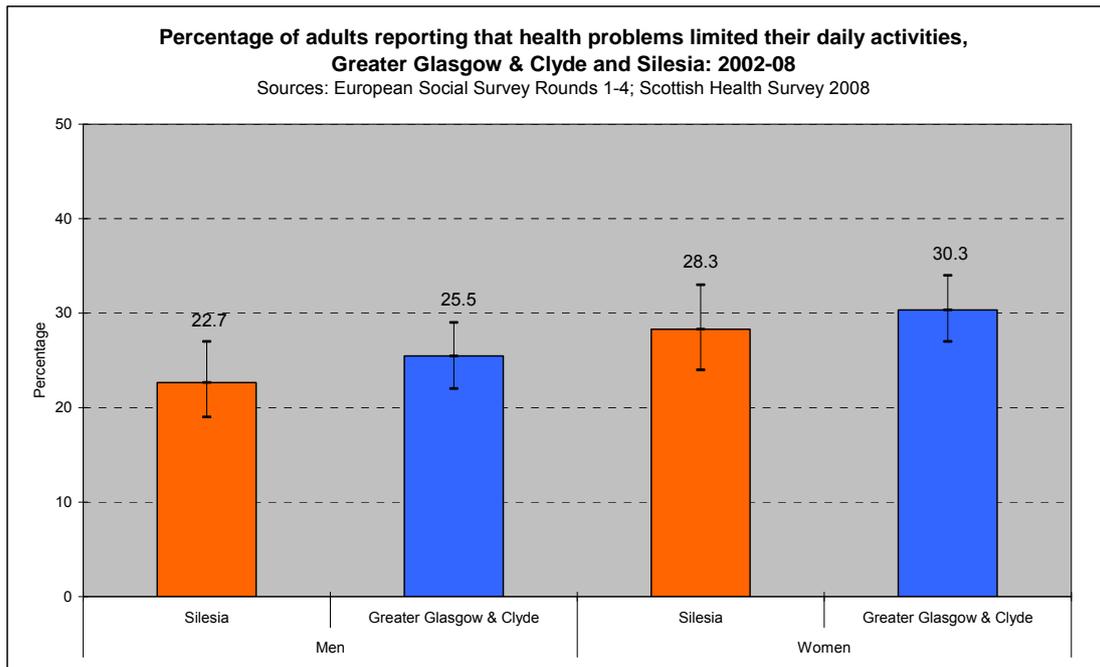
Sample sizes: Silesia = 377 men and 393 women; Greater Glasgow & Clyde = 703 men and 843 women.

2.2.2 Limiting health problems

The European Social Survey also asks whether respondents were *hampered in their daily activities by a physical or mental health problem or disability*. Again, this can be compared to the percentage of adults in the 2008 Scottish Health Survey reporting that they had a *long-standing physical or mental condition or disability that limited their activities in any way*. Slight differences in the wording of these two questions may potentially reduce the comparability of this indicator.

No significant regional differences were observed for this indicator: around a quarter of men and just less than a third of women in both regions reported that health problems limited their daily activities (Figure 8).

Figure 8



Sample sizes: Silesia = 377 men and 390 women; Greater Glasgow & Clyde = 703 men and 843 women.

2.2.3 Life satisfaction

The European Social Survey asks respondents to rate *how satisfied they are with their life as a whole nowadays* (from 0=extremely dissatisfied to 10=extremely satisfied). This question also appears in the 2008 Scottish Health Survey, allowing us to compare life satisfaction in the two regions. Figure 9 shows that mean life satisfaction among both males and females in Greater Glasgow & Clyde (again used here as a proxy for WCS) was significantly higher than that observed in Silesia. As shown in the main report, levels of life satisfaction tend to be lower in Eastern European and German regions.

Figure 9



Sample sizes: Silesia = 379 men and 389 women; Greater Glasgow & Clyde = 511 men and 658 women.

Summary: Health and function

- The *Aftershock* report showed the much faster rate of improvement in **life expectancy** in Katowice relative to WCS between the mid-1980s and mid-2000s. Similar trends were evident for the Silesian region.
- Between 1995 and 2007, the number of extra years a man living in WCS could expect to live, relative to Silesia, fell from 3.3 years to 2.3 years.
- Life expectancy for women also rose at a faster pace in Silesia compared with WCS. The two regions now have an almost identical female life expectancy.
- Both regions provide examples of dramatic improvements in **mortality** from selected causes: for example: IHD, stroke and male lung cancer in WCS; stomach cancer and suicide in Silesia.
- In 1982-1984, WCS had higher rates of **mortality** than Silesia from stroke and IHD and a lower rate of mortality from chronic liver disease. By 2003-2005, this position had reversed.
- New analysis for this report provides a comparison of district-level **mortality** in Silesia and WCS: two-thirds of WCS districts had male **mortality** rates that compare favourably to those in Silesia. **Mortality** rates in the East and North of Glasgow City were, however, on a par with those seen in the 'worst' Silesian districts. Female mortality rates for almost all WCS districts (except East Renfrewshire and East Dunbartonshire) were closer to those seen in the 'worst' Silesia districts.
- Adults in WCS are more likely to rate their **general health** as 'good' or 'very good' compared with their counterparts in Silesia.
- However, the percentage of adults who report that **physical or mental health problems limit their daily activities** was similar in both regions.
- Mean **life satisfaction** scores in WCS were significantly higher than those for Silesia.

3. 0 Prosperity and poverty

As highlighted in the introduction to both the main report and this case study, a key research question for this project is whether WCS's relatively poorer health status can be explained purely in terms of socio-economic factors, such as poverty and deprivation. In this section, we present some data comparing a range of measures of prosperity and poverty in Silesia and WCS (labour market opportunity, car ownership, home ownership and relative poverty) to test the plausibility of this idea.

3.1 Labour market opportunity

Lack of labour market opportunity has a negative impact on mental health and can increase the risk of suicide.⁴ Many studies have found an association between unemployment and poor health^{5 6 7} and there is increasing evidence that similar associations are observed for other forms of involuntary inactivity⁸. Health impacts of non-employment appear especially pronounced and long-lasting for young adults.⁹ This section looks at various measures of labour market opportunity in Silesia and WCS.

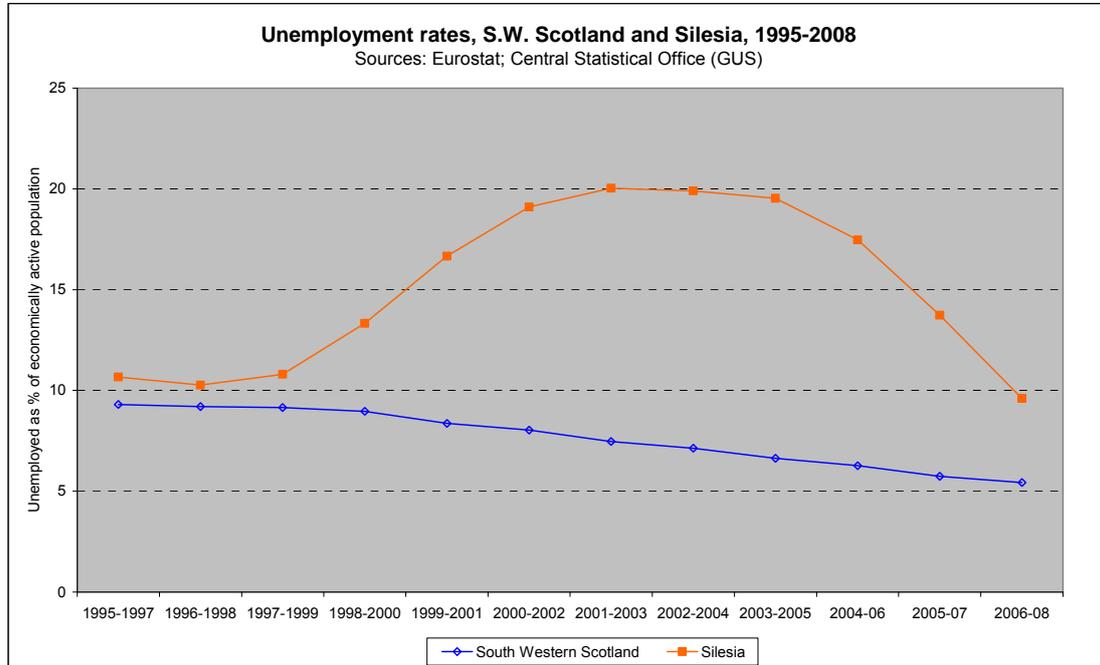
3.1.1 Unemployment

The first measure used here is the percentage of all economically active adults *describing themselves as unemployed*. It should be noted that unemployment may have become less efficient as a marker of labour market opportunity over the last 20-30 years, as early-retirement and long-term sickness increasingly function as a method of disguising unemployment.¹⁰

Figure 10 compares unemployment rates in South Western Scotland (used here as a proxy for WCS) and Silesia between 1995 and 2008. Levels of unemployment were similar in both regions until 1998. Thereafter, unemployment rates rose steeply in Silesia in the late 1990s but continued to decline slowly in the Scottish region. Unemployment rates remained 2-3 times

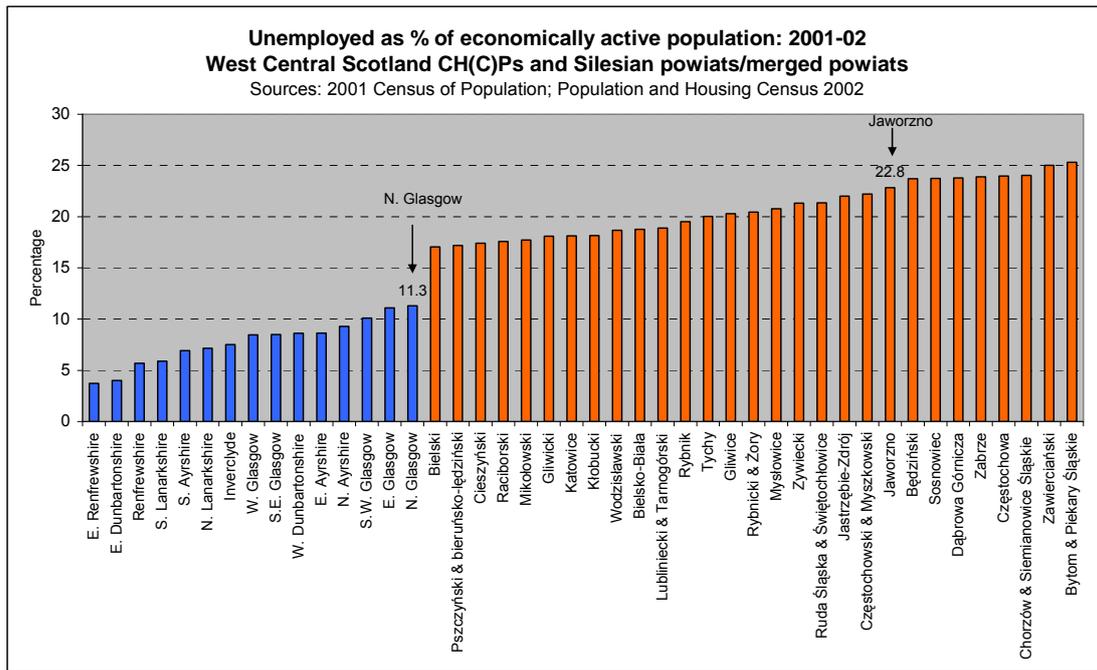
higher in the Polish region for much of the remaining decade. Only recently have rates began to converge again (Figure 10).

Figure 10



At a local level, the sharp divide between Silesia and WCS around the time of the last Census can be clearly illustrated (Figure 10). In 2001-2002, unemployment rates in all 15 WCS CHPs were lower than that recorded in every Silesian county ('powiat') (Figure 11). North Glasgow and Jaworzno (highlighted in Figure 11) are similar in population size and industrial legacy, but unemployment rates in the Polish region were almost twice as high as those recorded in the WCS CHP.

Figure 11



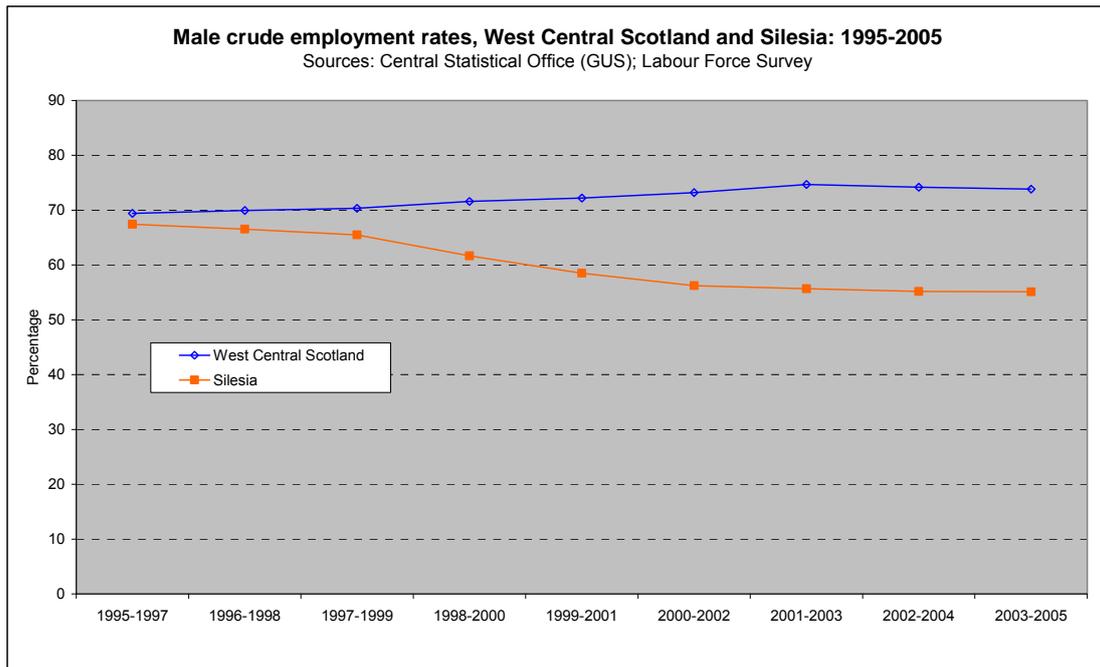
3.1.2 Employment rates

Comparisons of employment opportunities over time between Silesia and WCS in the 1980s are made difficult by the different employment policies of the communist and non-communist governments. Under communism in Poland, there was virtually ‘full employment’ for those of working age^{xiii}.¹¹ By contrast, the last era of full employment in Britain effectively ended between the early and mid-1970s.¹²

Comparable employment rates for adults aged 15-64 years were calculated for the two regions for the period 1995-2005. This was done separately for men and women. At the start of this period, employment rates for men were similar in the two regions. Deterioration in the Polish labour market during the late 1990s meant that by 2005, male employment rates in WCS were more than 15 percentage points higher than those in the Silesia region (Figure 12).

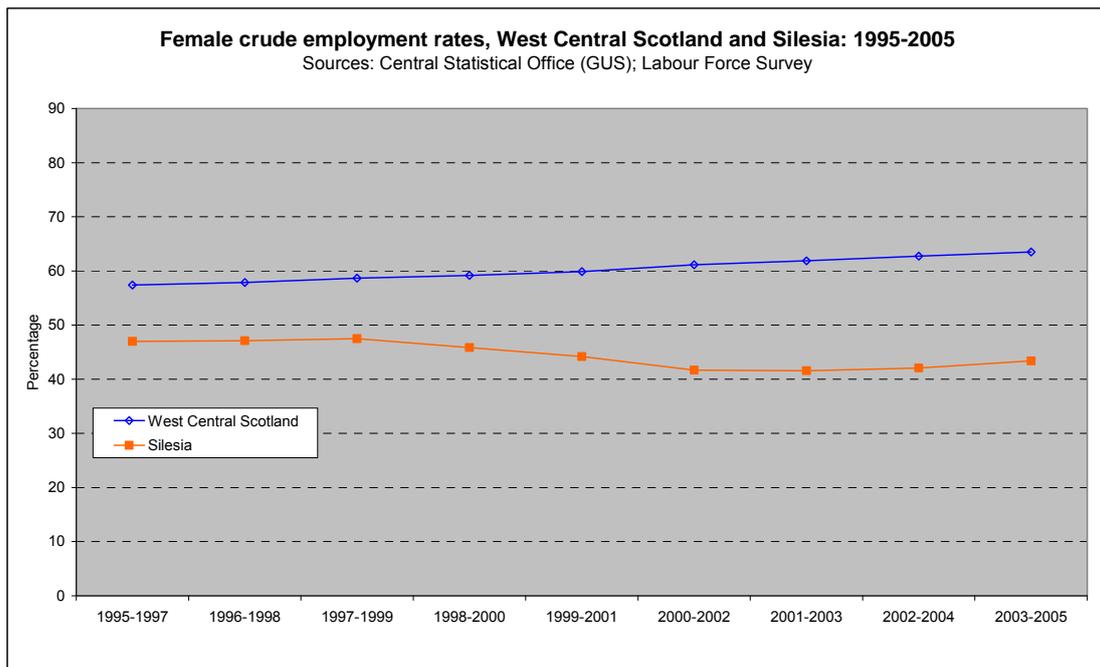
^{xiii} This included substantial hidden unemployment, with people maintained in work without adding much economic value. However, it is important to note the context of full employment was also very different in communist countries: for example, full employment under communism was also characterised by shortages of some goods and surpluses of others, black markets, low productivity among the workforce, and little attention to either the health and safety of the population or the quality of the environment. See: Judt T. *Postwar*. London: Heinemann, 2005 (pp. 427-29, 570-71).

Figure 12



A rather different picture emerges for females. Employment rates for women were already much higher in WCS compared to Silesia at the start of the period (57% vs. 47%). The gap widened over time, so that by 2005, female employment rates in WCS were around 20 percentage points higher than those for women in Silesia (Figure 13).

