# COMPARISONS OF HEALTH-RELATED BEHAVIOURS AND HEALTH MEASURES BETWEEN GLASGOW AND THE REST OF SCOTLAND

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# EXECUTIVE SUMMARY

**Background**
The population of Glasgow has poorer health and shorter life expectancy than elsewhere in Scotland, and Scotland's health is known to compare unfavourably with that of other European countries. High levels of health-damaging behaviours (excess alcohol consumption, smoking and poor diet) have been proposed as the causes of Glasgow's poor health. Given the associations of low socio-economic status with such health behaviours and morbidity and mortality, it is unclear whether the unfavourable outcomes seen in Glasgow reflect the high levels of deprivation in the area.

**Aims**
The aims of this report are to provide comprehensive comparisons of adult morbidity, mortality, health behaviours and risk factors in the Glasgow area with those seen elsewhere in Scotland, and to establish the extent to which any observed differences can be explained by the unique socio-economic profile of Glasgow.

**Outcomes**
The health-related factors considered are alcohol intake, current cigarette smoking, diet, physical activity and obesity. The health measures examined comprise self-reports of cardiovascular disease, diabetes, general health, long-standing illness, acute sickness, psychological ill-health and health-related quality of life. Finally, comparisons between the Glasgow area and the rest of Scotland are made based on mortality from all-causes combined, and from coronary heart disease (CHD), stroke, cancers, chronic liver disease, mental and behavioural disorders due to the use of alcohol, mental and behavioural disorders due to the use of drugs, and suicide/self-harm.

**Methods**
Analyses are based on data from the 1995, 1998 and 2003 Scottish Health Surveys and on mortality data covering the years 2000-2002. Since behaviours and disease aetiologies can be different for men and women, all analyses were stratified by sex. Outcomes were compared across all regions, comparisons were made between sub-groups in Greater Glasgow and the rest of Scotland, and the extent to which differences were attributable to socio-economic factors was examined. The extent to which differences between Greater Glasgow and the rest of Scotland changed over time was analysed and comparisons were made between deprived and non-deprived areas within Greater Glasgow. Three areas covering Glasgow were used in these comparisons: Glasgow City was the smallest of the three, then the area covered by the (pre-2006) Greater Glasgow Health Board, and the largest area used was West Central Scotland (including Ayrshire & Arran, Argyll & Clyde, Greater Glasgow and Lanarkshire health boards). The majority of the analyses focussed on comparisons conducted at the Greater Glasgow level.

Comparisons were also made between Greater Glasgow and the rest of Scotland for adult mortality (all age mortality over 16 years) and for premature mortality (ages 16-64 years), and within the region comparisons were made between the most deprived areas and the remainder of the region.

## Main findings

### Men

Following adjustment for differences in socio-economic circumstances, there were higher levels of long standing illness, acute sickness and psychological distress among men in West Central Scotland compared with the rest of Scotland. Elevated rates of excessive alcohol consumption and binge drinking were found in the area, after adjustment for socio-economic factors, and may be associated with these higher levels of morbidity. Excess mortality from all cancers, lung cancer, as well as mortality from chronic liver disease and from mental and behavioural disorders due to the use of drugs persisted in men in Greater Glasgow following adjustment for socio-economic circumstances. Acute sickness and psychological distress levels also remained high in Greater Glasgow and in Glasgow City, with high levels of daily and weekly alcohol consumption again seen in these areas even once socio-economic factors had been accounted for. Poor diet, in terms of low green vegetable consumption, also persisted after socio-economic adjustment in Greater Glasgow as well as in the broader West Central Scotland.

### Women

Among women in West Central Scotland there were higher levels of psychological distress compared with the rest of Scotland and these could not be explained by socio-economic differences. The same was true of Greater Glasgow, which also had an excess of self-reported poor general health among women. Low intake of green vegetables among women in West Central Scotland was also found. Women in Glasgow City were identified as having higher rates of poor self-reported general health and mental aspects of quality of life, as well as higher levels of psychological distress compared with the rest of the country. Unlike men, elevated alcohol consumption was not seen among women in the region, with the exception of binge drinking levels in Glasgow City. Addition of salt to food at the table was high in women in West Central Scotland, Greater Glasgow and Glasgow City relative to the rest of Scotland.

### Sub-groups

Higher levels of morbidity and negative health-related behaviours in Greater Glasgow relative to the rest of the country were found to be clustered within certain sub-groups of the population. This was most pronounced for men with no qualifications; men aged 45-64; women living in the most deprived areas; women in low social classes; retired or economically inactive women; and women with no qualifications or qualifications below degree level.

Differences in health-related behaviours and health measures between adults living in the most deprived areas in Greater Glasgow compared to the rest of the areas in the health board region tend to be larger than differences between Greater Glasgow and rest of Scotland. With the exceptions of alcohol consumption (both excess and binge drinking) in adults generally, and obesity and CHD among women, results were significantly less favourable in the most deprived areas. All-cause mortality was higher in deprived areas, and this was also the case for the majority of the specific causes. Exceptions were mortality from mental and behavioural disorders due to the use of alcohol, mental and behavioural disorders due to the use of drugs, from breast cancer and chronic liver disease among women.

**Conclusions**

The excesses in binge drinking and more general alcohol consumption among men in the Glasgow area, beyond those expected given the socio-economic profile, are clearly linked to the excess mortality from chronic liver disease and should be seen as a matter of urgency by those charged with improving public health. The high levels of psychological distress among men and women in the area also raises concern. However, the strong social patterning of many of the negative health behaviours and other morbidity measures examined accounted for the tendency of Glasgow to have high levels, reflecting its poorer socio-economic position. Improving Glasgow's health thus remains inextricably linked to tackling the problems associated with deprivation and poverty.

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# ACKNOWLEDGEMENTS

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# INTRODUCTION

The Glasgow story

The Glasgow conurbation is the largest urban area in Scotland. Not only does Scotland's health compare unfavourably with other parts of the UK (1-3), it has one of the worst health profiles in Western Europe (4). Within Scotland, Glasgow has poorer health and shorter life expectancy than other areas (5). Attempts to explain Glasgow's poor health record have pointed to evidence of elevated rates of health-damaging behaviours such as high levels of alcohol consumption, smoking, and poor diet compared with elsewhere in Scotland (6-8).

Health outcomes and related behaviours tend to be associated with socio-economic status (9-16). Within Great Britain, health inequalities are more marked in Scotland than elsewhere (3) and within Scotland, Glasgow City has the greatest inequalities (17). The socio-economic composition of Glasgow differs to that of the rest of Scotland as a whole. Although it contains wards at both ends of the deprivation spectrum, the Glasgow area is the most economically disadvantaged part of Scotland, with for example, 33% of the data zones in Glasgow City in the bottom 5% of all the data zones in the country in terms of the Scottish Index of Multiple Deprivation (18). The question of whether the relatively poor health and high levels of associated risk factors found in Glasgow and the Glasgow area can be explained by these socio-economic differences has still to be fully answered.

The recent *Let Glasgow Flourish* report (19) published by the Glasgow Centre for Population Health illuminated many aspects of health and health determinants in the West Central Scotland area. Based on data from the Scottish Health Surveys, this current report complements *Let Glasgow Flourish* by presenting a comprehensive comparison of the risk factors and health outcomes in the Glasgow area compared with those elsewhere in Scotland, and seeking to establish the extent to which the observed differences can be explained by the unique socio-economic profile of the Glasgow area.

The Scottish Health Surveys

Analyses of health determinants and morbidity in this report are based on data from the Scottish Health Surveys which took place in 1995/1996 ("1995") (6), 1998/1999 ("1998") (7), and 2003/2004 ("2003") (8). These are based on nationally representative samples of the population living in private households, with 1 in 3 postcode sector areas in Scotland selected. The response rate for the surveys are respectively 81%, 77% and 67% of all eligible households, involving 25,127 adults in total (Table A). Response rates were not equal across the country, with lower rates achieved in Greater Glasgow than in Scotland as a whole. However, with response rates in Greater Glasgow ranging from 80% (compared with 81% for the entire survey) in 1995 to 61% (compared with 67% for the entire survey) in 2003, differences were not large.