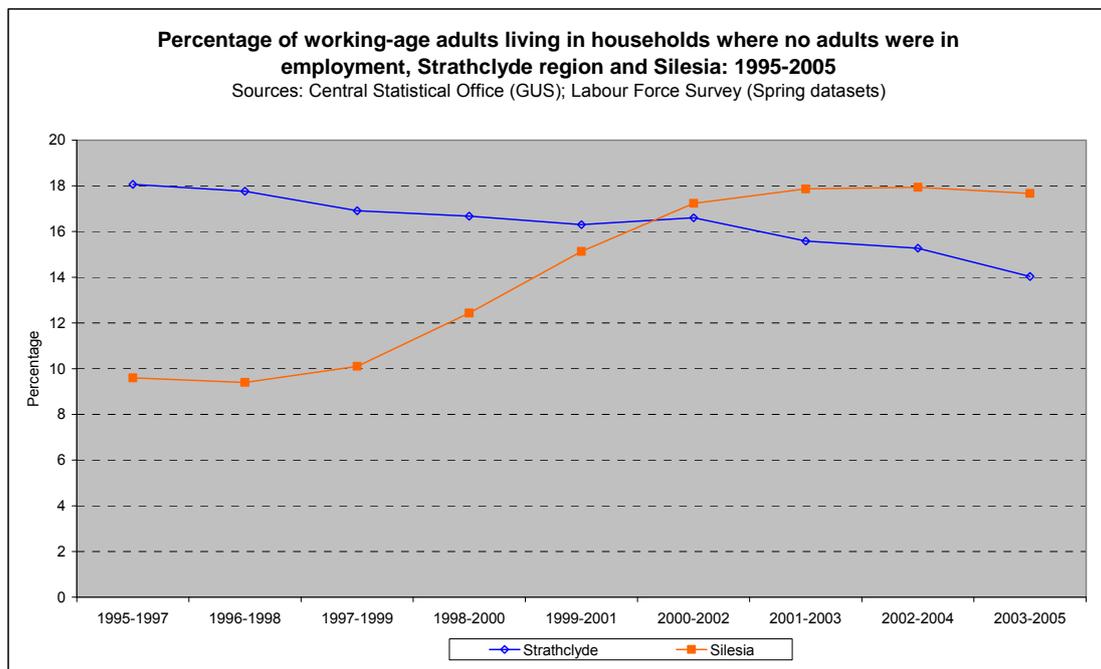
Figure 13



3.1.3 Adults living in workless households

Measures of employment opportunity at the individual level may not capture differences in the labour market at a household level (i.e. the number of households where either all adults are in work or no adults are in work). To compensate for this, the percentage of adults aged 18-59 years living in workless households can be compared for Strathclyde region (our proxy for WCS) and Silesia for the period 1995-2005 (Figure 14).

Figure 14



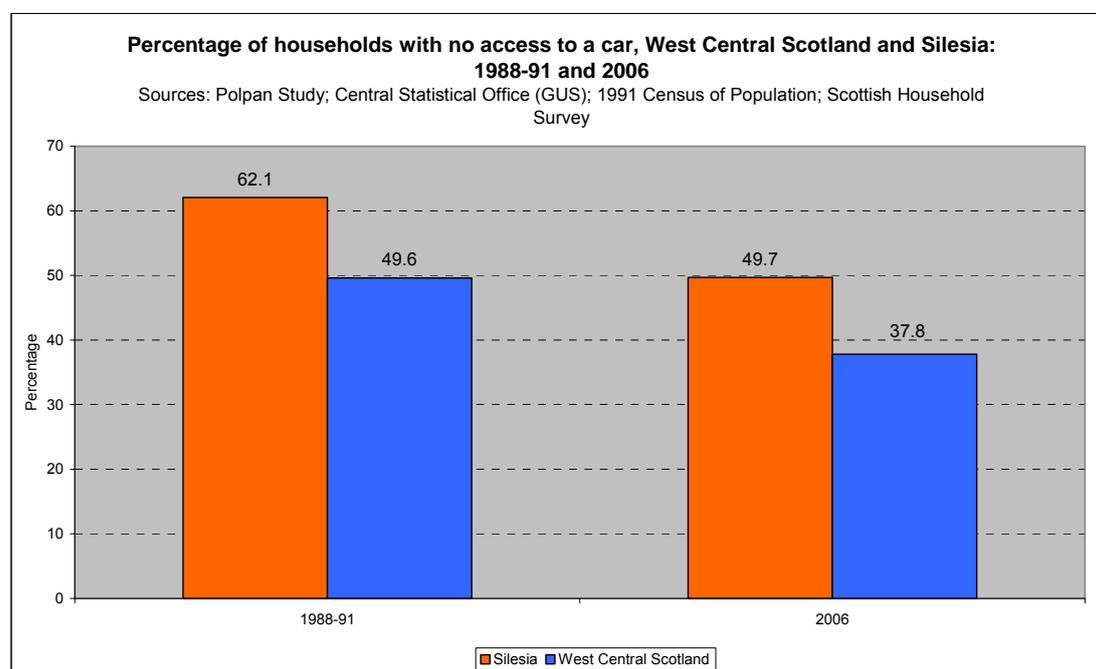
In the mid-1990s, the percentage of adults living in workless households was twice as high in WCS as the Polish region (18.1% vs. 9.6%). Worsening labour market conditions in Silesia and improving conditions in WCS meant that this position changed over time. By 2001, the figure was higher in Silesia than WCS. The gap had widened further by 2005 (Figure 14).

3.2 Car ownership

The next indicator of prosperity presented here is the percentage of *private households without access to a car or van*. However, as observed in the main report, differences in car ownership may reflect cultural factors as much as the level and distribution of wealth within each region. In 2006, 49.3% of Polish households reported they did not own a car but less than a quarter reported that this was because they could not afford it¹³. The quality, cost (and social desirability) of public transport may also be an influencing factor of car ownership.

Both regions saw household car ownership increase steadily between 1988-1991 and 2006.^{xiv} Despite this, the percentage of households without access to a car in the Polish region was still more than 10 percentage points higher than levels seen in WCS in 2006: 49.7% vs. 37.8% (Figure 15).

Figure 15



^{xiv} Data from the Polpan study for 1993-2003 was not used, since the figures for ownership of key consumer durables were much higher than those published in other studies. For example, the 2003 Household Budget Survey reported that 57.7% of Silesia households did not own a car. The figure in the Polpan study was 37.8%.

3.3 Home ownership

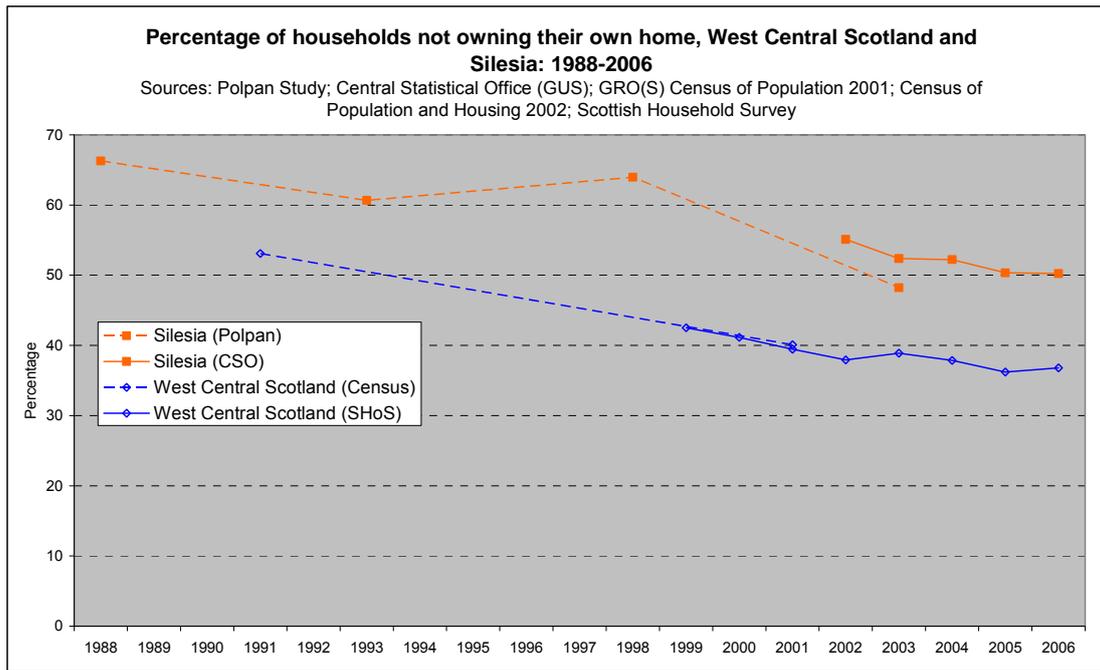
This indicator shows *the percentage of private households who do not own their own home (either outright or with a mortgage)*. Again, cultural differences should be taken into account in interpreting these results. Social housing – managed by housing co-operatives – emerged as the dominant housing tenure under communism in Poland and retains a much more substantial share of the market than in the UK^{xv}.

More than half (50.2%) of households in Silesia did not own their own home in 2006. This was much higher than the equivalent observed in WCS (36.8%). Over time, owner-occupation has increased in both regions, but the percentage of households not owning their own home remained consistently higher in Silesia (Figure 16). This may reflect the dominance of housing co-operatives (homes built by state owned-enterprises) in Poland under communism, the perceived and actual higher cost of mortgages compared to subsidised rents¹⁴ and also perhaps the absence of Right-to-Buy^{xvi} policies that operated in the Scottish region from 1980.

^{xv} In 2009, 17.6% of the UK population lived in reduced price or free rented accommodation, compared to 29.1% in Poland. Source: EU-SILC via Eurostat.

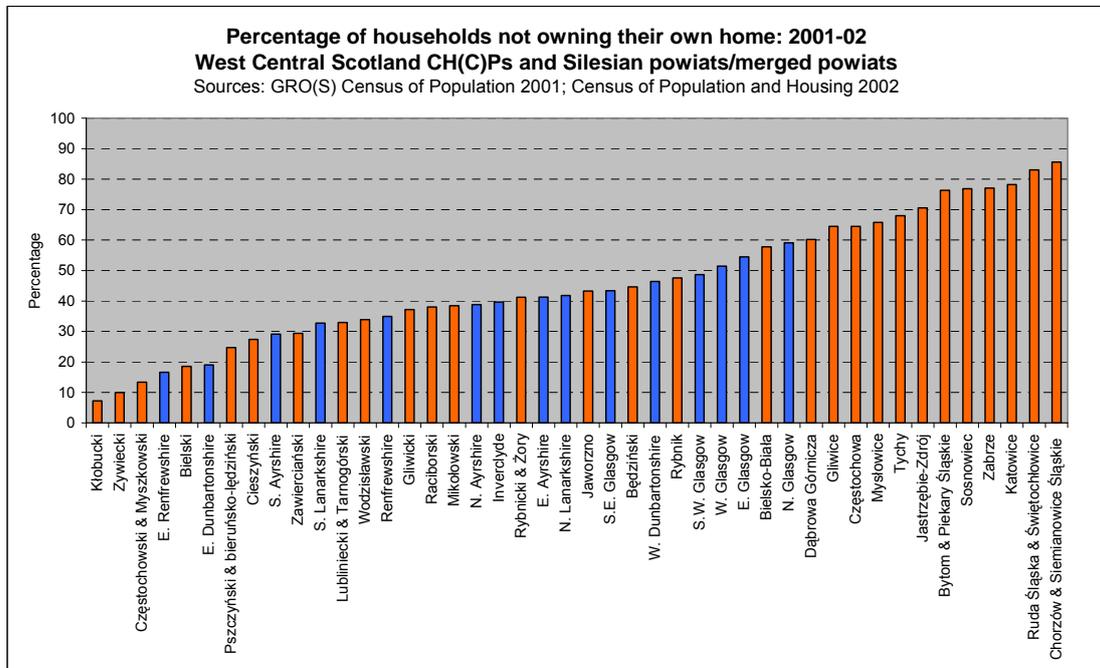
^{xvi} Introduced in 1980, the Right-to-Buy scheme gave tenants of council housing in the UK the right to buy the home they lived in. From March 2011, those renting social housing for the first time in Scotland or those returning to rent social housing no longer have the right to buy.

Figure 16



As Figure 17 shows, this result is influenced by the high concentrations of social housing in the largest cities of the Silesia (Figure 17).

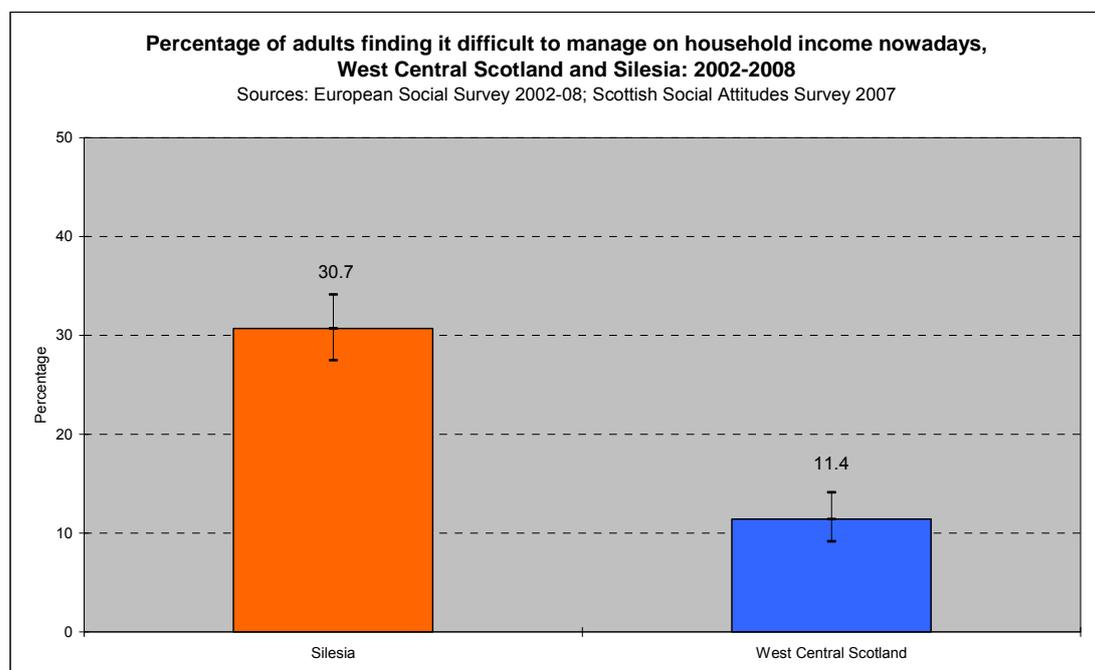
Figure 17



3.4 Perceived adequacy of income

As discussed in the main report, survey data can be compared to assess regional differences in perceived adequacy of income at the household level. The question asked in both the European Social Survey (ESS) and the Scottish Social Attitudes Survey (SSAS) is whether people *find it difficult to manage on household income nowadays*^{xvii}. Perceived financial difficulties are much more widespread in the Polish region. One in three adults in Silesia reported that they found it difficult to manage on their household income nowadays, compared to around one in ten in WCS (Figure 18).

Figure 18



Sample sizes: Silesia = 770; WCS = 534.

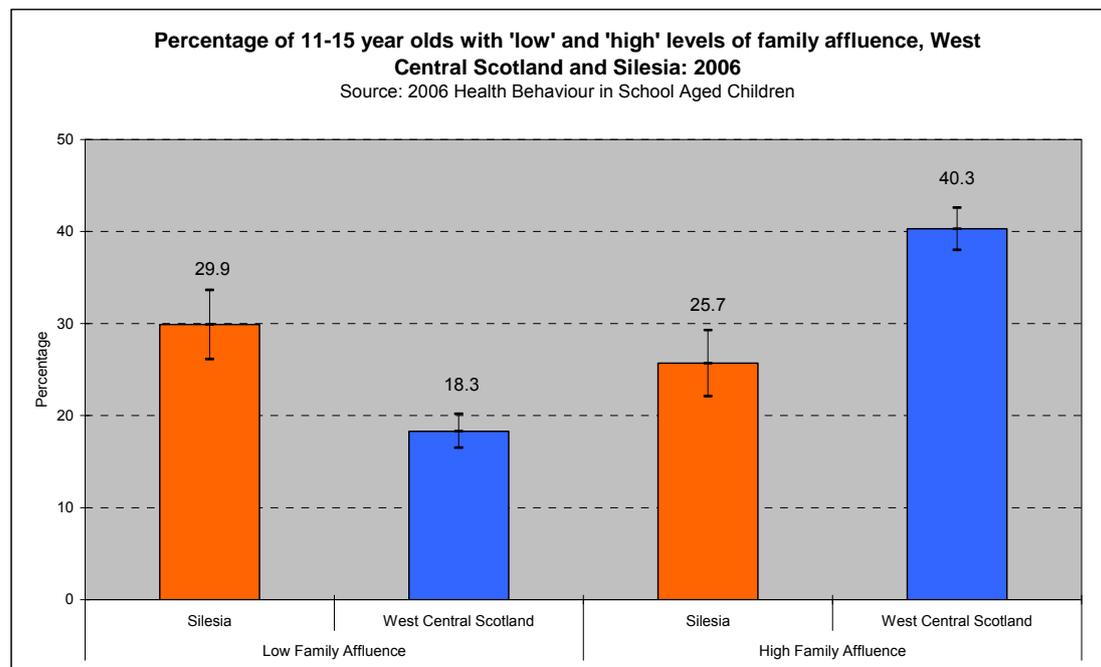
^{xvii} ESS data are taken from Rounds 1-4 of the survey which cover the years 2002, 2004, 2006, and 2008. However, reported values for this question for the selected region do not vary significantly between rounds. Note also that ESS data are available for all Scotland (but not WCS), and the figure for this question is close to that for WCS taken from the SSAS – 12.8%.

3.5 Family affluence

The Family Affluence Scale is calculated from young people's responses to four questions in the WHO-collaborative Health Behaviour in School-aged Children survey (HBSC)¹⁵. The questions relate to: family ownership of a car; ownership of computers; whether the young person has their own bedroom; and number of family holidays taken in the year prior to the survey. A composite score is derived from the answers to these questions and, from this, families can be assessed as being of low, middle or high levels of affluence¹⁶. The main report presents data for five regions of interest for this study. Here we compare the percentage of 11-15 year olds living in 'high' and 'low' affluence families in Silesia and WCS.

Figure 19 shows that children living in Silesia were more likely to live in 'low affluence' families than those in WCS (29.9% vs. 18.3%); conversely, children living in WCS were more likely to live in 'high affluence' families than those in Silesia (40.3% vs. 25.7%).

Figure 19



Sample sizes: Silesia = 572; WCS = 2547.

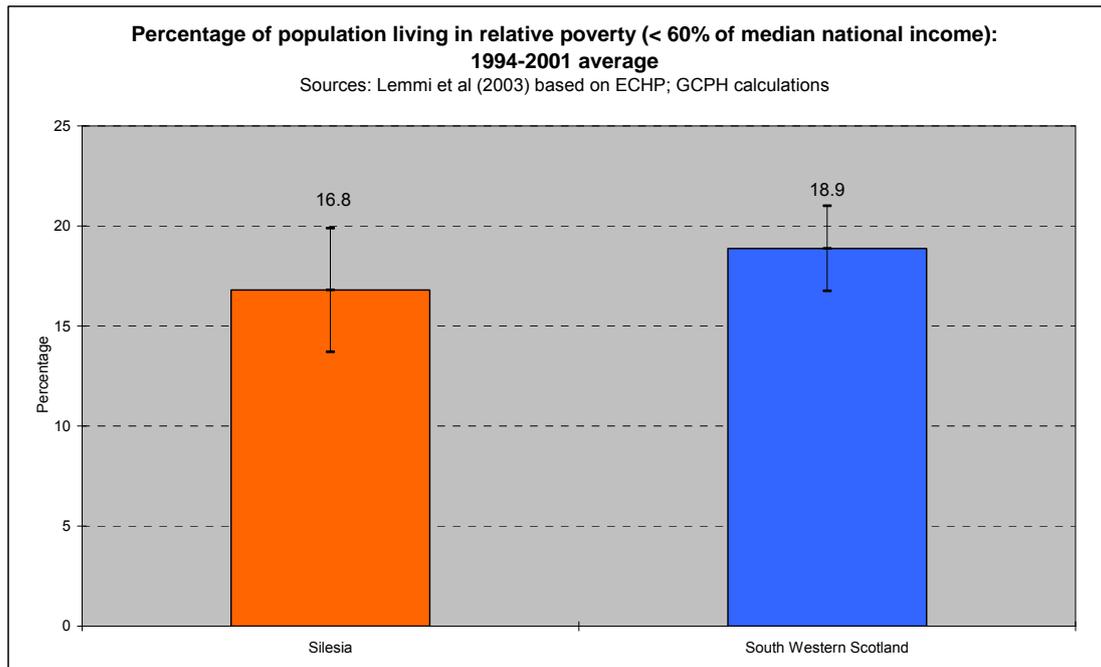
3.6 Relative poverty and income inequality

In the European Union, poverty is usually measured in relative terms: that is, showing income levels relative to the national income standards. The most common indicator used is the percentage of people living in households with an income that is less than 60% of the median income. Lemmi et al (2003)¹⁷ have published methods and data that can be used to estimate relative poverty rates for a large number of NUTS II^{xviii} regions, averaged for the period 1994-2001. These were used to estimate poverty rates for Silesia and South Western Scotland (used here as a proxy for WCS).