*Table A: Scottish Health Surveys 1995, 1998 and 2003*

| Survey year | Response rate* | Number of adults |
|---|---|---|
| 1995 | 81% | 7,932 |
| 1998 | 77% | 9,047 |
| 2003 | 67% | 8,148 |

* Household response rate

Age ranges

Over time, the range of ages included in the surveys has widened. The survey in 1995 included individuals up to age 65 years; in 1998 those up to the age of 75 years were included and in 2003 all ages were covered.

Survey coverage

Compatible data on different topics are available in different combinations of surveys and thus have different denominators, as shown in tables B and C.

*Table B: Adult bases for survey combinations*

| Survey year | 1995 | 1998 | 2003 | Total Men | Total Women |
|---|---|---|---|---|---|
| 1995 only | • | | | 3,524 | 4,408 |
| 1998 only | | • | | 3,941 | 5,106 |
| 2003 only | | | • | 3,610 | 4,538 |
| 1995 & 1998 | • | • | | 7,465 | 9,514 |
| 1995 & 2003 | • | | • | 7,134 | 8,946 |
| 1998 & 2003 | | • | • | 7,551 | 9,644 |
| 1995,1998 & 2003 | • | • | • | 11,075 | 14,052 |

*Table C: Data availability for topics of interest*

| | 1995 | 1998 | 2003 | Total Men | Total Women |
|---|---|---|---|---|---|
| Alcohol consumption | • | • | • | 11,075 | 14,052 |
| Cigarette smoking | • | • | • | 11,075 | 14,052 |
| Diet[1] | • | • | • | 11,075 | 14,052 |
| Diet[2] | • | | • | 7,134 | 8,946 |
| Physical activity[3] | | • | • | 7,551 | 9,644 |
| Obesity | • | • | • | 11,075 | 14,052 |
| Cardiovascular disease | • | • | • | 11,075 | 14,052 |
| Diabetes | • | • | • | 11,075 | 14,052 |
| Self-assessed health | • | • | • | 11,075 | 14,052 |
| Psychosocial health | • | • | • | 11,075 | 14,052 |
| Health-related quality of life | | | • | 3,524 | 4,408 |

[1]Non-diet soft drinks, bread, breakfast cereals, potatoes/pasta/rice, fish, milk, salt and dietary supplements

[2]Sweets and chocolates, biscuits, cakes/scones/pastries, ice cream, crisps/other savoury snacks, chips, meat, meat products, poultry and butter

[3] Physical activity data available for 1995 were not compatible, and could not be combined with those for 1998 and 2003

Health board groups

Throughout this report, Greater Glasgow[1] and West Central Scotland geographies, as well as Glasgow City, are compared with the rest of Scotland. West Central Scotland is defined as covering Ayrshire & Arran, Argyll & Clyde[1], Greater Glasgow, and Lanarkshire health board regions. For numerical reasons, where figures are broken down by region, they are grouped as follows:

Greater Glasgow
Highland & Islands
Grampian & Tayside
Lothian & Fife
Borders, Dumfries & Galloway
Lanarkshire, Ayrshire & Arran
Forth Valley, Argyll & Clyde

[1] The Scottish Health Surveys preceded the split in 2006 of NHS Argyll & Clyde into NHS Highland and NHS Greater Glasgow & Clyde

Generally, the Scottish Health Survey sampling strategy is designed to be representative at this grouped Health Board level but not at the individual Health Board level. However, Greater Glasgow is the exception to this (20), enabling reliable comparisons between the Glasgow area and the rest of Scotland, based on the Scottish Health Survey samples. Survey respondents in West Central Scotland comprise 39% of the entire combined sample for the three surveys; residents in the Greater Glasgow Health Board region make up 39% of those in West Central Scotland; and participants living in the Glasgow City area form 68% of the sample in Greater Glasgow.

Socio-economic profiles

Four aspects of socio-economic status were considered and regarded as making distinct contributions: area deprivation, individual social class, educational qualification attainment and employment status.

*Carstairs area deprivation*

The area based measure of material deprivation available across all three surveys is the Carstairs index (21). It is created using four national census data variables from the 1991 Great Britain census, namely: car ownership, household overcrowding, low social class, and male unemployment. These measures are applied to populations of postcode sectors (5000 residents on average) and therefore describe the relative affluence or disadvantage of localities. In this report, quintiles of the Carstairs index are used for the presentation of distributions, however the continuous values were used in formal analyses. The possibility of non-linear relationships between area deprivation and risk factors/health outcomes was allowed for by the inclusion of a quadratic deprivation term in models. Although the Scottish Index of Multiple Deprivation was available for the 2003 survey, it has not been derived for the previous two and thus was not used in this report.

*Social class*

Use of the social class of chief income earner enables the capturing of the affluence of an individual within a household. The Registrar General's Social Class based on Occupation system is the one common to all three surveys (22). When presenting data on the composition of the sample, social class was considered in its original five distinct groups, but for analyses it was grouped into three: professional/intermediate, skilled (manual/non-manual), partly skilled/unskilled.

*Educational qualification attainment*

Respondents' highest educational qualifications were categorised as none, below degree level, or degree/degree level qualification.

*Economic activity status*

Individuals' employment status was considered in four groups: in employment, unemployed, retired, or economically inactive.

Age/Sex/Socio-economic composition of Greater Glasgow from the combined Scottish Health Surveys 1995, 1998 and 2003

The breakdown of the respondents by survey year, sex, age, area deprivation, social class, economic activity and educational qualification attainment, separately for the Greater Glasgow Health Board region and the rest of Scotland, is provided in Table D. Cells display respondent numbers and proportions relative to the distribution of characteristics, within survey year and geographical location. Overall, more women than men participated in the surveys. The survey samples from Greater Glasgow have a slightly younger age distribution than the rest of Scotland, reflecting the age characteristics of these populations. The large degree of area deprivation in the Glasgow areas is clear from the proportions in the most deprived Carstairs quintile (53%, 56% and 49% for Greater Glasgow compared with 14%, 15% and 12% for the rest of Scotland for the survey years 1995, 1998 and 2003, respectively). Differentials in individual social class are less apparent although Greater Glasgow has a slightly higher proportion of respondents in social class V. These similarities in social class distribution in Greater Glasgow compared with the rest of Scotland are, perhaps, surprising given the concentration of area-based deprivation in the city. However census 2001 National Statistics Socio-economic Classification[2] (23) data verify that in terms of individual social class the population of Glasgow is indeed similar to that of the rest of the country (24). A smaller proportion of respondents in Greater Glasgow were employed and more were unemployed or otherwise economically inactive compared with those living elsewhere in Scotland. More respondents in Greater Glasgow had no educational qualifications.

[2] The newest classification of occupation based social position aimed to bring together people of similar social and economic status; derived from occupational unit group, employment status and size of establishment.