The percentage of people living in relative poverty using this measure was slightly lower in Silesia (16.8%) compared to South Western Scotland (18.9%). However, this difference was not statistically significant (Figure 20). However, it is useful to note that as the data covers a seven year period (1994-2001) measures of relative poverty may well have fluctuated, especially in Eastern European regions such as Silesia. Income inequality was also higher in WCS than in Silesia in 2003-2004 (Figure 21). The more unequal distribution of income in the Scottish region helps explain why WCS has a higher level of absolute prosperity compared to Silesia but marginally higher levels of relative poverty.

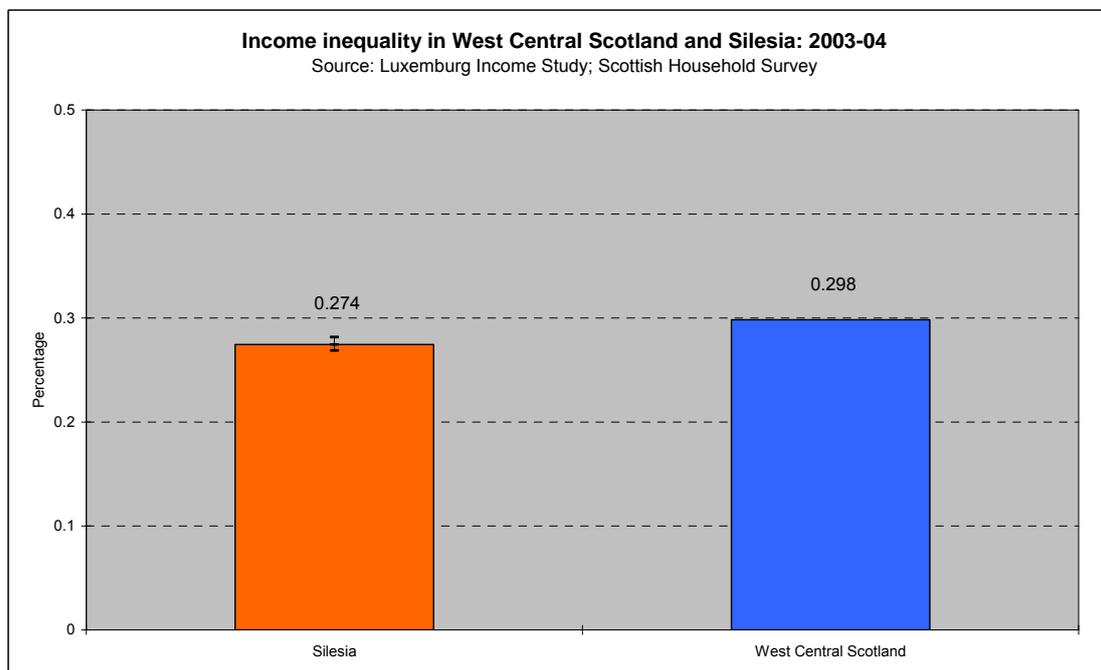
^{xviii} Nomenclatures of Units for Territorial Statistics (NUTS) are the standard geographies used by the European Union to divide countries into regions and sub-regions. NUTS II regions have populations between 800,000 and 3m.

Figure 20



Sample sizes: Silesia = 563; South Western Scotland = 1279.

Figure 21



Sample sizes: Silesia = 4237; West Central Scotland; 11030.

Summary: Prosperity and poverty

- **Unemployment** rates increased markedly in Silesia in the late 1990s and remained very high compared to WCS for much of the subsequent decade.
- In the 1990s, **employment** rates in Silesia deteriorated relative to WCS for both men and women. Male employment rates were similar in both regions in the mid 1990s but more than 15 percentage points higher in WCS by 2005. Female employment rates were consistently higher in WCS than in Silesia throughout the whole period.
- In the mid-1990s, the proportion of working-age adults living in **workless households** was twice as high in WCS than in Silesia. However, the gap had closed by 2001 and by 2005 rates were higher in the Polish region.
- **Access to a car or van** was consistently higher in WCS compared to Silesia between 1988-1991 and 2006.
- The percentage of households **not owning their own home** fell over time in both regions, but remained consistently higher in Silesia than in WCS.
- Survey data suggest that adults in Silesia were almost three times as likely to report difficulties in managing their **household income** nowadays than adults in WCS (30.7% vs. 11.4%).
- **Family affluence** may be higher in WCS. Survey data show that compared to Silesia, WCS had a higher percentage of children aged 11-15 living in 'high affluence' families and a lower proportion living in 'low affluence' families.
- **Relative poverty** rates were lower in Silesia than South Western Scotland (16.8% vs. 18.9%). However, the difference was not statistically significant.
- **Income inequality** was marginally higher in WCS than Silesia in 2003-04 (0.298 vs. 0.274). This helps explain why higher levels of absolute prosperity in the Scottish region co-exist with higher levels of relative poverty.

4.0 Population

As noted in the main report, population structure, and how it changes over time, can have positive and negative effects on the health of the population. Between 1995 and 2009, the population size of both Silesia and WCS decreased, but the rate of decrease in the Polish region was three times that seen in WCS (5.4% vs. 1.7%)^{xix}. This section looks at aspects of population that might influence regional differences in health: overall population trends; the sex ratio; the dependency ratio; population density; and fertility rates.

Note that time trends for the sex ratio and dependency ratio relate to the pre-1999 Katowice *voivodship*, rather than Silesia.

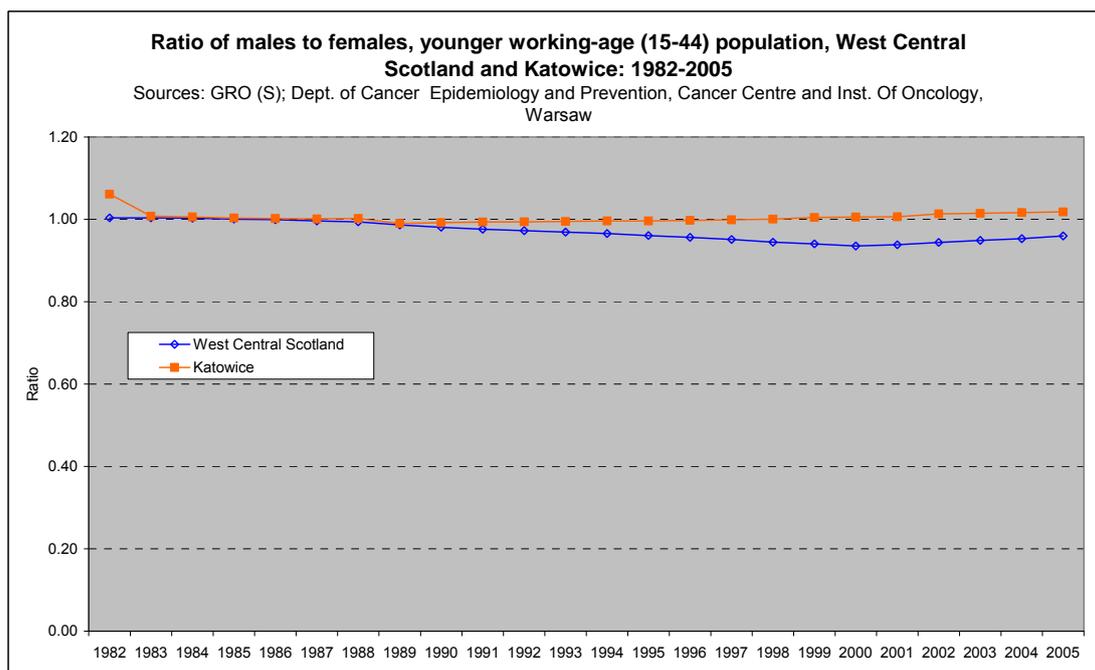
4.1 Sex ratio

In 2005, the ratio of men to women was slightly higher in Katowice (0.95) than in WCS (0.91): in both regions, women outnumbered men, but the gap was more marked in the Scottish region. The gap has been consistent over time.

This has been especially driven by a reduction in the WCS sex ratio among 15-44 year olds over time. As Figure 22 shows, in 1987 the proportions of males and females in the population were equal (i.e. the ratio equalled 1) but by 2005 the ratio had fallen to 0.96 (Figure 22). This was because the decrease in the West of Scotland's young adult male population exceeded the decrease in its young female population.

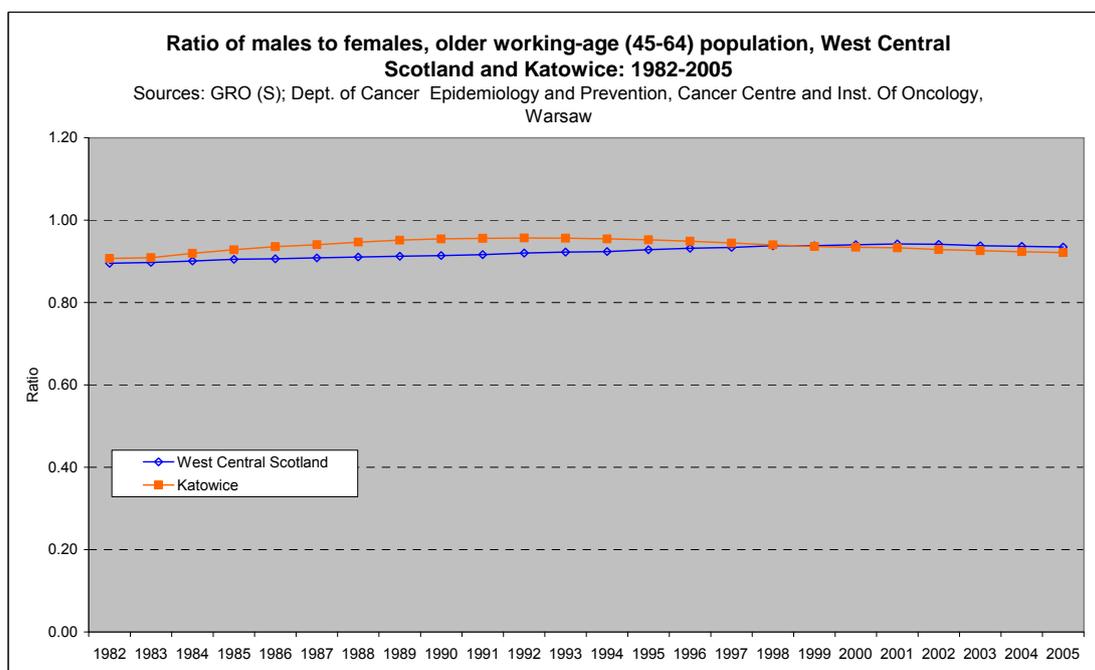
^{xix} GCPH calculations, based on GRO (S) and GUS population estimates for Slaskie and WCS, 1995-2009.

Figure 22



For older working age adults (aged 45-64), the ratio of men to women was similar in 2005 in both regions. It also increased slightly over time in WCS and fluctuated without a clear trend in Katowice (Figure 23).

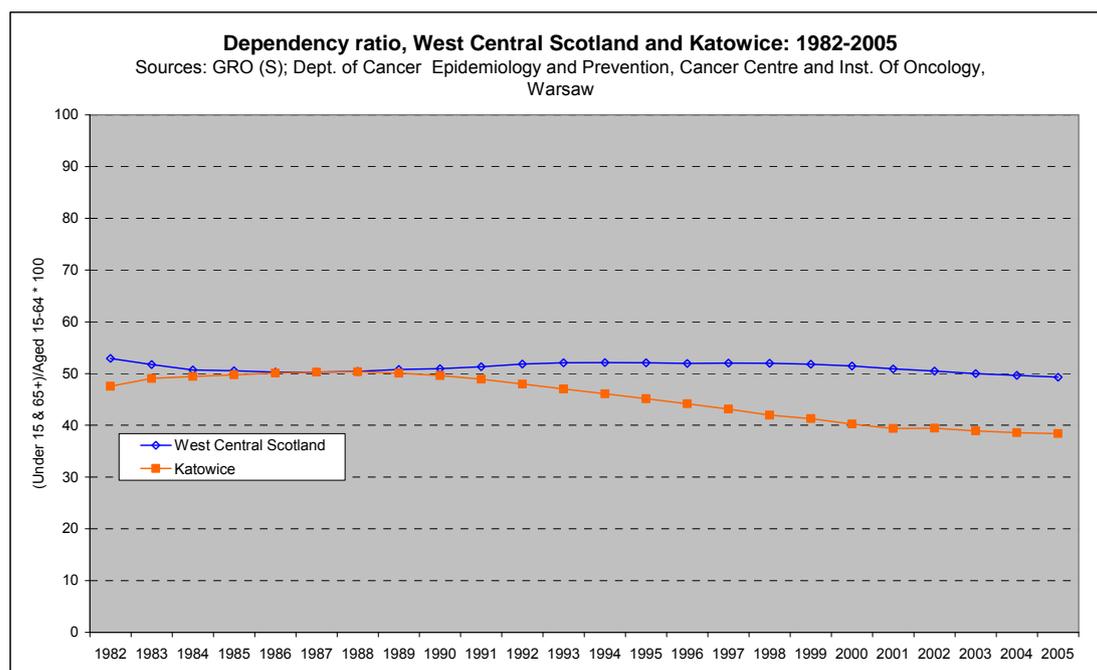
Figure 23



4.2 Dependency ratio

The 'dependency ratio' (defined crudely as the ratio of the 'economically dependent' population (i.e. the young and old) to the working-age population) is an important economic and demographic indicator for countries, regions and cities^{xx}. In 2005, the dependency ratio was lower in Katowice than in WCS (38 per 100 vs. 49 per 100). During the 1980s, the dependency ratio was similar in both Katowice and WCS (c. 50 per 100). However, from the early 1990s the dependency ratio in Katowice declined steadily year-on-year while that for WCS fluctuated without much overall change (Figure 24). This was driven by a sharper reduction in the number of children in the Polish region compared to WCS.

Figure 24



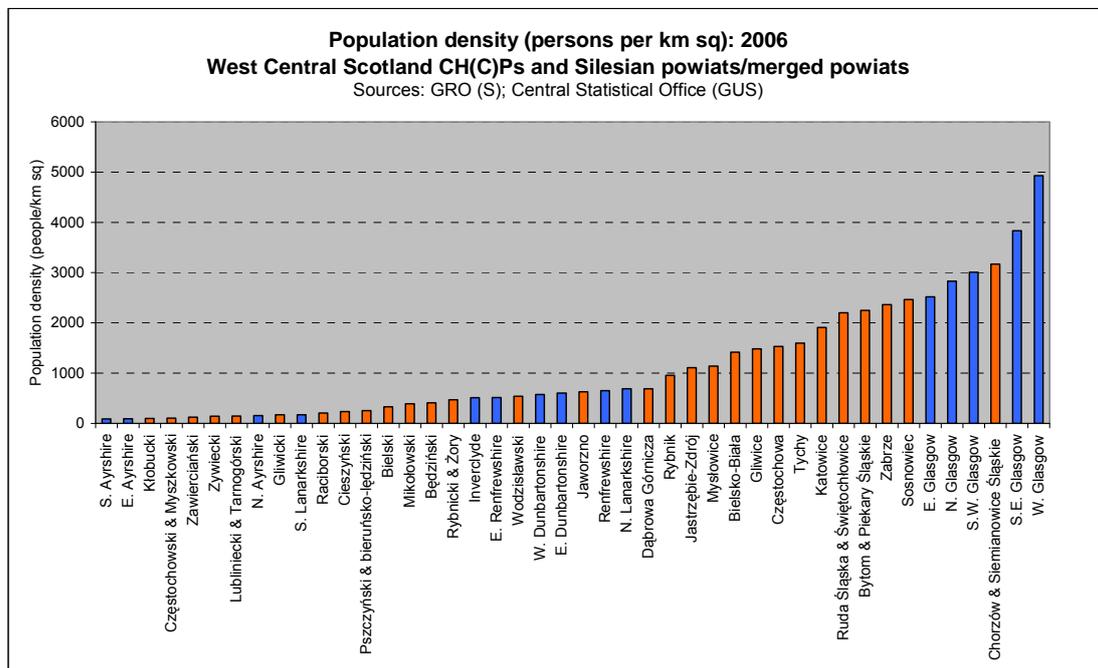
^{xx} Here it is calculated as the population aged 0-14 and 65+ divided by the population aged 15-64, and multiplied by 100.

4.3 Population density

Population density is used here principally to assess the comparability of the regions. However, it has also been shown to be associated with particular health outcomes – for example within developed Western countries, higher population densities are associated with higher mortality from cancer (especially for men)¹⁸. As shown in the main report, at a regional level population density was higher in Silesia (378 people per km²) than in WCS (316 per km²) in 2007.

At a sub-regional level, both regions contain districts with a very low population density and a very high population density. However, the Glasgow CHPs stand out as having high levels of population density compared to the Silesian *powiats* (Figure 25).

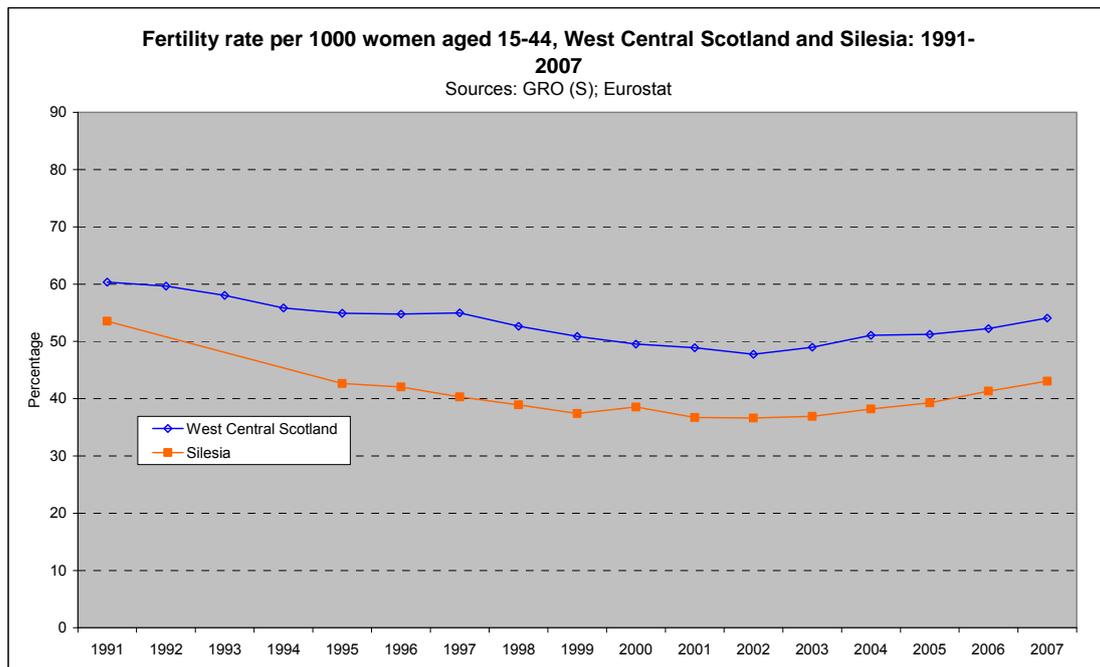
Figure 25



4.4 Fertility rates

The fertility rate is calculated as the number of live births per 1000 women aged 15-44. In 2007, fertility rates in WCS were higher than Silesia in 2007 (54.1 vs. 43.0 per 1000). Both regions saw a decline in their fertility rates between 1991 and 2001, followed by a slight recovery, but the regional gap has persisted throughout (Figure 26).

Figure 26



Note: 1991 data shows 1990 births/1991 population.

Summary: Population

- The overall size of the **population** of both Silesia and WCS fell between 1995 and 2009, but the rate of decline was more pronounced in the Polish region.
- In 2005, the **ratio** of men to women was slightly higher in Katowice (0.95) than in WCS (0.91). This reflected relatively larger reductions in the number of younger working-age males in WCS in the 1980s and 1990s.
- **Dependency ratios** were similar in both regions in the 1980s but diverged in the 1990s, due to falling ratios in Silesia.
- **Population density** was higher in Silesia than in WCS. However, at a sub-regional level, the most population-dense areas were found in Glasgow.
- **Fertility rates** were lower in Silesia compared to WCS between 1990 and 2007. Rates declined then recovered slightly in both regions during this period, but remained consistently higher in the Scottish region.

5.0 Social environment

The term 'social environment' covers an array of important, often overlapping, topics which are relevant to health. These include educational attainment, home circumstances, social capital and many more. In this section we compare a number of such indicators to assess how WCS compares with Silesia in these terms.

5.1 Education levels

Although international comparisons of educational qualifications are not straightforward, it is possible to assess the general levels of education in the two regions using the International Standard Classification of Education 1997 (ISCED 97) as a guide^{xxi}. This has six categories of education, ranging from 0 (pre-primary) to 6 (second stage of tertiary education).

Comparisons are made here between the percentage of adults aged 25-64 in the two regions with *low or no qualifications*^{xxii} and the percentage with *tertiary level qualifications*.^{xxiii}

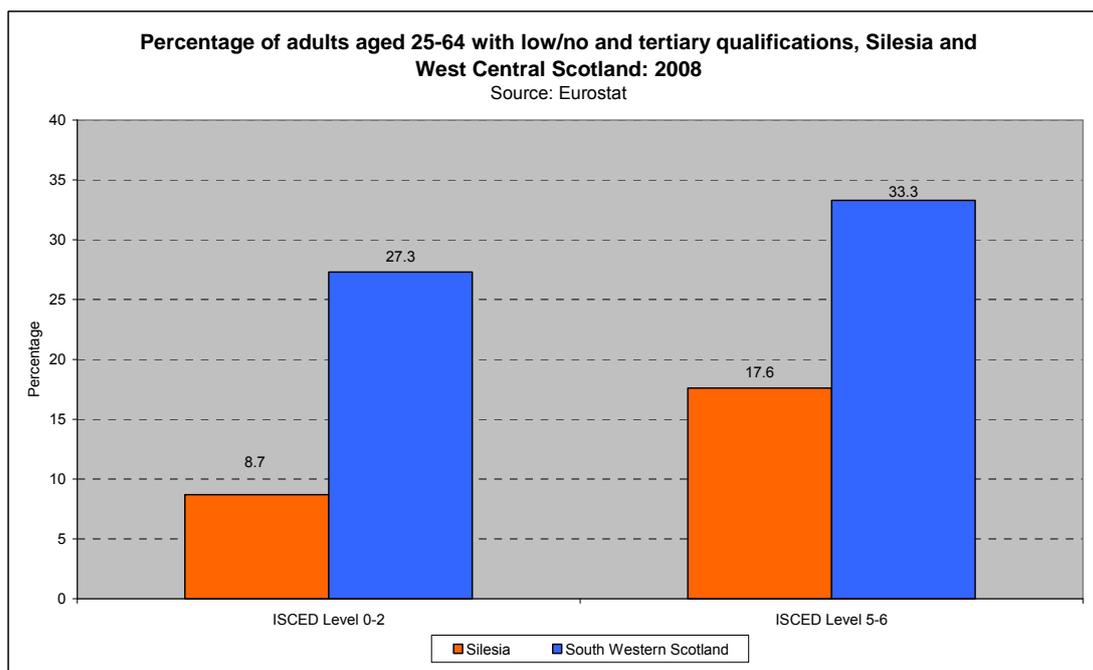
In 2008, South Western Scotland (our proxy for WCS) had a higher percentage of adults aged 25-64 with low or no qualifications than Silesia (27.3% vs. 8.7%) but also a greater proportion of adults aged 25-64 with tertiary level qualifications (33.3% vs. 17.6%). This hints at a higher level of educational polarisation in WCS relative to the Polish region (Figure 27).

^{xxi} International Standard Classification of Education, November 1997. Available at: http://www.unesco.org/education/information/nfsunesco/doc/isced_1997.htm

^{xxii} ISCED Level 0-2: no qualifications & NVQ Level 1

^{xxiii} ISCED Level 5-6: NVQ 4+ and other qualifications

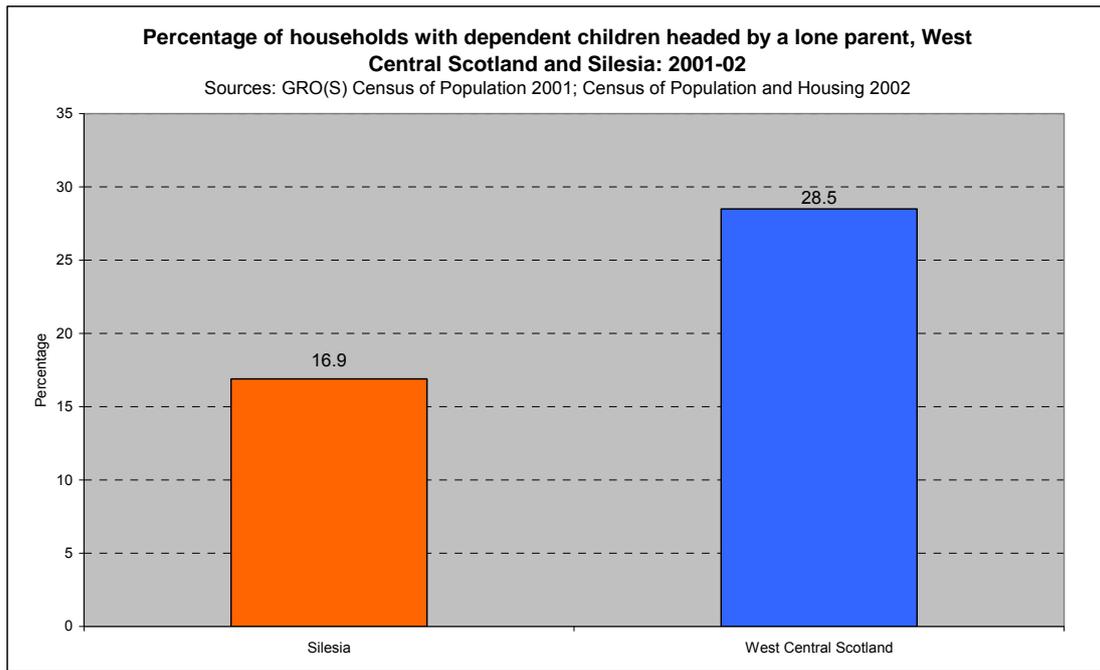
Figure 27



5.2 Lone parent households

This indicator shows *the percentage of households with dependent children headed by a lone parent*. Information on household composition in both regions is available from Population Censuses conducted in Scotland in 2001 and Poland in 2002. WCS had a higher proportion of lone parent households than Silesia in this year: 28.5% compared with 16.9% (Figure 28).

Figure 28



When district-level data are analysed, it is clear that this difference in household structure is region-wide (Figure 29). The vast majority of WCS CHPs have much higher percentages of lone parent households than the comparably sized Polish areas. The percentage of lone parent households in Glasgow was particularly high, even when compared with highly urbanised *powiats*. For example, 43.9% of households in North Glasgow CHP with dependent children were headed by a lone parent. In the comparably-sized industrial city of Jarworzno, the figure was 17.6%.

Figure 30

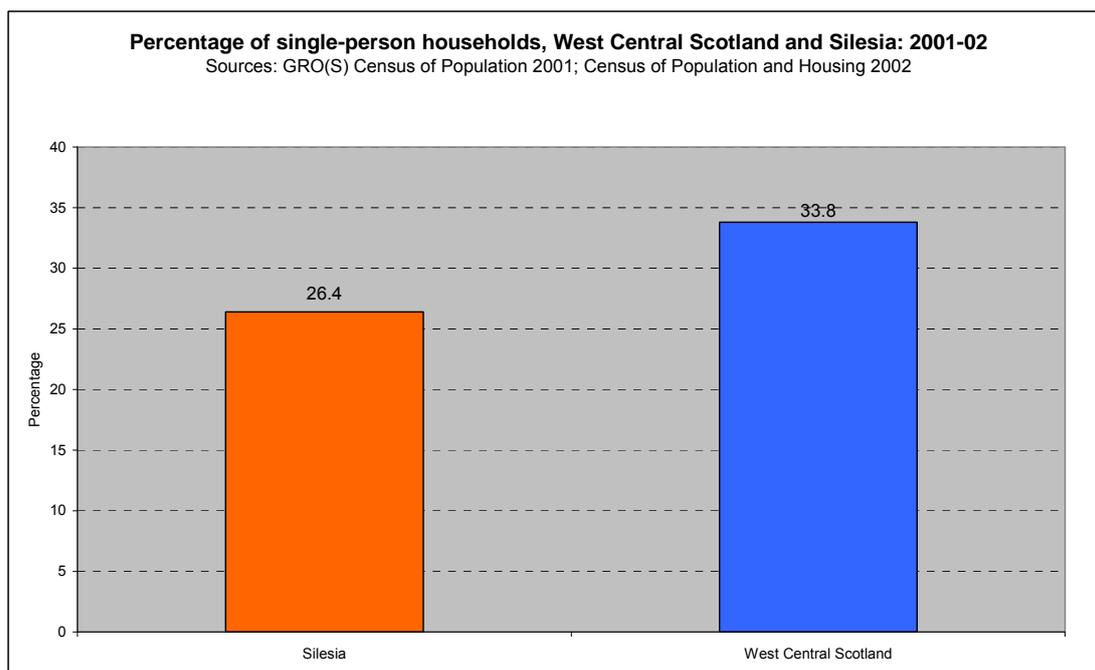
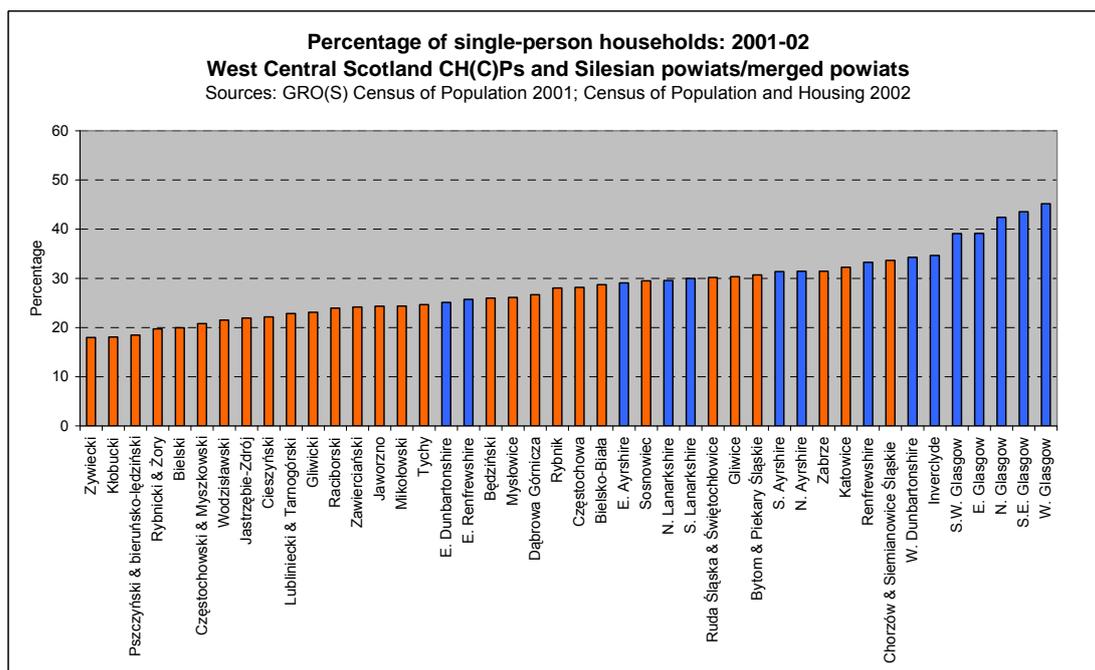


Figure 31

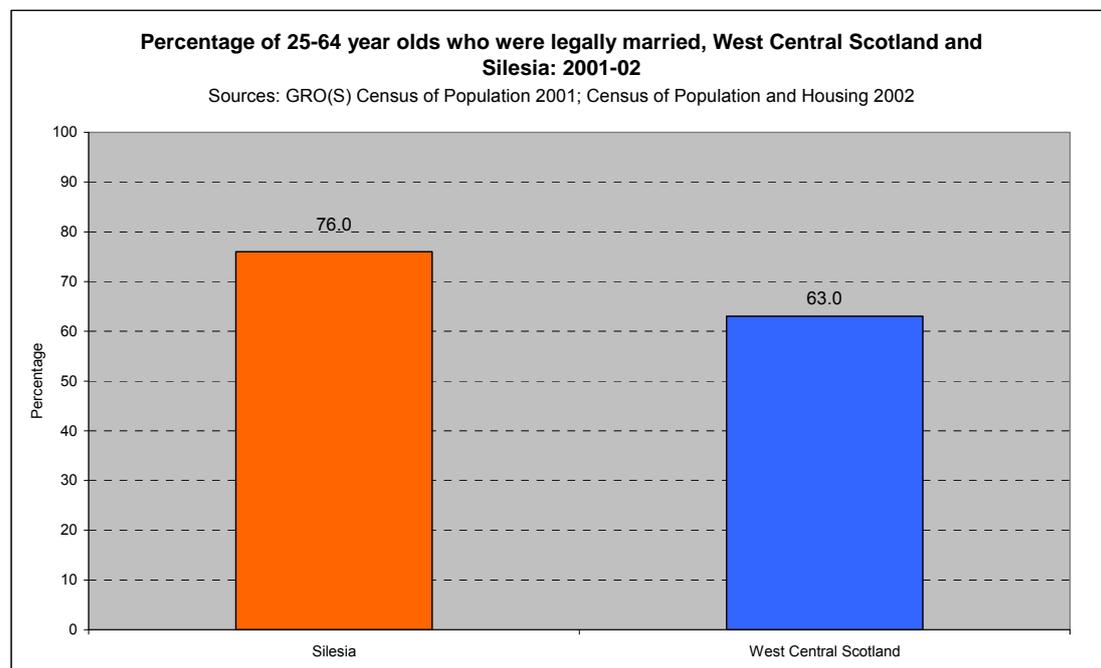


5.4 Marital status

An increasing amount of research evidence points to a range of health and well-being related benefits of living with a partner. Many studies have shown, for example, higher levels of mortality among single men compared to married men^{24, 25, 26 27, 28, 29}.

The indicator presented in this section is *the percentage of adults aged 25-64 who were legally married*^{xxiv} around the time of the last census: the age band was chosen to reflect the average age of marriage across relevant Europe regions³⁰ and to partly compensate for different age structures in the two regions. As shown in Figure 32, the percentage of adults in this age group defined as legally married was substantially higher in Silesia (76.0%) than in WCS (63.0%).

Figure 32

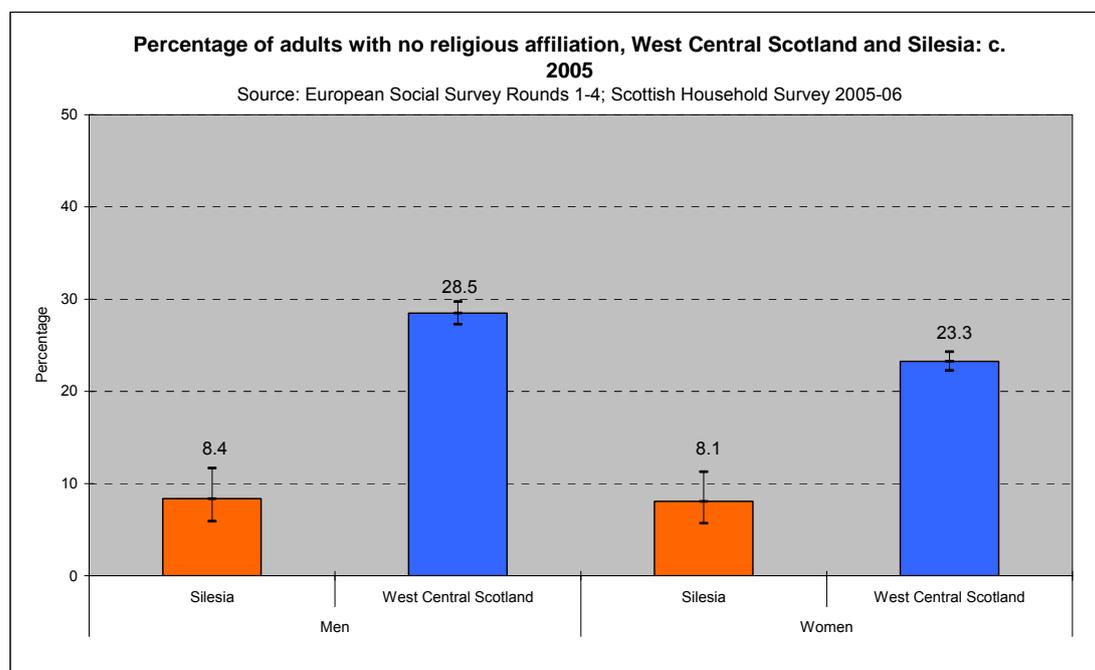


^{xxiv} Note that this definition includes those who were separated

5.5 Religious participation

Religious participation offers opportunities for social contact, and may, therefore, reflect aspects of social capital. It has also been shown to be potentially protective against suicide³¹. Using data from the European Social Survey and selected Scottish surveys, it is possible to compare two measures of religious participation at a regional level. The first is the percentage of people with no religious affiliation. In Silesia, less than one in ten adults said they had no religion, compared to around one in four adults in WCS (Figure 33).