*Table D: Age/Sex/Socio-economic composition of Glasgow from the combined Scottish Health Surveys 1995, 1998 and 2003*

| | | | Greater Glasgow | | | Rest of Scotland | |
|---|---|---|---|---|---|---|---|
| | | 1995 n=1,245 (33%) | 1998 n=1,294 (34%) | 2003 n=1,267 (33%) | 1995 n=6,687 (31%) | 1998 n=7,753 (36%) | 2003 n=6,881 (32%) |
| Sex | Men | 508 (41) | 546 (42) | 557 (44) | 3,016 (45) | 3,395 (44) | 3,053 (44) |
| | Women | 737 (59) | 748 (58) | 710 (56) | 3,671 (55) | 4,358 (56) | 3,828 (56) |
| Age | 16-24 | 164 (13) | 138 (11) | 145 (11) | 858 (13) | 789 (10) | 595 (9) |
| | 25-34 | 299 (24) | 253 (20) | 184 (15) | 1,701 (25) | 1,485 (19) | 871 (13) |
| | 35-44 | 283 (23) | 281 (22) | 255 (20) | 1,520 (23) | 1,555 (20) | 1,365 (20) |
| | 45-54 | 223 (18) | 219 (17) | 195 (15) | 1,311 (20) | 1,371 (18) | 1,216 (18) |
| | 55-64 | 276 (22) | 179 (14) | 199 (16) | 1,297 (19) | 1,313 (17) | 1,212 (18) |
| | 65-74 | - | 224 (17) | 167 (14) | - | 1,240 (16) | 924 (13) |
| | 75 and over | - | - | 122 (10) | - | - | 698 (10) |
| Carstairs quintile | Least deprived | 220 (18) | 229 (18) | 263 (21) | 1,371 (21) | 1,542 (20) | 1,549 (23) |
| | 2 | 58 (5) | 96 (7) | 95 (8) | 1,552 (23) | 1,668 (22) | 1,526 (22) |
| | 3 | 146 (12) | 90 (7) | 119 (9) | 1,460 (22) | 1,708 (22) | 1,578 (23) |
| | 4 | 161 (13) | 150 (12) | 175 (14) | 1,381 (21) | 1,709 (22) | 1,399 (20) |
| | Most deprived | 660 (53) | 729 (56) | 615 (49) | 923 (14) | 1,126 (15) | 829 (12) |
| Social class | I | 80 (6) | 73 (6) | 61 (5) | 413 (6) | 425 (5) | 340 (5) |
| | II | 285 (23) | 327 (25) | 242 (19) | 1689 (25) | 2,037 (26) | 1,438 (21) |
| | III | 525 (42) | 510 (39) | 592 (47) | 2944 (44) | 3,330 (43) | 3,226 (47) |
| | IV | 171 (14) | 187 (14) | 180 (14) | 1027 (15) | 1,236 (16) | 1,170 (17) |
| | V | 90 (7) | 108 (8) | 134 (11) | 379 (6) | 452 (6) | 482 (7) |
| | Unknown | 94 (8) | 89 (7) | 58 (5) | 235 (4) | 273 (4) | 225 (3) |
| Economic activity status | Employed | 634 (51) | 578 (45) | 587 (47) | 4,262 (64) | 4,311 (56) | 3,624 (53) |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Unemployed | 80 (6) | 84 (7) | 57 (5) | 374 (6) | 255 (3) | 299 (4) |
| | Retired | 0 (0) | 262 (20) | 323 (25) | 0 (0) | 1,503 (19) | 1,753 (25) |
| | Economically inactive | 531 (43) | 361 (28) | 294 (23) | 2,051 (31) | 1,659 (21) | 1,201 (17) |
| | Unknown | 0 (0) | 0 (0) | 2 (0.2) | 0 (0) | 0 (0) | 15 (0.2) |
| Education | No qualification | 600 (48) | 629 (49) | 540 (43) | 2,594 (39) | 3,330 (43) | 2,553 (37) |
| | Below degree level | 464 (37) | 478 (37) | 450 (36) | 3,316 (50) | 3,410 (44) | 2,748 (40) |
| | Degree level or above | 177 (14) | 178 (14) | 268 (21) | 772 (12) | 991 (13) | 1,546 (22) |
| | Unknown | 4 (0.3) | 9 (0.7) | 9 (0.7) | 5 (0.1) | 22 (0.3) | 34 (0.5) |

Mortality data

Data available from NHSScotland's Information Services Division (ISD Scotland) on deaths in Scotland 2000-2002 form the basis of extended analyses modelling rates for Glasgow and elsewhere, adjusting for area deprivation (24). This was performed for all-cause as well as cause-specific (coronary heart disease, stroke, cancers, mental and behavioural disorders due to the use of alcohol, chronic liver disease, mental and behavioural disorders due to the use of drugs, and suicide/self-harm) mortality.

Approach to analysis

Since behaviours and disease aetiologies can be different for men and women, all analyses were stratified by sex. For each health-related behaviour and health indicator of interest, the following were examined: comparisons of proportions across all regions; sub-group breakdowns by age, socio-economic factors and survey year for Greater Glasgow and the rest of Scotland; the role socio-economic factors play in Glasgow differences; trends in differences over time; and finally, comparisons of the most deprived and less deprived areas within Greater Glasgow. The most deprived areas were defined as those with a Carstair index score in the highest 20%; the less deprived areas were those with a lower score. Comparisons of the West Central Scotland area and the Glasgow City council area with the rest of the country were also made.

*Statistical methods*

The extent to which differences in health-related behaviours and health outcomes between Glasgow geographies and the rest of Scotland can be explained by the differential socio-economic profiles can be examined by comparing unadjusted and adjusted results. First, univariable logistic regression was applied to model the unadjusted relationship between the outcome – for instance alcohol consumption exceeding recommended weekly limits – and the explanatory factor (living in Greater Glasgow Health Board/West Central Scotland/Glasgow City area or elsewhere in Scotland). Odds ratios (ORs) obtained from the models provide the extent and direction of the relationship, for instance an OR greater than 1 indicates that the event is more likely in the Greater Glasgow population than elsewhere in Scotland. Multivariable logistic regression analysis incorporated adjustment by age, and year of survey, then subsequently: Carstairs area deprivation index; social class of household's chief income earner; economic activity; and educational qualification attainment, to assess their effect on the relationship between Greater Glasgow residence and the outcome. All models were fitted within a multilevel framework to account for the hierarchy of individuals clustered within postcode sector areas, codings for which were harmonized allowing consistency across all three surveys. This is appropriate since the assumption of independence required for standard regression modelling is violated by the possibility of intraclass correlation of the various levels – characteristics of individuals may be correlated with those of other individuals in the same postcode sector area.

Formal tests of statistical interaction between Greater Glasgow residence and survey year are used to detect changes in any "Glasgow effects" over time. It should be borne in mind that such interaction tests tend to lack power to detect effects and thus results should be interpreted with caution. This lack of power means that the results presented are conservative, thus there may be other effects that have not been detected by these analyses.

For presentation of baseline results, age and Carstairs index were categorised into groups/quintiles but original, continuous values (including quadratic Carstairs index term) were used in formal statistical modelling (see Carstairs area deprivation section).

The ISD Scotland mortality data were considered in relation to mid-point population estimates obtained from the 2001 census. Negative binomial regression - a generalisation of Poisson regression, with less conservative assumptions - was used to model the counts of deaths from the population (25). Relative risks (RRs) obtained give the degree of association in a similar way to ORs. As for the health survey based analyses, the impact of area deprivation as measured by Carstairs index was assessed by comparison of Greater Glasgow residence estimates before and after adjustment for deprivation. Comparisons were made between Greater Glasgow and the rest of Scotland and between the most deprived and less deprived areas within Greater Glasgow for overall (aged 16 years upward) and premature mortality (age 16-64 years).

*Weighting*

Like most surveys, the Scottish Health Surveys were unable to obtain information from an exactly representative sample of everyone within the population of interest. To avoid biased results arising from non-response it is necessary to adjust the data by differentially weighting survey respondents on a combination of probabilities. The weighting strategy used took account of differential selection of postcode sectors, households and individuals as well as ensuring that the weighted sample of household members matched population estimates for age/sex and health boards (20).

Report structure

The structure of this report is as follows:

- Chapter 1 makes comparisons of alcohol intake, with consumption considered in two ways: excess drinking in terms of advised weekly limits, and binge drinking in terms of amount consumed in a single day;
- Chapter 2 reports on comparisons of current cigarette smoking prevalence;
- Chapter 3, considering aspects of diet, covers sweets and chocolates, biscuits, cakes/scones/pastries, ice cream, non-diet soft drinks, crisps/other savoury snacks, bread, breakfast cereals, potatoes/pasta/rice, chips, meat, meat products, poultry, fish, butter, milk, salt and dietary supplements;
- Chapter 4 addresses physical activity, considered in terms of the weekly recommendations for participation in moderate to vigorous activity;
- Chapter 5 examines obesity prevalence;
- Chapter 6 deals with rates of doctor diagnosed cardiovascular disease (any), ischaemic heart disease, and stroke;
- Chapter 7 looks at doctor-diagnosed diabetes;
- Chapter 8 regards three aspects of self-reported health: general health, long standing illness and acute sickness;
- Chapter 9 concerns the mental distress and psychological ill-health measure General Health Questionnaire 12;

- ❖ Chapter 10 provides comparisons of another aspect of wellbeing, health-related quality of life, using the self-reported generic measure SF-12; and finally,
- ❖ Chapter 11 presents comparisons of mortality from all-causes combined and specifically CHD, stroke, cancers, mental and behavioural disorders due to the use of alcohol, chronic liver disease, mental and behavioural disorders due to the use of drugs, and suicide/self-harm.

For the survey based work, chapters 1 to 10, comparisons are made between Greater Glasgow and the rest of Scotland, with a subset of analyses also comparing Glasgow City and West Central Scotland to the rest of the country. Comparisons are also made within Greater Glasgow, between the most deprived areas and the others.

# CHAPTER 1: ALCOHOL CONSUMPTION

People in Scotland are twice as likely to die from alcohol-related causes as those in the UK as a whole (26).

Alcohol consumption was regarded in two major ways (27):
- Excess drinking
- Binge drinking

## 1.1 Excess drinking

In terms of weekly limits, men are advised to drink no more than 21 units of alcohol per week, and women no more than 14. To estimate weekly consumption, respondents were asked how often during the past 12 months they had drunk each of six different types of alcoholic drink: normal beer, lager, cider and shandy; strong beer, lager and cider; sherry and martini; spirits and liqueurs; wine; alcoholic soft drinks ("alcopops"). The average number of days a week and how much of each drink type they had usually drunk on each occasion was estimated. These data were converted into units of alcohol and multiplied by the amount they said they usually drank on any one day to obtain weekly figures (28). Respondents were grouped according to whether or not they exceeded the recommended weekly alcohol limits of 21 units for men and 14 for women. Excess drinking status was known for 24,899 (99.1%) of 25,127 adult respondents.

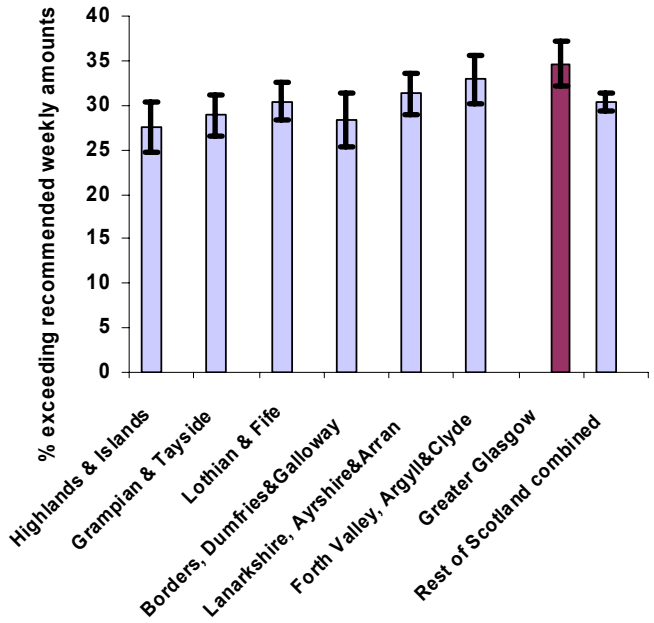
When interpreting these figures, it is important to bear in mind that surveys tend to underestimate adults' levels of alcohol consumption (29). Nevertheless, the following estimates provide useful comparisons of alcohol consumption between the different geographical and socio-economic groups.

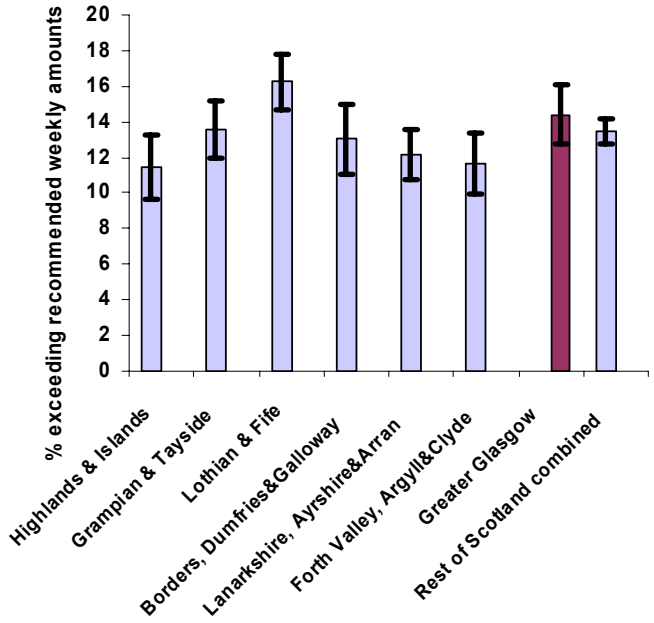
### 1.1.1 Regional comparisons

Among the Scottish region groups, Greater Glasgow has the highest proportion of men exceeding recommended weekly alcohol limits at 35% (95% confidence interval (CI): 32% to 37%). There is a significantly higher proportion of men in Greater Glasgow exceeding weekly limits than in Highland & Islands, Grampian & Tayside, and Borders, Dumfries & Galloway (Figure 1.1a). Although men in Lothian & Fife, Lanarkshire, Ayrshire & Arran, and Forth Valley, Argyll & Clyde were not significantly different in their weekly consumption to those in Greater Glasgow, the proportion in Greater Glasgow was significantly higher that that for the rest of Scotland overall (30%; 95% CI: 29% to 31%).

The proportion of women in Greater Glasgow exceeding recommended weekly alcohol limits was not significantly different from any of the other regional groups, and at 14% (95% CI: 13% to 16%) was not, in fact the highest, which was Lothian and Fife at 16% (95% CI: 15% to 18%) (Figure 1.1a).

*Figures 1.1a and b: Percentages with 95% confidence intervals exceeding recommended weekly alcohol limits by region for men (top) and women (bottom)*



1.1.2 Greater Glasgow vs the Rest of Scotland comparisons

Among men, proportions exceeding weekly alcohol limits in Greater Glasgow were significantly higher than those for the rest of Scotland for the employed and those with qualifications below degree level.

Among women, for 25-34 year olds, a significantly higher proportion of those in Greater Glasgow than those elsewhere exceeded weekly limits.