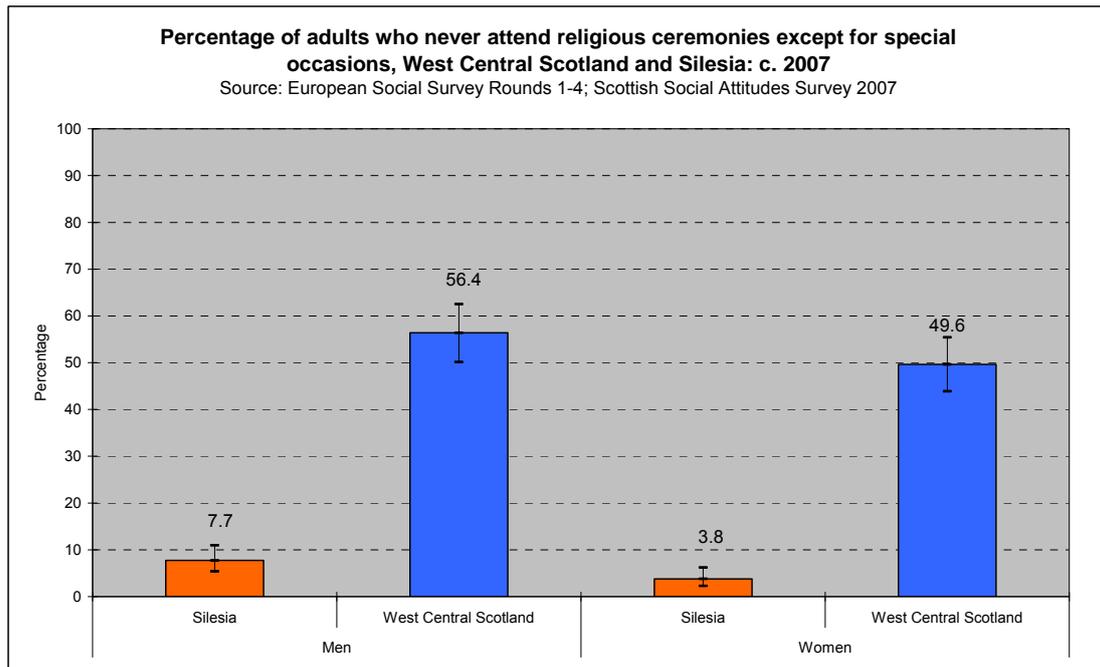
Figure 33



Sample sizes: Silesia = 372 men and 392 women; West Central Scotland = 4486 men and 6179 women.

The second measure looks at actual levels of religious observance. Again, the adult population of Silesia appears much more religious. While 8% of men and 4% of women in the Polish region never attend religious ceremonies except on special occasions, the figures for WCS were 56% and 50% respectively (Figure 34).

Figure 34

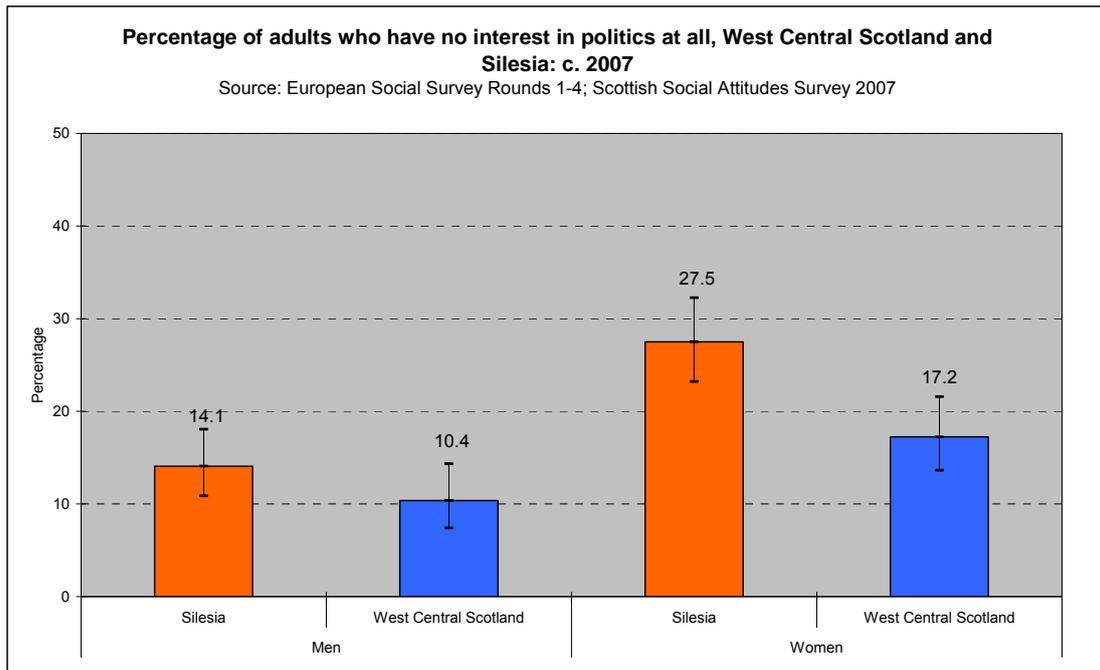


Sample sizes: Silesia = 376 men and 392 women; West Central Scotland = 186 men and 258 women.

5.6 Political participation

Another proxy measure of social capital is political participation^{32 33}, which can include engagement and interest in politics as well as voter turnout. Two comparative measures of political participation are shown here. The first, more subjective, measure looks at interest in politics in the two regions. In Silesia 14% of men reported they had no interest in politics at all, compared to 10% of men in WCS (although this difference was not statistically significant). Among females, those in Silesia were more likely than those in WCS to report that they had no interest in politics (27.5% vs. 17.2%).

Figure 35



Sample sizes: Silesia = 377 men and 390 women; West Central Scotland = 226 men and 310 women.

Our second measure of political participation is *voter turnout at parliamentary elections*. In 2005-07, voter turnout was marginally lower in Silesia region than in WCS (54.9% vs. 58.3%, Figure 36). Both regions contain districts with high and low levels of voter turnout (Figure 37).

Figure 36

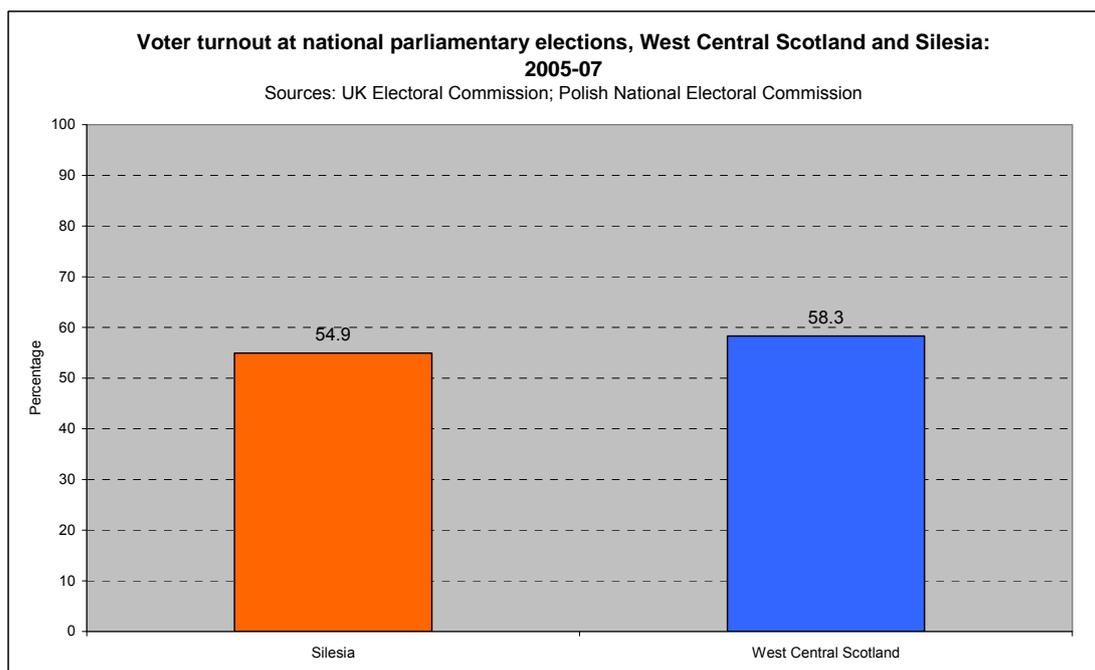
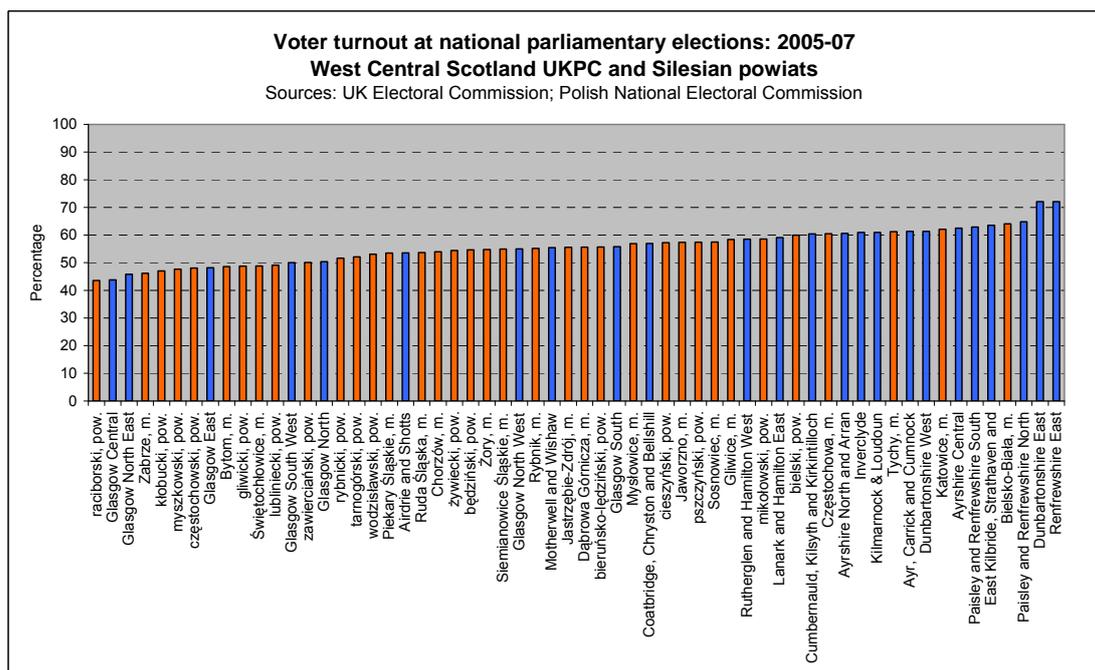


Figure 37



Summary: Social environment

- In relation to **educational attainment**, WCS has a much higher percentage of adults with no or low level qualifications, but also a higher percentage of adults qualified to tertiary level or above, compared to Silesia.
- Over a quarter (28.5%) of households with children in WCS was headed by a **lone parent** in 2001: the equivalent figure for Silesia was much lower: 16.9%.
- One in three (33.8%) WCS households was occupied by a **single-person**, compared to around one in four (26.4%) in Silesia.
- Survey data suggest that adults aged 25-64 were less likely to be **married** in WCS than in the Polish region (63% vs. 76%).
- Indicators of **social capital** showed that women in Silesia were more likely to report that they were not at all interested in politics than those in WCS; voter turnout in Silesia was slightly lower than in WCS; adults in Silesia are more likely than their counterparts in WCS to identify with a religion, and to attend religious ceremonies on a regular basis.

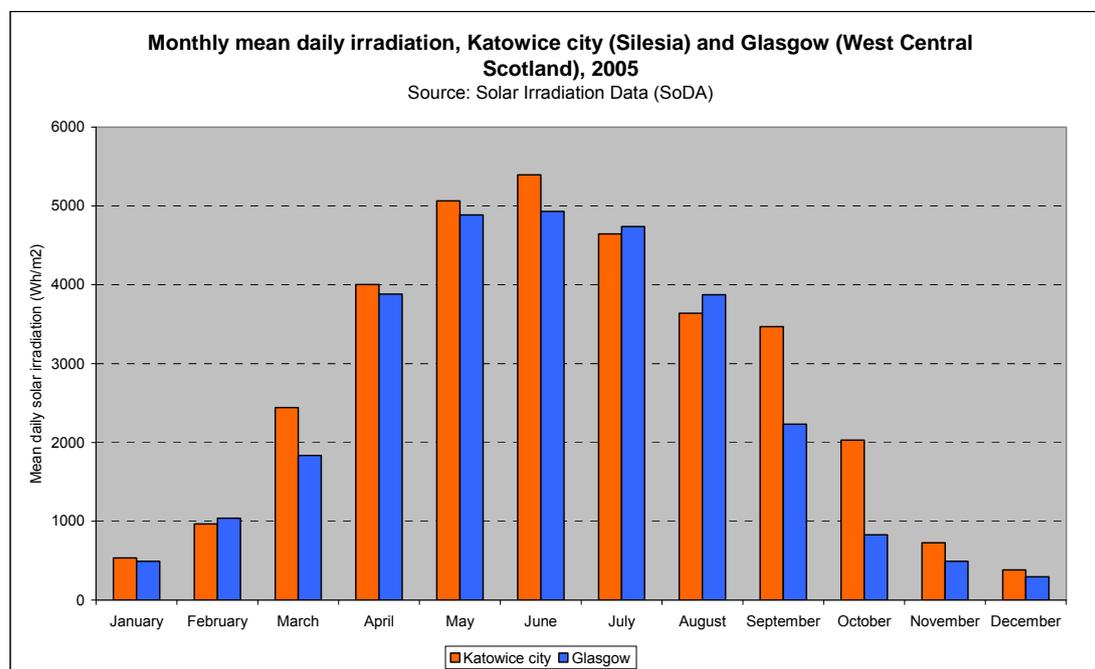
6.0 Physical environment

In this section we compare indicators of the physical environment between the two regions. Data limitations mean the analysis is restricted to measures of climate, overcrowding and perceived neighbourhood safety in Silesia and WCS.

6.1 Climate

As noted in the main report, some authors have argued that Scotland's relatively poor health can, in part, be attributed to lower levels of sunlight.³⁴ Figure 38 (below) compares the monthly mean of solar irradiation in Glasgow (the main city of WCS) with that of Katowice city (the largest city in Silesia) in 2005^{xxv}. Glasgow received less sunshine ('daily irradiation') than the Polish city for nine of the 12 months of the year^{xxvi}.

Figure 38



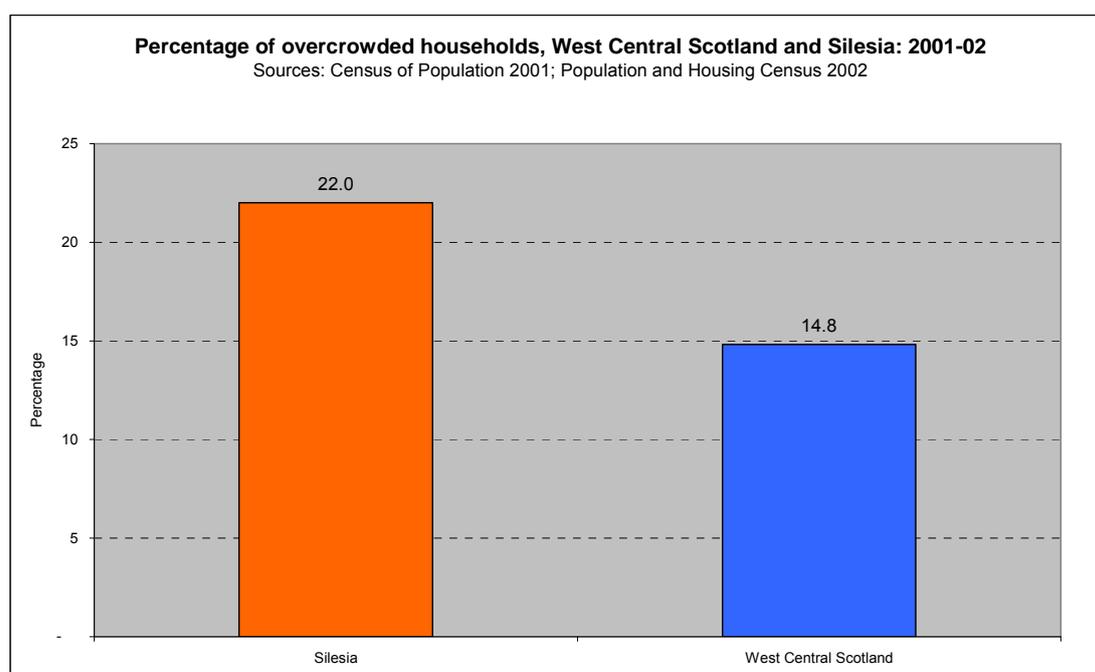
^{xxv} Unfortunately, data are only available for 2005. Using one year's data may of course present a skewed picture, and it would be preferable to show data average over several years were such information available.

^{xxvi} Irradiation is the power received per area (i.e. the energy hitting the ground from natural light), measured in watt-hours per square metre (Wh/m2).

6.2 Overcrowding

Overcrowding can be defined in a number of ways, but the measure used here shows the percentage of households with less than one room (excluding bathrooms, toilets and storage rooms) available per household resident. WCS households were less likely to be overcrowded than those in Silesia. In 2001-2002, more than a fifth (22.0%) of Silesia households had more than one person per room, compared to 14.8% in WCS (Figure 39). This partly reflects larger household size in Silesia: in 2001-2002, 49% of households in the Polish region contained at least three people, compared with 34.7% in WCS^{xxvii}.