*Table 1.1: Percentages (with 95% confidence intervals) exceeding recommended weekly alcohol limits for Greater Glasgow and the rest of Scotland by sex, age, Carstairs area deprivation, social class, education and economic activity based on Scottish Health Survey 1995, 1998 and 2003 data*

| | | Men | | Women | |
|---|---|---|---|---|---|
| | | Greater Glasgow n=1,596 (15%) | Rest of Scotland n=9,368 (85%) | Greater Glasgow n=2,173 (16%) | Rest of Scotland n=11,762 (84%) |
| Age | 16-24 | 43 (35, 51) | 36 (32, 39) | 19 (14, 25) | 22 (19, 25) |
| | 25-34 | 39 (33, 45) | 33 (30, 35) | 22 (18, 26) | 15 (14, 17) |
| | 35-44 | 33 (27, 38) | 30 (28, 33) | 15 (12, 19) | 13 (12, 15) |
| | 45-54 | 32 (26, 38) | 31 (29, 34) | 14 (10, 18) | 14 (12, 15) |
| | 55-64 | 31 (25, 36) | 28 (25, 30) | 8 (5, 11) | 9 (8, 10) |
| | 65-74 | 26 (19, 33) | 20 (17, 23) | 3 (1, 5) | 6 (5, 8) |
| | 75 and over | 18 (6, 29) | 15 (10, 19) | 1 (0, 4) | 4 (2, 5) |
| Carstairs quintile | Least deprived | 33 (27, 39) | 30 (28, 33) | 17 (13, 21) | 16 (15, 18) |
| | 2 | 34 (24, 43) | 31 (28, 33) | 18 (12, 25) | 13 (11, 15) |
| | 3 | 33 (25, 41) | 31 (28, 33) | 16 (10, 21) | 12 (10, 13) |
| | 4 | 33 (26, 40) | 29 (27, 31) | 13 (8, 18) | 12 (11, 14) |
| | Most deprived | 36 (33, 40) | 32 (29,35) | 13 (11,15) | 14 (12,16) |
| Social class | I | 31 (22, 41) | 30 (26, 35) | 19 (11, 27) | 17 (14, 21) |
| | II | 32 (27, 37) | 29 (27, 31) | 17 (13, 20) | 15 (13, 16) |
| | III | 35 (32, 39) | 31 (29, 32) | 14 (11, 16) | 13 (12, 14) |
| | IV | 38 (31, 46) | 30 (28, 33) | 14 (10, 18) | 12 (10, 14) |
| | V | 37 (27, 47) | 29 (24, 33) | 9 (5, 12) | 9 (7, 11) |
| | Unknown | 34 (23, 45) | 33 (26, 40) | 16 (9, 24) | 18 (13, 23) |
| Economic activity status | Employed | 37 (34, 41) | 32 (31, 33) | 18 (15, 20) | 16 (15, 17) |
| | Unemployed | 34 (26, 43) | 33 (29, 38) | 21 (10, 32) | 20 (15, 25) |
| | Retired | 27 (21, 33) | 21 (19, 23) | 4 (2, 7) | 6 (5, 7) |
| | Economically inactive | 31 (26, 36) | 27 (25, 30) | 13 (11, 16) | 11 (10, 12) |
| | Unknown | 48 (5, 90) | 20 (0, 54) | 52 (0, 100) | 10 (0, 21) |
| Education | No qualification | 33 (30, 37) | 28 (26, 30) | 9 (7, 11) | 8 (7, 9) |
| | Below degree level | 39 (34, 43) | 33 (31, 34) | 17 (14, 20) | 16 (15, 18) |
| | Degree level or above | 29 (23, 34) | 29 (26, 31) | 23 (18, 28) | 17 (15, 19) |
| | Unknown | 19 (0, 53) | 55 (22, 88) | - | - |
| Total | | 35 (32, 37) | 30 (29, 31) | 14 (13, 16) | 13 (13, 14) |

1.1.3 Role of socio-economic factors

The extent to which differences in proportions exceeding recommended weekly alcohol limits between Greater Glasgow and the rest of Scotland can be explained by the differential socio-economic profiles can be examined by comparing unadjusted and adjusted results from logistic models.

Without adjustment for age, survey year or socio-economic factors, men living in Greater Glasgow were 21% more likely to exceed recommended weekly alcohol limits compared with those living in the rest of the country (95% CI: 6% to 37% (Table 1.2a)). The proportion of women living in Greater Glasgow exceeding recommended weekly alcohol limits was not significantly different from that of those living elsewhere. Adjustment by age and survey year alone did not alter results.

Additionally accounting for the socio-economic factors, Carstairs area deprivation, social class, education and economic activity, living in Greater Glasgow was still significantly associated with excess alcohol consumption among men. (OR=1.21, 1.05 -1.40).

Comparisons of West Central Scotland and Glasgow City with the rest of the country yielded similar findings, with significant results remaining after adjustment for men and non-significant results for women (Table 1.2b and c).

*Table 1.2a: Effect of Greater Glasgow residence compared with the rest of Scotland on alcohol consumption exceeding recommended weekly limits*

| | Men | | Women | |
|---|---|---|---|---|
| | OR | 95% CI | OR | 95% CI |
| Unadjusted | 1.21 | 1.06, 1.37 | 1.06 | 0.87, 1.29 |
| Age and survey year adjusted | 1.20 | 1.06, 1.36 | 1.06 | 0.88, 1.28 |
| Age, survey year and socio-economic adjusted | 1.21 | 1.05, 1.40 | 1.16 | 0.93, 1.44 |

*Table 1.2b: Effect of West Central Scotland residence compared with the rest of Scotland on alcohol consumption exceeding recommended weekly limits*

| | Men | | Women | |
|---|---|---|---|---|
| | OR | 95% CI | OR | 95% CI |
| Unadjusted | 1.19 | 1.08, 1.31 | 0.92 | 0.79, 1.06 |
| Age and survey year adjusted | 1.21 | 1.10, 1.33 | 0.93 | 0.81, 1.08 |
| Age, survey year and socio-economic adjusted | 1.21 | 1.09, 1.34 | 1.01 | 0.87, 1.18 |

*Table 1.2c: Effect of Glasgow City residence compared with the rest of Scotland on alcohol consumption exceeding recommended weekly limits*

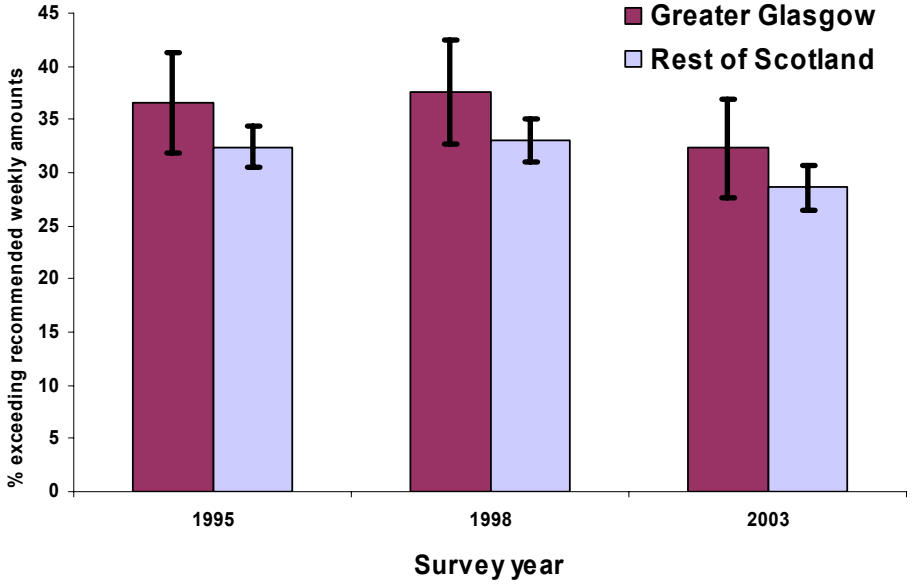
| | Men | | Women | |
|---|---|---|---|---|
| | OR | 95% CI | OR | 95% CI |
| Unadjusted | 1.30 | 1.12, 1.50 | 1.11 | 0.87, 1.41 |
| Age and survey year adjusted | 1.29 | 1.12, 1.49 | 1.10 | 0.88, 1.38 |
| Age, survey year and socio-economic adjusted | 1.33 | 1.13, 1.58 | 1.34 | 1.02, 1.76 |

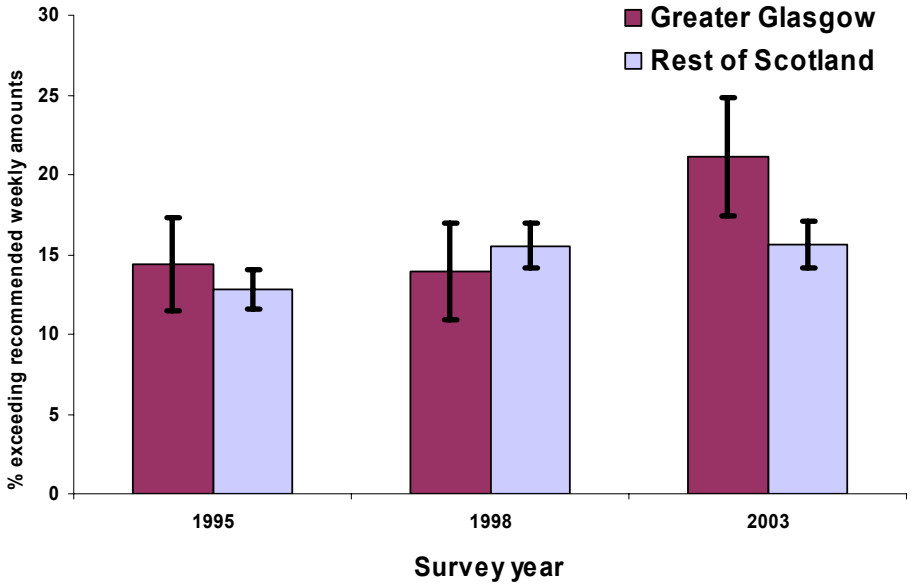
1.1.4 Trends in percentages exceeding recommended weekly alcohol limits for Greater Glasgow and the Rest of Scotland over time

Proportionally more Greater Glasgow men exceeded recommended weekly alcohol limits compared with those in the rest of Scotland in each of the three survey years (Figure 1.2a). In 2003 levels had fallen since 1998 both in Greater Glasgow and elsewhere. The excess in proportions in Glasgow was not statistically significantly different from 1995 in either 1998 ($p$=0.821) or 2003 ($p$=0.922).

Differences in proportions of women exceeding recommended weekly alcohol limits in Glasgow compared with elsewhere varied over the surveys (Figure 1.2b). Although higher in Glasgow 2003 compared with 1995, the proportion was actually lower in 1998. Levels of excess drinking among women have increased over time both within and outside Greater Glasgow but the biggest rise is seen between 1998 and 2003 in Greater Glasgow, from 16% to 20%. Formally (from statistical models), differences in levels between Greater Glasgow and elsewhere in Scotland did not change over time ($p$=0.056 and 0.556).

*Figure 1.2a & b: Trends in percentages exceeding recommended weekly alcohol limits for Greater Glasgow and the rest of Scotland over time for ages 16-64 years only, men (top) and women (bottom)*



1.1.5 Comparisons of the most deprived and less deprived areas of Greater Glasgow

Overall a higher proportion of men living in the most deprived parts of the Greater Glasgow Health Board area (i.e. the most deprived Carstairs index quintile) exceeded recommended weekly alcohol limits [36% (95% CI: 33% to 40%)] compared with more affluent areas in Greater Glasgow [33% (95% CI: 29% to 37%)], but the differences were not significant.

Among women on the other hand, there was a lower proportion exceeding recommended weekly alcohol limits in those living in the most deprived areas of Greater Glasgow [13% (95% CI: 11% to 15%)] compared with the other areas [16% (95% CI: 13% to 18%)], but again, results were not significant. For a detailed breakdown of comparisons by sex, age, Carstairs area deprivation, social class, education and economic activity, see Appendix A1.1.

## 1.2 Binge drinking

In late 1995, following the recommendations of an inter-departmental Working Group, advice on sensible drinking was revised so that it is now commonly expressed in terms of daily, rather than weekly, consumption (30). Consumption of an excessive amount on a single occasion - so called 'binge' drinking - is thought to be less healthy than drinking moderate amounts more regularly. The amount consumed on the heaviest drinking day during the previous week was available from the 1998 and 2003 Scottish Health Surveys, with the definition of binge drinking used being 8 units or more for men and 6 or more for women on a single occasion. Binge drinking status was known for 17,147 (99.7%) of 17,195 adult respondents.

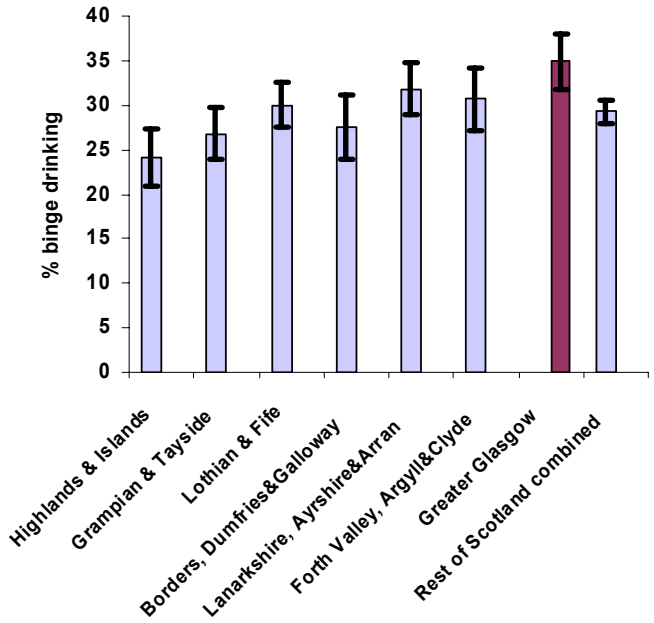
1.2.1 Regional comparisons

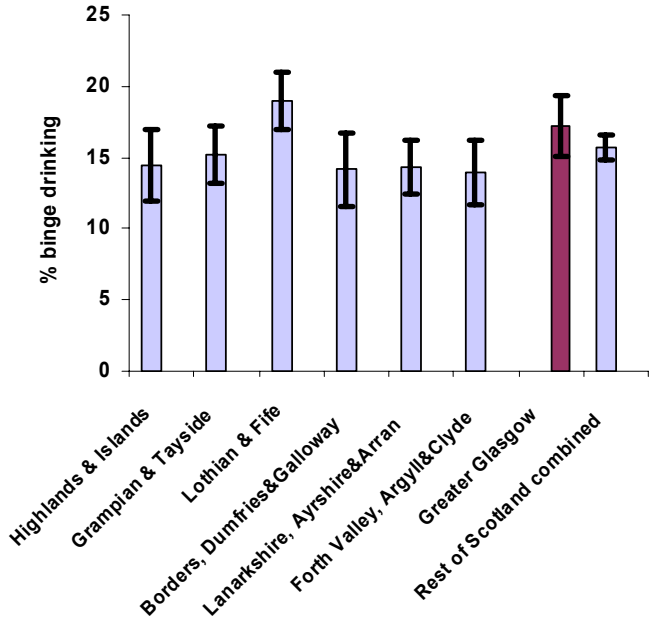
At 35%, Greater Glasgow has the highest proportion of men binge drinking of all the region groups (Figure 1.3a). This figure is significantly higher than those for Highland & Islands, Grampian & Tayside and Borders, Dumfries & Galloway, but not for Lothian & Fife, Lanarkshire, Ayrshire & Arran, or Forth Valley, Argyll & Clyde. At 29%, the combined figure for the rest of Scotland is significantly lower than that of Greater Glasgow.

Among women, the figure of 17% for Greater Glasgow was not significantly different from any of the other regions nor all the regions combined.

Overall, figures for binge drinking were similar to those for exceeding the recommended weekly alcohol limits. Binge drinking figures were slightly higher than those for excess weekly drinking among women. Generally, the respondents exceeding weekly limits tended to be the binge drinkers (76% agreement among men and 85% among women).