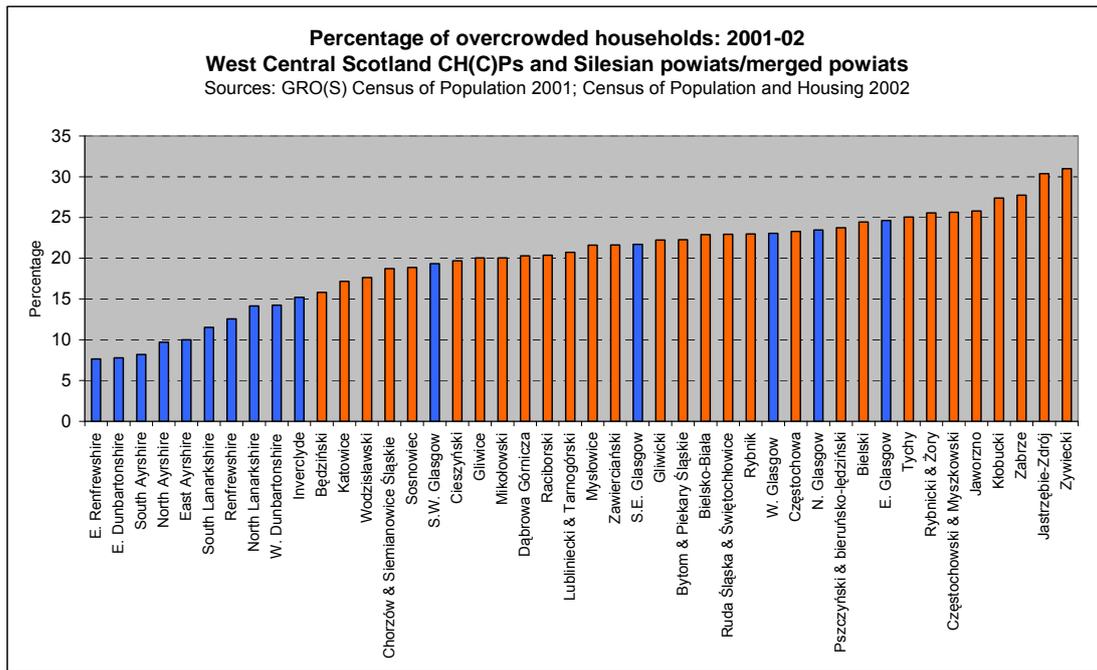
Figure 39



At a district level, there is a clear divide in the WCS between Glasgow and other CHPs. Ten of the WCS CHPs have levels of overcrowding below that in the least overcrowded *powiat*. Four Glasgow CHPs have levels of overcrowding close to the average observed in Silesia (Figure 40).

^{xxvii} GCPH calculations, based on 2001 and 2002 Census data.

Figure 40

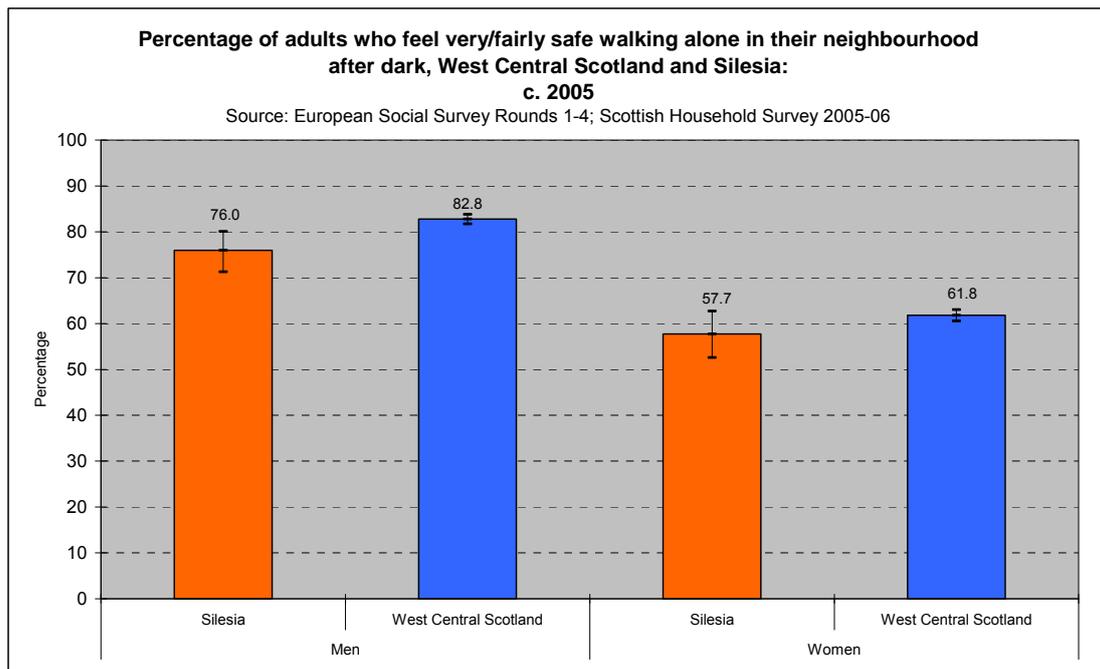


6.3 Perceived neighbourhood safety

Survey data suggest that in both WCS and Silesia, men were more likely to report that they would feel safe walking alone in their local area after dark than women^{xxviii}. For men, levels of reported safety were significantly higher in WCS relative to Silesia. For women no significant difference was found (Figure 41).

^{xxviii} Questions used in the two surveys were almost identical. The ESS questionnaire asks respondents “How safe do you – or would you – feel walking alone in this local area or neighbourhood after dark?” (very safe, safe, unsafe or very unsafe). The Scottish Household Survey asks: “How safe do you feel walking alone in your neighbourhood after dark?” (very safe, fairly safe, a bit unsafe, very unsafe).

Figure 41



Sample sizes: South Poland = 840 men and 833 women; West Central Scotland = 3084 men and 4269 women.

Summary: Physical environment

- There are a limited set of indicators of the **physical environment** (climate, overcrowding and neighbourhood safety) that can be compared for WCS and Silesia.
- In 2005, Glasgow received less daily solar irradiation (**sunshine**) on average than Katowice (largest city in Silesia) for nine out of 12 months of the year.
- Households in Silesia were also much more likely to be **overcrowded** than those in WCS. More than a fifth (22%) of Silesia households were overcrowded in 2002, compared to less than one in six (14.8%) in WCS.
- Perceived **neighbourhood safety** was significantly higher for men in WCS than in Silesia, though for women no significant regional difference was observed.

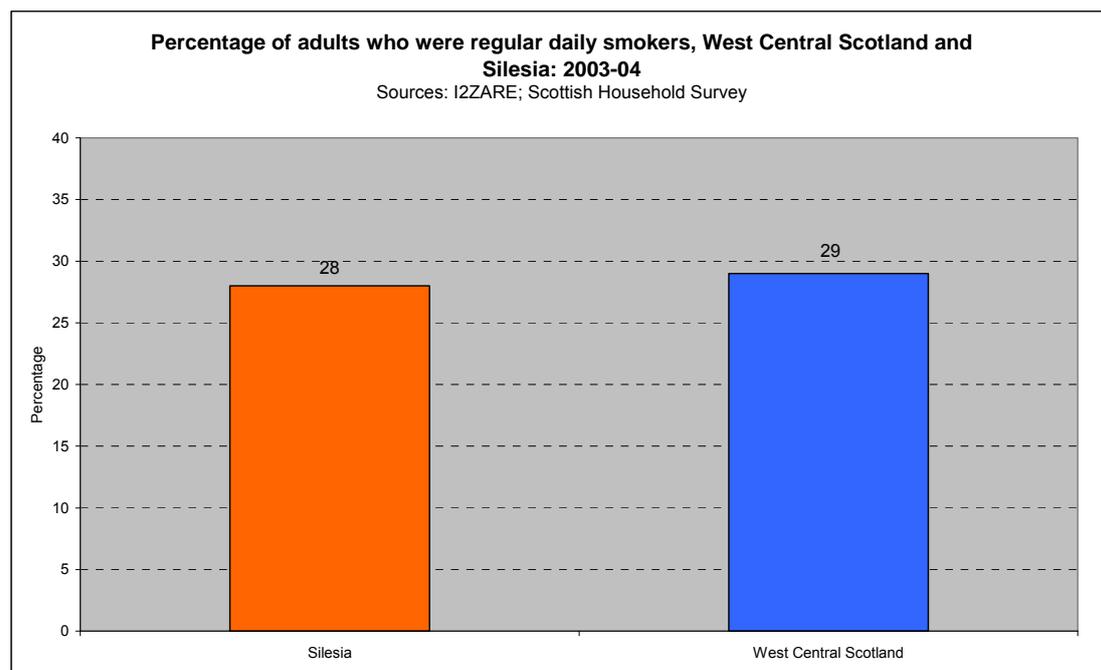
7.0 Health behaviours

This section compares the limited health behaviour data available – on smoking and alcohol consumption – in the two regions.

7.1 Smoking

Regular smoking remains an important risk factor for many chronic diseases, especially lung cancer and chronic obstructive pulmonary disease (COPD). Our first comparison shows adult smoking rates in Silesia and WCS in 2004 (Figure 42). For all adults, smoking rates were almost identical in two regions (28% vs. 29%).

Figure 42



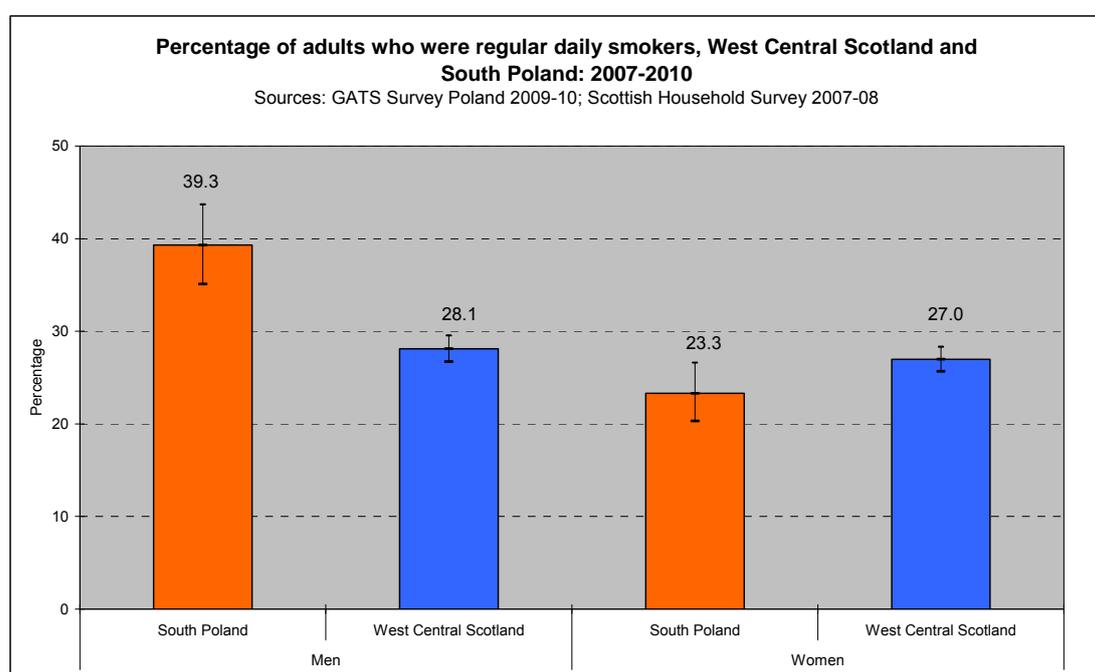
Unfortunately a breakdown of smoking rates by gender was not available for Silesia. However, the recent Global Adult Tobacco Survey for Poland provides estimates of smoking rates by gender in the larger South Poland region (Silesia plus Malopolskie^{xxix}). Note that as smoking rates are lower in

^{xxix} In 2009, Silesia (Slaskie) had a population of 4.6m and Malopolskie a population of 3.3m. Source: GUS. *Regions of Poland 2010*. GUS: Warsaw, 2010.

Malopolskie, estimates for South Poland are likely to understate smoking rates for Silesia^{xxx}.

For men, smoking rates in South Poland were significantly higher than in WCS (39.3% vs. 28.1% for regular smokers). For women, smoking rates in South Poland were significantly lower than WCS. More than a quarter (27%) of adult women smoked regularly in WCS in 2007-2008, compared to less than a quarter (23.3%) of adult women in South Poland (Figure 43).

Figure 43



Sample sizes: South Poland = 840 men and 833 women; West Central Scotland = 3084 men and 4269 women.

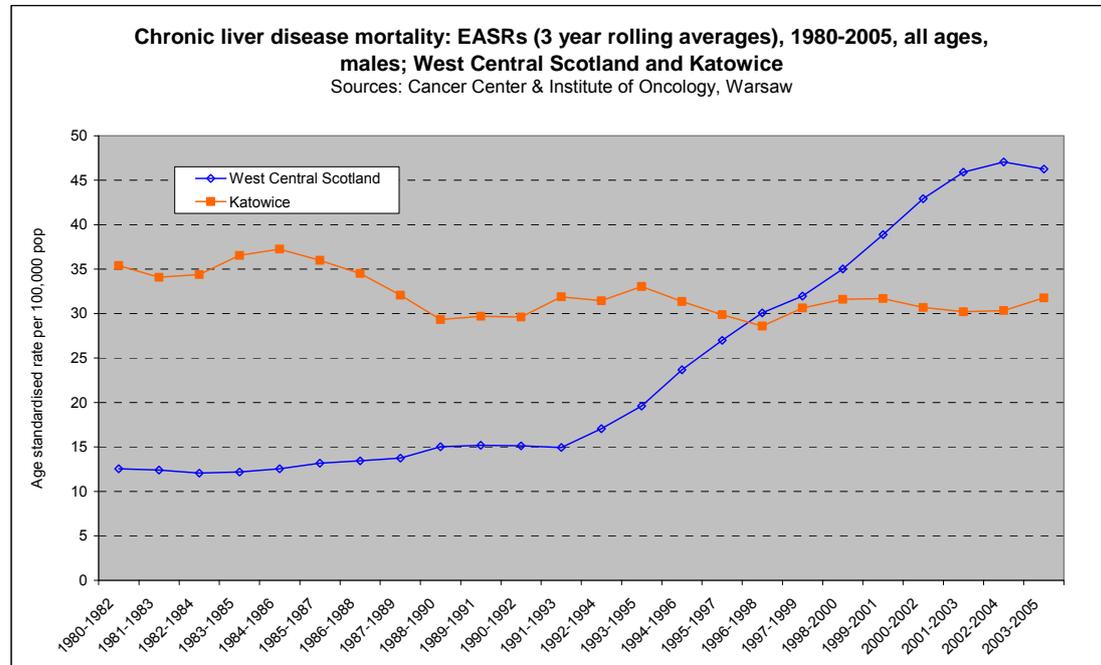
7.2 Alcohol

Mortality from alcohol-related causes is of serious concern in WCS. As the first *Aftershock* report showed, while mortality rates from liver disease fluctuated without much change in Silesia in the 1990s, they rose sharply in WCS, overtaking the Polish region in the late 1990s and continuing to

^{xxx} In 2004, estimated smoking rates were 28% in Silesia and 22.1% in Malopolskie. Source: I2ZARE: <http://www.i2sare.eu/>.

increase. By 2003-2005, mortality from this cause for men was 45% higher in WCS than in Katowice (Figure 44).

Figure 44



Understanding regional differences in drinking habits would be a useful first step in exploring this issue. Unfortunately, there is a lack of comparable data on alcohol consumption for the two regions. However, we can at least compare patterns of alcohol consumption in Southern Poland and Scotland as a whole using pooled data from two Eurobarometer surveys, conducted in 2006 and 2009.

Our first comparison shows frequency of alcohol consumption in these two geographies (Figure 45). Compared to adults in South Poland, Scottish adults were significantly more likely to report drinking two to three times a week (31.2% vs. 12.6%) and four times a week or more (14% vs. 3.9%). They were significantly less likely to report drinking two to three times a month (10.8% vs. 25.6%) or not to have drunk alcohol at all in the last 30 days (10.2% vs. 18.2%).

The second chart compares the average number of alcoholic drinks consumed at a single sitting in the two geographies. Scottish adults were significantly more likely than those in Southern Poland to report drinking five or more drinks in an average sitting, and significantly less likely to report consuming two drinks or less (Figure 46).

Figure 45

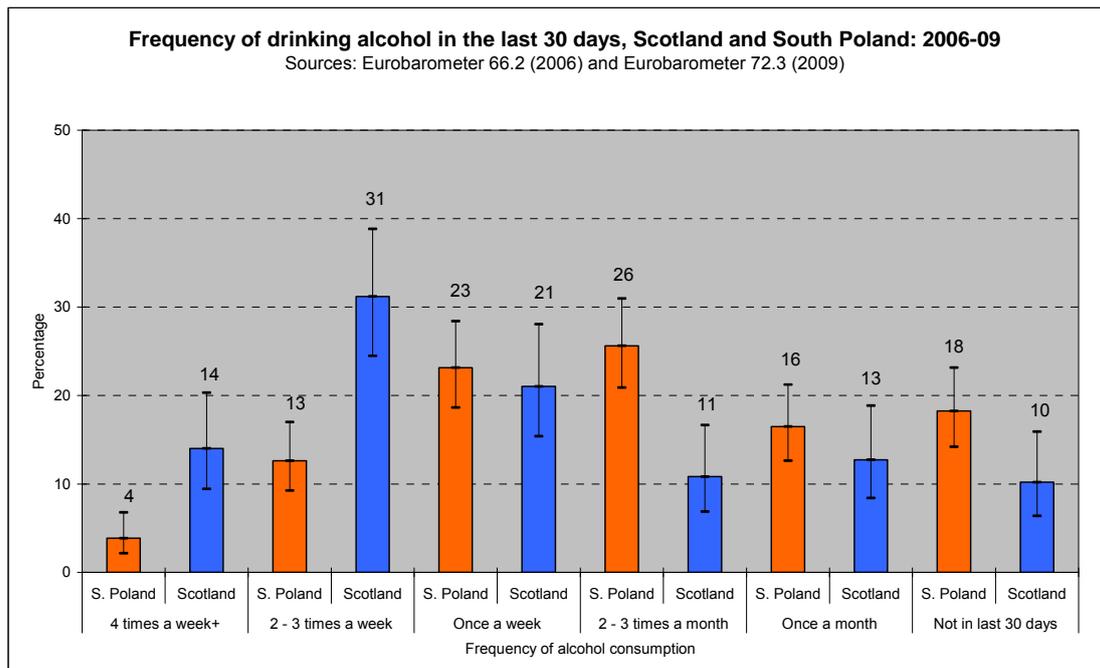
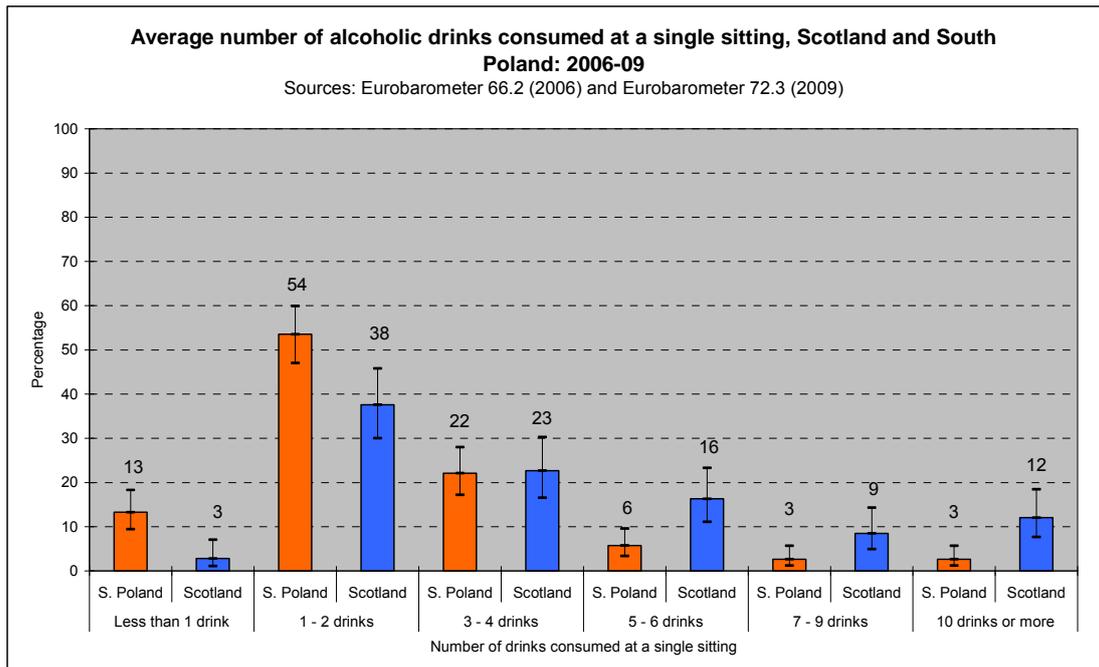


Figure 46



Sample sizes: South Poland = 265; Scotland = 156.