*Figures 1.3a and b: Percentages binge drinking by region for men (top) and women (bottom)*



1.2.2 Greater Glasgow vs the Rest of Scotland comparisons

Comparisons of binge drinking proportions in Greater Glasgow and the Rest of Scotland (Table 1.3) by age, area deprivation, social class, education and economic activity revealed a few sub-group differences. Among men, the 25-34 year olds, those in social class II, the employed, the retired and those with no qualifications living in Greater Glasgow were significantly more likely to binge drink than those elsewhere in Scotland.

Among women, for those with degree level qualifications or above, the ones in Greater Glasgow were significantly more likely to binge drink than those living elsewhere.

*Table 1.3: Percentages (with 95% confidence intervals) binge drinking for Greater Glasgow and the rest of Scotland by sex, age, Carstairs area deprivation, social class, education and economic activity based on Scottish Health Survey 1998 and 2003 data*

| | | Men | | Women | |
|---|---|---|---|---|---|
| | | Greater Glasgow n= 1,100 (15%) | Rest of Scotland n= 6,423 (85%) | Greater Glasgow n=1,455 (15%) | Rest of Scotland n=8,169 (85%) |
| Age | 16-24 | 39 (30, 47) | 43 (38, 47) | 29 (21, 37) | 32 (28, 36) |
| | 25-34 | 49 (41, 57) | 35 (31, 38) | 23 (18, 29) | 23 (21, 26) |
| | 35-44 | 39 (32, 45) | 31 (29, 34) | 19 (15, 24) | 18 (16, 20) |
| | 45-54 | 32 (24, 39) | 31 (28, 34) | 18 (13, 23) | 14 (12, 16) |
| | 55-64 | 27 (20, 34) | 22 (20, 25) | 10 (5, 15) | 7 (5, 8) |
| | 65-74 | 17 (11, 23) | 11 (8, 13) | 4 (1, 6) | 2 (1, 3) |
| | 75 and over | 12 (2, 22) | 4 (2, 7) | - | 0 (0, 1) |
| Carstairs quintile | Least deprived | 31 (24, 37) | 28 (25, 31) | 17 (12, 22) | 16 (14, 19) |
| | 2 | 36, (25, 47) | 26 (23, 29) | 15 (8, 22) | 15 (13, 17) |
| | 3 | 33 (23, 43) | 29 (26, 32) | 24 (15, 33) | 14 (12, 16) |
| | 4 | 36 (28, 45) | 30 (27, 32) | 17 (11, 23) | 16 (14, 18) |
| | Most deprived | 37 (32, 41) | 36 (32, 39) | 17 (14, 20) | 17 (14, 19) |
| Social class | I | 43 (30, 56) | 30 (24, 35) | 17 (8, 27) | 15 (11, 19) |
| | II | 39 (32, 46) | 27 (25, 30) | 21 (16, 26) | 15 (13, 17) |
| | III | 34 (29, 38) | 30 (28, 32) | 16 (13, 19) | 17 (15, 18) |
| | IV | 35 (27, 43) | 31 (28, 34) | 16 (11, 22) | 16 (13, 18) |
| | V | 36 (25, 47) | 27 (22, 32) | 15 (9, 21) | 11 (8, 14) |
| | Unknown | 19 (8, 30) | 29 (22, 37) | 16 (6, 26) | 18 (13, 24) |
| Economic activity status | Employed | 40 (36, 45) | 33 (32, 35) | 21 (18, 24) | 21 (19, 22) |
| | Unemployed | 42 (31, 52) | 36 (30, 42) | 38 (23, 53) | 26 (19, 32) |
| | Retired | 20 (14, 25) | 11 (9, 13) | 4 (2, 6) | 3 (2, 3) |
| | Economically inactive | 30 (24, 37) | 28 (24, 32) | 18 (14, 22) | 15 (13, 16) |
| | Unknown | 24 (0, 56) | 19 (0, 42) | 38 (0, 85) | 16 (0, 35) |
| Education | No qualification | 33 (28, 38) | 26 (24, 28) | 13 (10, 16) | 10 (9, 11) |
| | Below degree level | 39 (34, 44) | 35 (32, 37) | 19 (15, 22) | 20 (19, 22) |
| | Degree level or above | 32 (25, 38) | 23 (20 , 26) | 25 (19, 31) | 16 (13, 18) |
| | Unknown | 12 (0, 34) | 4 (0, 12) | - | 3 (0, 10) |
| Total | | 35 (32, 38) | 29 (28, 31) | 17 (15, 19) | 16 (15, 17) |

1.2.3 Role of socio-economic factors

Based on logistic regression modelling, unadjusted results indicate that men in Greater Glasgow are 30% (95% CI: 9% to 56%) more likely to binge drink than those living elsewhere in Scotland (Table 1.4a). Figures were altered only slightly on adjustment for age of respondent and year of survey.

Compared with those in the rest of Scotland, women in Greater Glasgow were not significantly different in the proportion of binge drinkers.

The excess binge drinking among men in Greater Glasgow remained at 30% after further adjustment for the socio-economic factors (95% CI: 5% to 60%). This binge drinking differential was moderately higher than that for excess weekly drinking.

As for excess drinking, findings on socio-economic explanations for binge drinking in West Central Scotland are similar to those for Greater Glasgow, with significant surfeit among men remaining, whilst results are non-significant for women (Table 1.4b). Results for Glasgow City were similar for men, but for women, elevated binge drinking emerged on adjustment for socio-economic factors.

*Table 1.4a: Effect of Greater Glasgow residence compared with the rest of Scotland on binge drinking*

| | Men | | Women | |
|---|---|---|---|---|
| | OR | 95% CI | OR | 95% CI |
| Unadjusted | 1.31 | 1.09, 1.56 | 1.13 | 0.93, 1.36 |
| Age and survey year adjusted | 1.30 | 1.09, 1.56 | 1.10 | 0.91, 1.33 |
| Age, survey year and socio-economic adjusted | 1.30 | 1.05, 1.60 | 1.21 | 0.97, 1.51 |

*Table 1.4b: Effect of West Central Scotland residence compared with the rest of Scotland on binge drinking*

| | Men | | Women | |
|---|---|---|---|---|
| | OR | 95% CI | OR | 95% CI |
| Unadjusted | 1.24 | 1.08, 1.43 | 0.92 | 0.79, 1.07 |
| Age and survey year adjusted | 1.28 | 1.12, 1.46 | 0.94 | 0.81, 1.09 |
| Age, survey year and socio-economic adjusted | 1.20 | 1.03, 1.39 | 0.94 | 0.80, 1.11 |

*Table 1.4c: Effect of Glasgow City residence compared with the rest of Scotland on binge drinking*

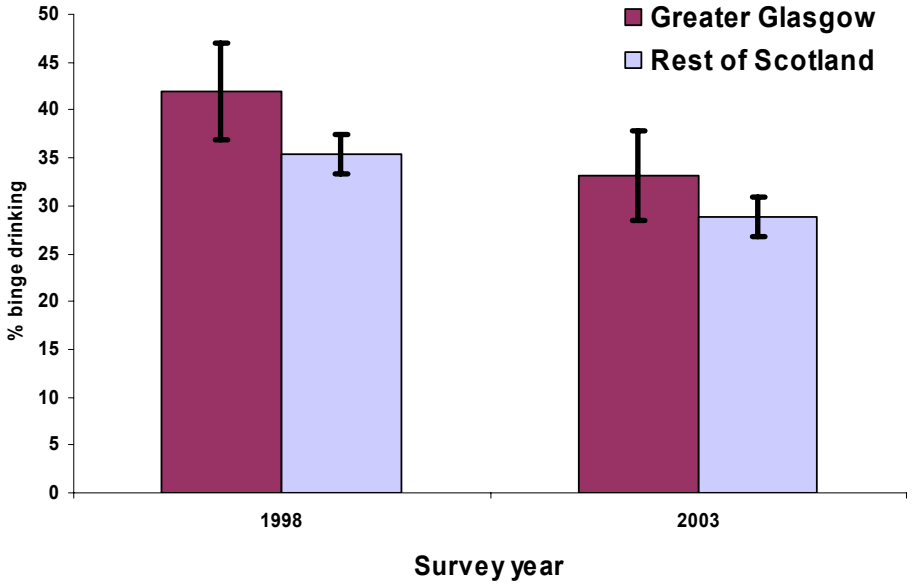
| | Men | | Women | |
|---|---|---|---|---|
| | OR | 95% CI | OR | 95% CI |
| Unadjusted | 1.45 | 1.19, 1.77 | 1.23 | 0.99, 1.52 |
| Age and survey year adjusted | 1.46 | 1.18, 1.79 | 1.22 | 0.99, 1.49 |
| Age, survey year and socio-economic adjusted | 1.42 | 1.09, 1.86 | 1.45 | 1.13, 1.88 |