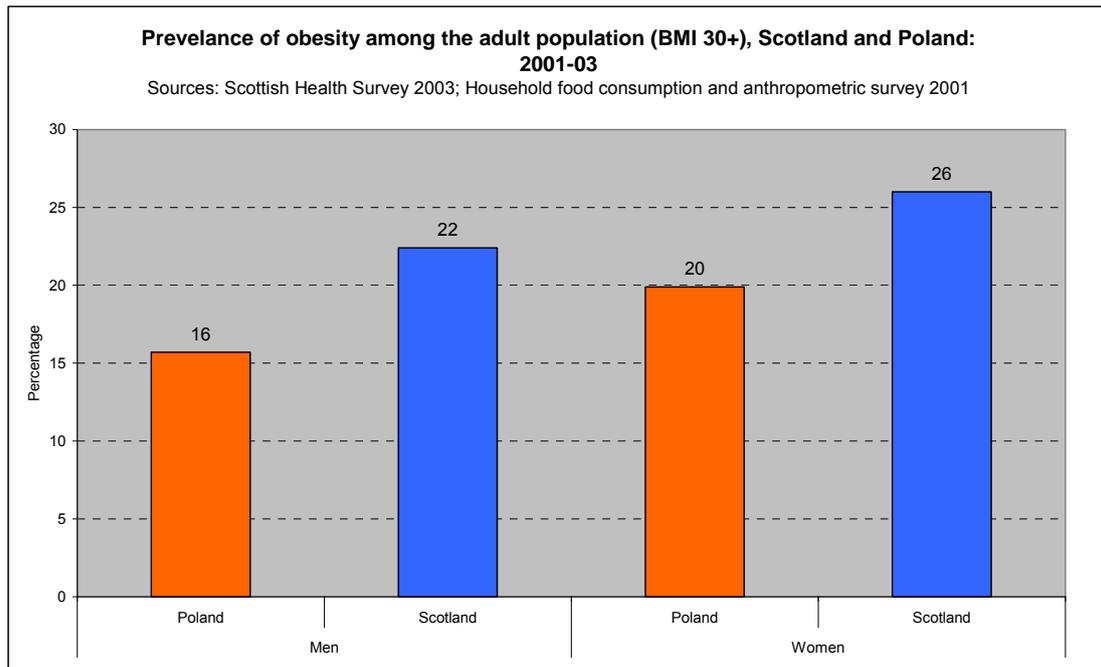
7.3 Obesity

Obesity is a serious public health concern for Scotland and other European countries. Self-reported estimates of obesity are available for the Silesia region from the 2004 Health Interview Survey, but are likely to understate the true level of obesity. For example, measured obesity rates in Poland were three percentage points higher for men and seven percentage points higher for women than self-reported data would suggest.^{xxxi} Similar differences are observed when comparing self-reported and measured estimates of obesity in Greater Glasgow (see the Nord-Pas-de-Calais case study for further details). This makes it difficult to make meaningful comparisons of obesity between the two regions.

National comparisons of measured obesity among the adult populations of Scotland and Poland are available. These indicate that in 2001-2003, obesity levels were higher in Scotland for both sexes (Figure 47).

^{xxxi} See Internal Association for the Study of Obesity (IASO) 2001 and the Health Status of Poland in 2004.

Figure 47



Sample sizes: Poland = 1255 men and 1570 women; Scotland = 3016 men and 3684 women.

Summary: Health behaviours

- Comparable data for **health behaviours** in Silesia and WCS are very limited.
- Male **smoking** rates were significantly higher in South Poland, but female rates significantly higher in WCS.
- Data on **alcohol consumption** are limited. However data from Eurobarometer suggests frequency of alcohol consumption, and number of alcoholic drinks consumed per sitting, were both significantly higher in Scotland than in South Poland.
- Self-reported data on **obesity** are available for both regions, but these are likely to underestimate obesity by an unspecified amount. It is not currently possible to make meaningful comparisons of obesity at a regional level.
- At a *national* level, obesity levels were much higher in Scotland than Poland in 2001-03.

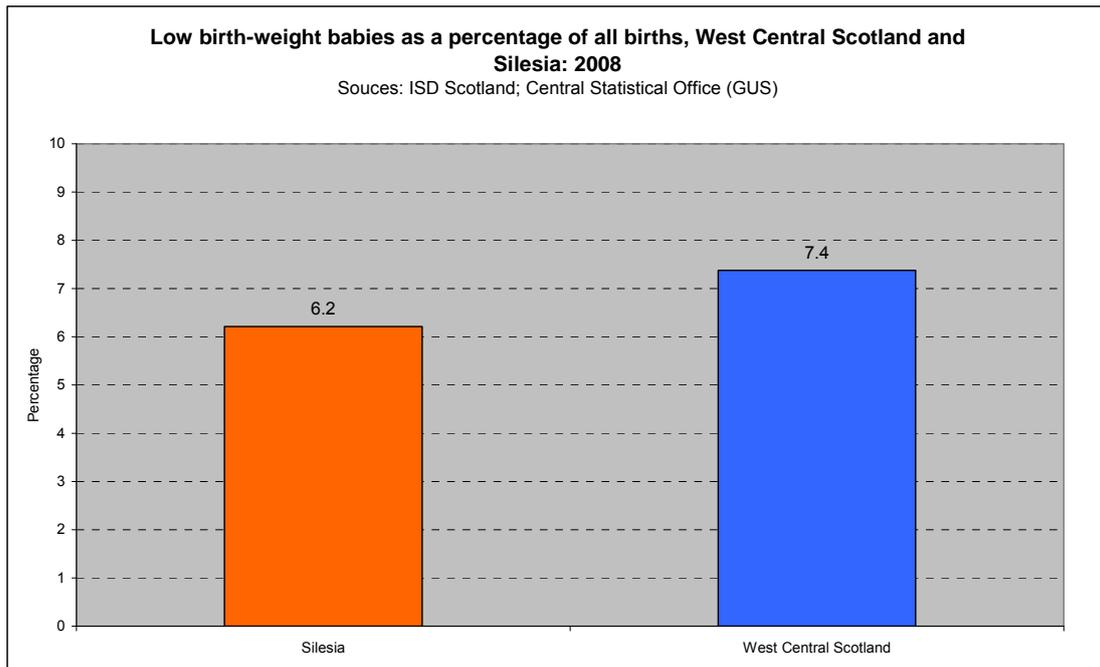
8.0 Child and maternal health

In this section, we briefly consider data on two available indicators relevant to the topic of child and maternal health in Silesia and WCS. Although the main report also includes regional comparisons of terminations of pregnancy and breastfeeding, it was not possible to obtain Silesian data on these indicators. Data on terminations of pregnancy are very limited for Poland, given its much tighter restrictions on the circumstances in which abortions are permitted compared to the UK^{35, 36}. Regional data on breastfeeding is also unavailable for Poland, though national comparisons suggest much higher rates at birth than for Scotland (90%³⁷ vs. 53%³⁸). The analyses presented here are therefore limited to low birth-weight babies and births to teenage mothers.

8.1 Low birth-weight babies

The indicator used here is *the percentage of babies born who weighed less than 2500g*. In 2008, the percentage of low birth-weight babies born in WCS (7.4%) was rather higher than Silesia (6.2%). National trends show a similar gap, driven by the percentage of low birth-weight babies declining in Poland and increasing in Scotland during the 1990s³⁹.

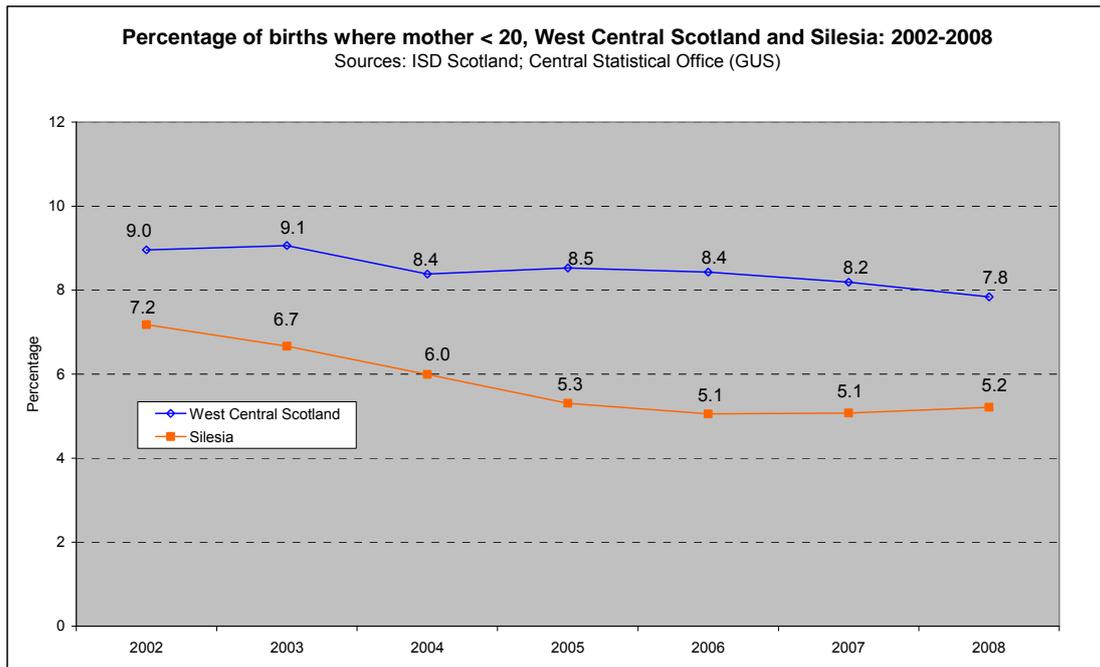
Figure 48



8.2 Teenage mothers

As discussed in the main report, teenage mothers are at greater risk of giving birth to pre-term and low birth-weight babies⁴⁰, with a number of known associated health risks⁴¹. Research has also suggested links between younger parents and other adverse health related outcomes^{42,43}. In 2008, the percentage of births to mothers under 20 in WCS (7.8%) was much higher than that recorded for Silesia (5.2%). This regional gap has persisted at least since 2002 (Figure 49).

Figure 49

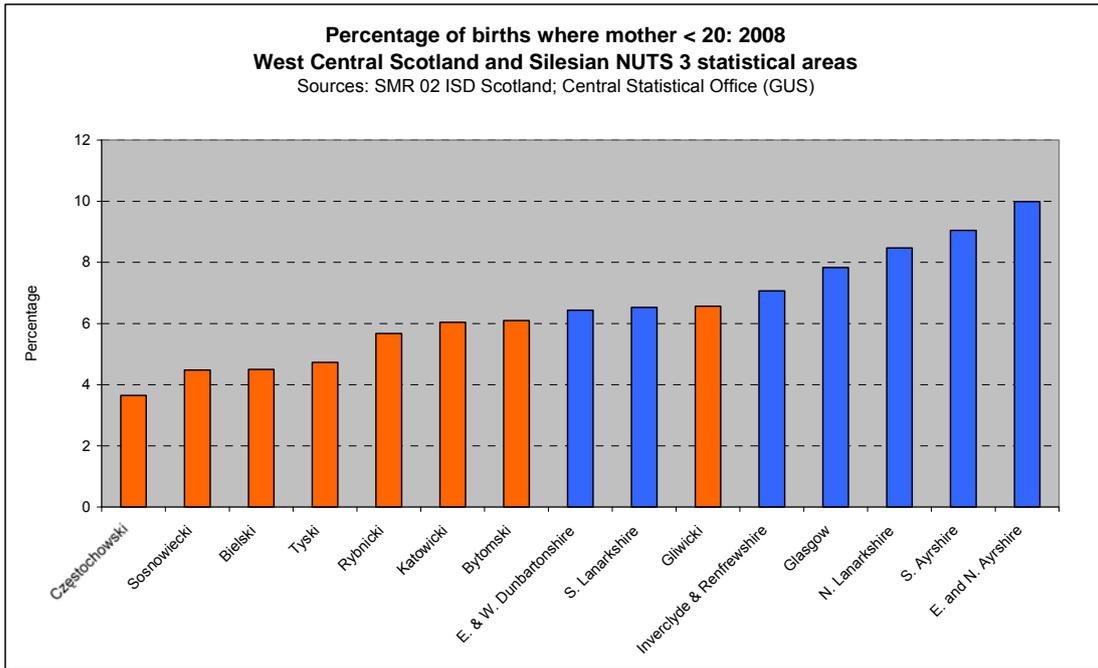


Sub-regional data on births in Silesia are only currently published for NUTS 3^{xxxii} geographies. There are eight of these, with larger populations than the *powiats/merged-powiats* used previously in this report^{xxxiii}. Results are therefore compared with the NUTS 3 regions for WCS, rather than for the CHPs used elsewhere in this report. Most NUTS 3 areas in WCS have a higher percentage of births to teenage mothers compared to the equivalent Silesia geographies (Figure 50).

^{xxxii} Nomenclature of Units for Territorial Statistics III (NUTS 3) regions of the EU have populations in the range 150,000 to 800,000.

^{xxxiii} The 2006 population range was from 382,500 people (Tyski sub-region) to 776,200 (Katowicki sub-region), compared to 75,100 (Mysłowice powiat) to 323,000 (Katowice city).

Figure 50



Summary: Child and maternal health

- **Maternal and child health data** are very limited, partly due to a lack of regional data and partly because of cultural and legal differences (e.g. in restrictions on pregnancy terminations in Poland).
- In 2008, the percentage of **low birth-weight babies** was higher in WCS than in Silesia region (7.4% vs. 6.2%).
- The percentage of births to **teenage mothers** in WCS was substantially higher than Silesia in 2008 (7.8% vs. 5.2%). This difference appears to be region-wide.

9.0 Conclusions

This report has compared some basic data on health and its determinants in Silesia and WCS in an attempt to identify what factors might explain the slower rate of improvement in health observed in the Scottish region during the 1990s. Any interpretation is constrained by a lack of data, especially looking at change over time in the Polish region and in relation to topic areas such as child and maternal health, the physical environment and health behaviours. However, the available information does suggest several differences between the two regions. Figure 51 represents an at-a-glance summary of key indicators presented within the case study and the main report. It is a (very crude) attempt to summarise the extent to which health and its determinants (or at least data on health and its determinants that are available from routine data sources) differs between the two post-industrial regions of WCS and Silesia.

The first research question outlined in this case study was: can WCS's relatively slower rate of health improvement be explained purely in terms of socio-economic factors (poverty, deprivation etc.)? This seems unlikely, for two main reasons. First, subjective measures of deprivation – such as the family affluence scale and perceived adequacy of household income – suggest poverty and deprivation remains a much more widespread concern in Silesia than WCS. Second, the period between the mid-1990s and mid-2000s saw labour market conditions deteriorate in Silesia relative to WCS, but life expectancy continue to improve at a faster rate than the Scottish region. Other potential measures of prosperity, such as household car ownership and non-renting households, also remained consistently higher in the WCS region, though it remains unclear to what extent these reflect cultural as much as genuine socio-economic differences.

Overall levels of regional prosperity may not necessarily translate into good health.

This is illustrated by the data on relative poverty and inequality. Despite higher levels of absolute prosperity, relative poverty rates were similar in WCS and Silesia during the 1990s. This is likely to reflect the more unequal distribution of household income (reflected by a higher Gini coefficient) seen in the Scottish region. Exploring the implications of this might be a useful avenue for future research.

The second research question was: do comparisons of other, important, health determinant information identify important differences between WCS and other regions? Subjective measures of health and function, such as self-rated health and life satisfaction, present WCS in a favourable light compared to Silesia, while the proportion of adults reporting that health problems limit their daily activities is similar in both regions. Indicators of social health and the physical environment show a mixed picture. Educational attainment is more polarised in WCS than in Silesia. The percentage of lone parent and single-person households is also higher, and marriage rates lower, in WCS. Overcrowding, and fear of crime among men, is low in WCS compared to the Polish region, although levels of overcrowding in Glasgow City can match those in Silesia and perceived neighbourhood safety among women is similar in both regions. In terms of social capital, voter turnout and interest in politics is lower in Silesia than WCS, though religious affiliation and regular participation in religious ceremonies is much more common in the Polish region. Exposure to sunlight is also lower in WCS than in Silesia.

Data on health behaviours are limited, but nevertheless suggest that some health behaviours may be worse in WCS. The available information hints at more frequent consumption of alcohol, and a greater number of alcoholic drinks consumed on average at each sitting, among adult Scottish drinkers. Smoking rates among women in WCS are also high compared to the Polish region. It remains very difficult to make regional comparisons of obesity: self-reported data are available for both regions, but these tend to understate true levels of obesity in the population to a considerable degree. Future research on diet and alcohol might consider ways to 'unlock' access to Polish surveys (such as the Household Food Consumption and Anthropometric Survey and

the Health Interview Survey for Poland) which might then allow comparisons with similar Scottish data.

As with the main report, the results from this case study also hint that child and maternal health may be poorer in WCS. Although very little comparable data are available at the regional level, both the percentage of low birth-weight babies and births to teenage mothers are higher in WCS than in Silesia.

As with the main report and the other three case studies, these analyses have identified some potentially important differences between the Scottish and Polish post-industrial regions. However, it is difficult to quantify their impact on health outcomes, or on the rate of improvement in health outcomes. Nonetheless, these results add to the evidence that economic issues alone do not appear to be the principal issue. Further research is required, focussing not on routine administrative data, but based on the collation of new data to test specific hypotheses – and this is now being undertaken as part of a programme of work focussing on the key WCS city, Glasgow, and its most comparable post-industrial cities in the UK, Liverpool and Manchester. The results of that research will be complete in 2012.

Figure 50: Selected indicators for WCS compared to Silesia

Is WCS worse than, similar to, or better than Silesia?							
Domain	Indicator	WCS vs. Silesia	WCS	Silesia	Measure	Region	Time Period
Health & Function	Life expectancy - males		73.3	70.6	yrs	WCS	2005-07
	Life expectancy - females		78.8	78.7	yrs	WCS	2005-07
	Adults in good/v. good health		71.8	60.1	%	GG & C	2002-08
	Mean life satisfaction (0-10)		7.3	6.5	Av.	GG & C	2002-08
Prosperity & poverty	Male employment rate		72.0	62.9	%	WCS	2008
	Female employment rate		64.0	49.9	%	WCS	2008
	Unemployment rate		5.8	6.6	%	WCS	2008
	Adults living in jobless households		14.0	17.7	%	Strathclyde	2003-05
	Perceived adequacy of income		11.4	30.7	%	WCS	2002-08
	Children aged 11-15 living in low family affluence families		18.3	29.9	%	WCS	2006
Inequalities	Population living in relative poverty		18.9	16.8	%	S.W. Scot	1994-01
	Income inequality		0.298	0.274	Gini	WCS	2003-04
Social Environment	Education: tertiary (level 5/6) qualifications, aged 25-64		33.3	17.6	%	WCS	2008
	Education: no/low (<level 3) qualifications, aged 25-64		27.3	8.7	%	WCS	2008
	Lone parent households		33.8	16.9	%	WCS	2001-02
	Single person households		33.8	26.4	%	WCS	2001-02
	Adults (25-64) who are married		63.0	76.0	%	WCS	2001-02
	Social capital - not reg. attend. Church		52.7	5.7	%	WCS	2002-08
	Social capital - voter turnout		58.3	54.9	%	WCS	2005-07
Physical Environment	Climate - average annual irradiance		2460.0	2805.0	w	G	2005
	Adults feeling safe walking along in their area after dark		70.6	66.9	%	WCS	2002-08
Behaviour	Male smoking prevalence *		28.1	39.3	%	WCS	2007-10
	Female smoking prevalence *		27.0	23.3	%	WCS	2007-10
	Male liver cirrhosis mortality **		46.3	31.8	sr	WCS	2003-05
	Female liver cirrhosis mortality **		19.6	11.1	sr	WCS	2003-05
Child & Maternal	Births to teenage mothers (< 20)		7.8	5.2	Cr2	WCS	2008
	Low birth-weight babies		7.4	6.2	Cr3	WCS	2008

* S. Poland used as proxy for Silesia. *** Katowice region rather than Silesia.

Note: For survey data, 95% confidence intervals (and Chi-square test for proportions) used to determine if difference significant.

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Appendix 1: Definitions and sources of data presented in the case study

Table/Figure No.	Description	Source	Notes
1	Map showing location of Silesia in Poland.	Map produced using boundaries provided with ESRI ArcGIS 9 software.	
2	Bar chart showing ranked population of 15 West Central Scotland Community Health (and Care) Partnerships and 29 powiats/merged powiats, 2006.	General Register Office for Scotland (WCS) and Central Statistical Office for Poland (GUS) (Silesia).	'Powiats' translate loosely to 'county' in English: cities can also have 'powiat' status.
3	Line chart showing male life expectancy in Silesia and WCS between 1995-1997 and 2005-2007.	General Register Office for Scotland (WCS) and Central Statistical Office for Poland (GUS) (Silesia).	
4	Line chart showing female life expectancy in Silesia and WCS between 1995-1997 and 2005-2007.	General Register Office for Scotland (WCS) and Central Statistical Office for Poland (GUS) (Silesia).	
5	Bar chart showing ranked male European age-standardised mortality rates (EASR) for 15 West Central Scotland Community Health (and Care) Partnerships and 29 powiats/merged powiats, 2006-2008.	General Register Office for Scotland (WCS) and Central Statistical Office for Poland (GUS) (Silesia). Three years of deaths/population data aggregated (2006, 2007, 2008).	
6	Bar chart showing ranked female European age-standardised mortality rates (EASR) for 15 West Central Scotland Community Health (and Care) Partnerships and 29 powiats/merged powiats, 2006-2008.	See above.	

7	Bar chart showing percentage of adults aged 15+/16+ rating their general health as very good/good, by gender, Greater Glasgow & Clyde Health Board area (2008) and Silesia region (2002-2008 average).	European Social Survey Rounds 1-4 (2002-2003 to 2008-2009) for Silesia. Scottish Health Survey 2008 for Greater Glasgow & Clyde.	
8	Bar chart showing percentage of adults aged 15+/16+ reporting that health limited their daily activities, by gender, Greater Glasgow & Clyde Health Board area (2008) and Silesia region (2002-2008 average).	European Social Survey Rounds 1-4 (2002-2003 to 2008-2009) for Silesia. Scottish Health Survey 2008 for Greater Glasgow & Clyde.	
9	Bar chart showing mean life satisfaction scores for adults aged 15+/16+, by gender, Greater Glasgow & Clyde Health Board area (2008) and Silesia region (2002-2008 average).	European Social Survey Rounds 1-4 (2002-2003 to 2008-2009) for Silesia. Scottish Health Survey 2008 for Greater Glasgow & Clyde.	Respondents rate their life satisfaction from 0-10 (very dissatisfied to very satisfied).
10	Line chart showing ILO unemployment rate for South Western Scotland and Silesia between 1995-1997 and 2006-2008.	Eurostat (South Western Scotland) and Central Statistical Office for Poland (GUS) (Silesia).	
11	Bar chart showing ranked unemployment rate of 15 West Central Scotland Community Health (and Care) Partnerships and 29 powiats/merged powiats, 2001-2002.	Census of Population 2001 (West Central Scotland). GUS Census of Population and Housing 2002 (Silesia).	Age bands are 16-74 for West Central Scotland, 15-64 for Silesia. Unemployment rate = unemployed as percentage of economically active population.

12	Crude male employment rate = all males in employment/all males aged 15-64, except for 1986-1991 WCS when rates directly calculated from Labour Force Survey.	<u>West Central Scotland:</u> Population data Mid- year population estimates, GROS. Employment data 1995-2003: total in employment (Labour Force Survey); 2005 (Annual Population Survey) <u>Silesia</u> All data from Central Statistical Office for Poland (GUS)	
13	Crude female employment rate=All females in employment/all males aged 15-64.	See above.	
14	Line chart showing percentage of adults aged 18-59 living in households where no-one worked, Silesia and Strathclyde region, 1995-1997 to 2003-2005.	UK Labour Force Survey Household Datasets (Spring datasets). GUS Census of Housing and Population 2002 (Silesia).	Age bands are adults aged 18-59 for both regions. Strathclyde used as proxy for WCS. Workless includes households where all unemployed, all inactive or mixed inactive/unemployed. 'All student' households excluded from UK data.
15	Bar chart showing percentage of households with no access to a car, Silesia and WCS, 1988-1991 and 2006.	Polpan study (1988) and Central Statistical Office for Poland (GUS) (2006) for Silesia. GRO (S) Census of Population (1991) and Scottish Household Survey (2006) for (WCS).	For 1988, Polpan data for Bielskie, Czestochowskie and Katowic pooled as proxy for Silesia.
16	Line chart showing percentage of households not owning their own home, 1988 to 2006.	Polpan study (1988, 1993, 1998, 2003) and Central Statistical Office for Poland (GUS) (2002-2006) for Silesia. Population (1991) and Scottish Household Survey (1999-2006) for (WCS).	For 1988, 1993 and 1998, Polpan data for Bielskie, Czestochowskie and Katowic pooled as proxy for Silesia.

17	Bar chart showing ranked percentage of households not owning their own home for 15 West Central Scotland Community Health (and Care) Partnerships and 29 powiats/merged powiats, 2002.	Census of Population 2001 (West Central Scotland). GUS Census of Population and Housing 2002 (Silesia).	
18	Bar chart showing percentage of adults aged 15+/16+ reporting that they found it difficult to manage on their household income nowadays , West Central Scotland 2007) and Silesia region (2002-2008 average).	European Social Survey Rounds 1-4 (2002-2003 to 2008/09) for Silesia. Scottish Social Attitudes Survey 2007 for West Central Scotland.	
19	Bar chart showing percentage of children aged 11-15 living in high and low affluence households, West Central Scotland and Silesia region (2006).	HBSC data calculated and supplied by Institute of Mother and Child (Warsaw) (Silesia) and University of Edinburgh (West Central Scotland).	For more detail on the family affluence scale, see: Boyce et al. The Family Affluence Scale as a Measure of National Wealth: Validation of an Adolescent Self-Report Measure. <i>Social Indicators Research</i> 2006;78: 473-487.
20	Percentage of population living in relative poverty (< 60% of median national income), South Western Scotland and Silesia.	Lemmi et al. Regional Indicators to reflect social exclusion and poverty VT/2003/43. Final Report. Original source is the European Community Household Panel, pooled data from 1994-2001 inclusive.	South Western Scotland used as proxy for West Central Scotland. NUTS II Relative poverty rates calculated by national figure (Table A.2) by figures in Table A.3 and Table A.5 where appropriate: the relevant variable is HCR_c.
21	Gini coefficient for household incomes, West Central Scotland and Silesia.	Luxemburg Income Study 2004 (Silesia) Scottish Household Survey 2003-2004 (WCS)	See main report for detail on how Gini coefficients for household income were calculated.

22	Line chart showing gender ratio of males aged 15-44 to females aged 15-44 for WCS and Katowice region, 1982-2005.	GRO (S) Mid-year population estimates (WCS). Dept. of Cancer Epidemiology and Prevention, Cancer Centre and Inst. Of Oncology, Warsaw (Katowice region).	
23	Line chart showing gender ratio of males aged 45-64 to females aged 45-64 for WCS and Katowice region, 1982-2005.	See above.	
24	Line chart showing dependency ratio for WCS and Silesia, 1983-2003. Dependency ratio = (65 + and Under 15)/(Population aged 15-64).	See above.	
25	Bar chart showing ranked population density for 15 West Central Scotland Community Health (and Care) Partnerships and 29 powiats/merged powiats, 2006.	General Register Office for Scotland (WCS) and Central Statistical Office for Poland (GUS) (Silesia).	
26	Line chart showing fertility rate for WCS and Silesia, 1991-2007. Rate shown is all births/female population aged 15-44 in each region.	GRO (S) Vital statistics and Mid-year population estimates (WCS). Eurostat database (Silesia).	Note that 1991 figure for Silesia uses 1990 live births as numerator.
27	Bar chart showing percentage of adults aged 15+ with low or no (ISCED Level 0-2) qualifications and tertiary qualifications (ISCED Level 5-6), Silesia and South Western Scotland.	Eurostat for both regions.	

28	Bar chart showing percentage of households with dependent children headed by a lone parent for WCS and Silesia 2001-2002.	GRO (S) Census of Population 2001 (WCS). GUS Census of Housing and Population 2002 (Silesia).	Scottish definition=all lone parents with dependent children/all families with dependent children. In WCS, a dependent child is a person aged 0-15 in a household (whether or not in a family) or aged 16-18, in full-time education and living in a family with his or her parent(s). Polish definition=(single mothers with children + single fathers with children)/all families with children. In Silesia, a dependent child is a person aged 0-24 years in the family household /institutional household.
29	Bar chart showing ranked percentage of households with dependent children headed by a lone parent 15 West Central Scotland Community Health (and Care) Partnerships and 29 powiats/merged powiats, 2001-2002.	See above.	See above.
30	Bar chart chart showing percentage of single-person households for WCS and Silesia 2001-2002.	GRO (S) Census of Population 2001 (WCS). GUS Census of Housing and Population 2002 (Silesia).	All single person households/all households.
31	Bar chart showing ranked percentage of single-person households for 15 West Central Scotland Community Health (and Care) Partnerships and 29 powiats/merged powiats, 2001-2002.	See above.	See above.

32	Bar chart showing percentage of adults aged 25-64 who were married (inc. legally separated) for WCS and Silesia 2001-2002.	Eurostat: original sourced from GRO (S) Census of Population 2001 (WCS) and GUS Census of Housing and Population 2002 (Silesia).	Scottish data on Eurostat combines legally separated and married data into single 'married' category.
33	Bar chart showing percentage of adults aged 15+/16+ reporting their religion as none, by gender, West Central Scotland (2005-2006) and Silesia region (2002-2008 average).	European Social Survey Rounds 1-4 (2002/03 to 2008/09) for Silesia. Scottish Household Survey 2005-2006 for West Central Scotland.	
34	Bar chart showing percentage of adults aged 15+/16+ who never attend church/religious ceremonies except for special occasions, by gender, West Central Scotland (2007) and Silesia region (2002-2008 average).	European Social Survey Rounds 1-4 (2002-2003 to 2008-2009) for Silesia. Scottish Social Attitudes Survey 2007 for West Central Scotland.	
35	Bar chart showing percentage of adults aged 15+/16+ not at all interested in politics, by gender, West Central Scotland (2007) and Silesia region (2002-2008 average).	European Social Survey Rounds 1-4 (2002-2003 to 2008-2009) for Silesia. Scottish Social Attitudes Survey 2007 for West Central Scotland.	
36	Bar chart showing voter turnout at Polish and UK parliamentary elections, West Central Scotland (2005) and Silesia region (2007).	UK Electoral Commission (WCS). Polish National Electoral Commission (Silesia).	
37	Bar chart showing ranked voter turnout at Polish and UK parliamentary elections for 24 West Central Scotland UK parliamentary constituencies (2005) and 36 Silesian powiats (2007).	UK Electoral Commission (WCS). Polish National Electoral Commission (Silesia).	

38	Bar chart showing monthly mean daily irradiation, Katowice city and Glasgow city, by month, January-December 2005.	Solar Radiation Data: http://www.sodanis.com/eng/services/services_radiation_free_eng.php	Irradiation is the power received per area, measured in watt-hours per square metre (Wh/m ²).
39	Bar chart showing percentage of overcrowded households, WCS and Silesia, 2001 and 2002.	GRO (S) Census of Population 2001 (WCS). GUS Census of Housing and Population 2002 (Silesia).	Overcrowded households are those where there are fewer than two common rooms (excluding bathrooms) available per household member.
40	Bar chart showing 15 West Central Scotland Community Health (and Care) Partnerships and 29 powiats/merged powiats, 2001-2002., ranked by percentage of overcrowded households.	See above.	See above.
41	Bar chart showing percentage of adults aged 15+/16+ who feel very/fairly safe walking alone in their neighbourhood after dark, by gender, Scottish Household Survey (2005-2006) and Silesia region (2002-2008 average).	European Social Survey Rounds 1-4 (2002/03 to 2008/09) for Silesia. Scottish Household Survey 2005-2006 for WCS.	
42	Bar chart showing percentage of adults aged 15+/16+ who were regular daily smokers, Silesia and West Central Scotland.	I2ZARE (original source: Polish Health Interview Survey 2004) (Silesia). Scottish Household Survey 2003-2004 for WCS.	
43	Bar chart showing Percentage of adults aged 15+/16+ who were regular daily smokers, by gender, South Poland and West Central Scotland	Global Adult Tobacco Survey for Poland 2009-2010 (South Poland). Scottish Household Survey 2007-2008 for WCS.	

44	Male all-age chronic liver disease mortality, age-standardised to European Standard Population, Katowice region and West Central Scotland, 1980-1982 to 2003-2005.	As reported in first <i>Aftershock</i> report.	
45	Bar chart showing distribution of adults aged 15+ by frequency of alcohol consumption in last 30 days, Scotland and South Poland.	Eurobarometer 66.2 and 72.3 (pooled data), extracted from ZACAT database.	
46	Bar chart showing distribution of adults aged 15+ by average number of drinks consumed at a single sitting, Scotland and South Poland.	See above.	
47	Bar chart showing percentage of adults aged 19-100/16+ in Poland/Scotland with a valid BMI measurement of 30+ (indicating obesity), Scotland and Poland, by gender, 2001-2003	Scottish Health Survey 2003 Polish Household food consumption and anthropometric survey 2001	
48	Bar chart showing total births < 2500g as a percentage of all live births, Silesia and West Central Scotland, 2008.	ISD Scotland (West Central Scotland) and Central Statistical Office for Poland (GUS) (Silesia).	
49	Line chart showing percentage of live births where mother < 20, WCS and Silesia, 2002-2008.	ISD Scotland (West Central Scotland) and Central Statistical Office for Poland (GUS) (Silesia).	
50	Bar chart showing ranked percentage of live births where mother < 20, at NUTS 3 level, WCS and Silesia, 2008.	ISD Scotland (West Central Scotland) and Central Statistical Office for Poland (GUS) (Silesia).	

Appendix 2: Silesian powiats/merged powiats(districts/sub-districts) used

Name used in report	How geography was defined	Population (2006)
Mysłowice	City with powiat status Mysłowice	75,063
Kłobucki	Powiat kłobucki	84,761
Mikołowski	Powiat mikołowski	91,112
Jastrzębie-Zdrój	City with powiat status Jastrzębie-Zdrój	94,716
Jaworzno	City with powiat status Jaworzno	95,771
Raciborski	Powiat raciborski	111,204
Gliwicki	Powiat gliwicki	114,848
Zawierciański	Powiat zawierciański	123,901
Dąbrowa Górnicza	City with powiat status Dąbrowa Górnicza	129,559
Tychy	City with powiat status Tychy	130,492
Rybnicki & Żory	Merged powiat rybnicki & City with powiat status Żory	136,068
Rybnik	City with powiat status Rybnik	141,388
Zywiecki	Powiat żywiecki	149,779
Będziński	Powiat będziński	151,163
Bielski	Powiat bielski	151,505
Wodzisławski	Powiat wodzisławski	155,222
Pszczynski & bieruńsko-lędziński	Merged powiat pszczyński & powiat bieruńsko-lędziński	160,845
Cieszyński	Powiat cieszyński	170,822
Bielsko-Biała	City with powiat status Bielsko-Biała	176,453
Chorzów & Siemianowice Śląskie	Merged City with powiat status Chorzów & City with powiat status Siemianowice Śląskie	186,225
Zabrze	City with powiat status Zabrze	190,110
Gliwice	City with powiat status Gliwice	198,499
Ruda Śląska & Świętochłowice	Merged City with powiat status Ruda Śląska & City with powiat status Świętochłowice	200,409
Częstochowski & Myszkowski	Merged Powiat częstochowski & Powiat myszkowski	205,210
Lubliniecki & Tarnogórski	Merged Powiat lubliniecki & Powiat tarnogórski	214,360
Sosnowiec	City with powiat status Sosnowiec	224,244
Częstochowa	City with powiat status Częstochowa	245,030
Bytom & Piekary Śląskie	Merged City with powiat status Bytom & City with powiat status Piekary Śląskie	245,878
Katowice	City with powiat status Katowice	314,500

Limburg

Merseyside

Nord-Pas-de-Calais

Northern Ireland

North Moravia

Ruhr

Saxony

Saxony-Anhalt

Silesia

Swansea & South
Wales Coalfields

Wallonia

West Central Scotland