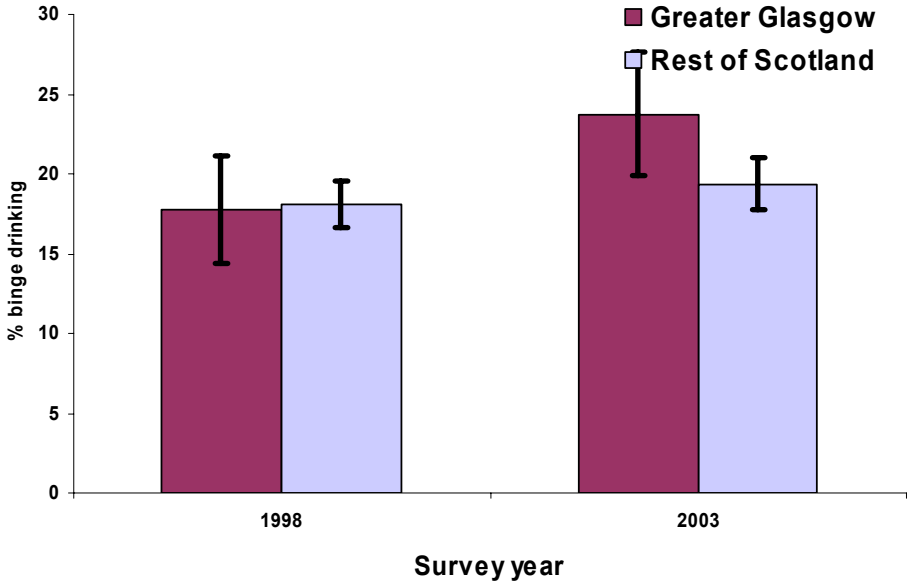
1.2.4 Trends in percentages binge drinking for Greater Glasgow and the Rest of Scotland over time

Binge drinking in men appears to have decreased overall in 2003 since 1998 (Figure 1.4a). This decrease is significant for the rest of Scotland, but not for Greater Glasgow though this could be due to the larger number of men in the sample outwith Greater Glasgow. Formal testing of interaction indicates that differences in the differentials between Glasgow and the rest of Scotland at the two surveys do not vary over time ($p$=0.807), though the lack of power of such a test should be taken into account.

The figures for women indicate a relatively higher increase in binge drinking in Greater Glasgow compared with elsewhere but this was not found to be significant from the formal interaction test ($p$=0.084) (Figure 1.4b).

*Figure 1.4a & b: Trends in percentages binge drinking for Greater Glasgow and the rest of Scotland over time for ages 16-64 years only, men (top) and women (bottom)*




1.2.5 Comparisons of the most deprived and less deprived areas of Greater Glasgow

Comparisons of binge drinking prevalence within Greater Glasgow revealed that overall, a higher proportion of men in the most deprived areas binge drink compared with those in less deprived areas, but this not was statistically significant [37% (95% CI: 32% to 41%) for the most deprived areas; 33% (95% CI: 29% to 38%) for other areas]. Proportions among women were similar, for the most deprived [17% (95% CI: 14% to 20%)] and less deprived [18% (95% CI: 15% to 21%)] areas in Greater Glasgow overall. For a detailed breakdown of comparisons by sex, age, Carstairs area deprivation, social class, education and economic activity, see Appendix A1.2.

CHAPTER 1 SUMMARY

Excess drinking

- Compared with the rest of the country overall, the proportion exceeding recommended weekly alcohol limits in Greater Glasgow was significantly higher in men but not women.

- Among sub-groups, the proportions were significantly higher in Greater Glasgow than those for the rest of Scotland for employed men, men with qualifications below degree level and 25-34 year old women.

- Higher proportions of excess weekly drinking in Greater Glasgow, West Central Scotland and Glasgow City among men remained after accounting for socio-economic factors, age, and survey year.

- Proportions of men exceeding recommended limits appeared to have fallen since 1998 in both Greater Glasgow and elsewhere, whereas there have been rises in women, particularly for those in Greater Glasgow between 1998 and 2003.

- Higher proportions for men and lower for women living in the most deprived areas compared with the more affluent areas of Greater Glasgow were not significant.

Binge drinking

- The proportion of men binge drinking in Greater Glasgow is significantly higher than the figure for the rest of Scotland; there was no significant difference for women.

- Among 25-34 year old men, men in social class II, employed men, retired men, men with no qualifications, and women with degree level qualifications or above, those living in Greater Glasgow were significantly more likely to binge drink than those living elsewhere in Scotland.

- Elevated levels of binge drinking among men in Greater Glasgow, West Central Scotland and Glasgow City were not explained by differences in socio-economic factors. Among women, excess binge drinking in Glasgow City became apparent on adjustment for socio-economic circumstances.

- Decreases in binge drinking from 1998 to 2003 among men for the rest of Scotland were not seen for Greater Glasgow; over this period there was a relatively higher increase in binge drinking in women in Greater Glasgow compared with those living elsewhere.

- Within Greater Glasgow, binge drinking prevalence was not statistically different in the most deprived areas compared with less deprived areas.

# CHAPTER 2: CIGARETTE SMOKING

As the largest component of the gap in healthy life expectancy between affluent and deprived individuals, smoking is the leading cause of inequalities in health (31). High rates of smoking in the Glasgow area (32) have been implicated in its poor health record (31).

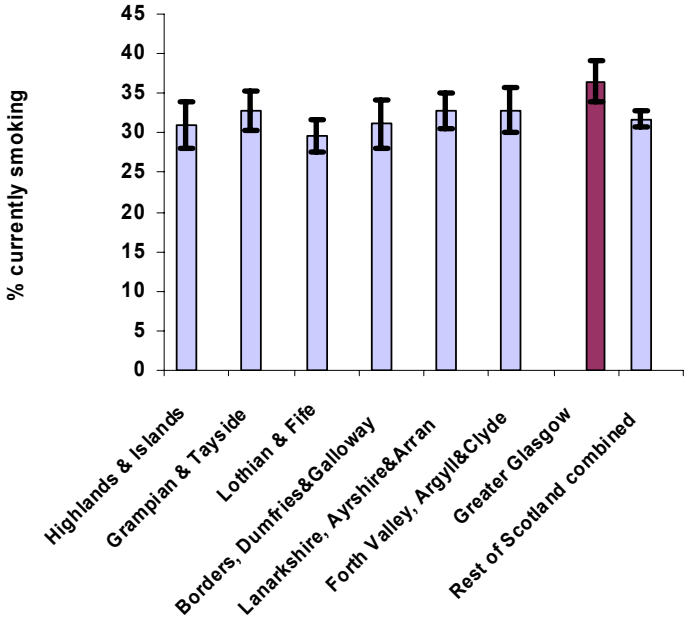
In the 1995, 1998 and 2003 Scottish Health Surveys, current smoking status was established by firstly asking respondents whether they have ever smoked a cigarette, a cigar or a pipe (33). If they answered "Yes", they were then asked if they smoke cigarettes at all nowadays. Current smoking status was known for 99.6% respondents.

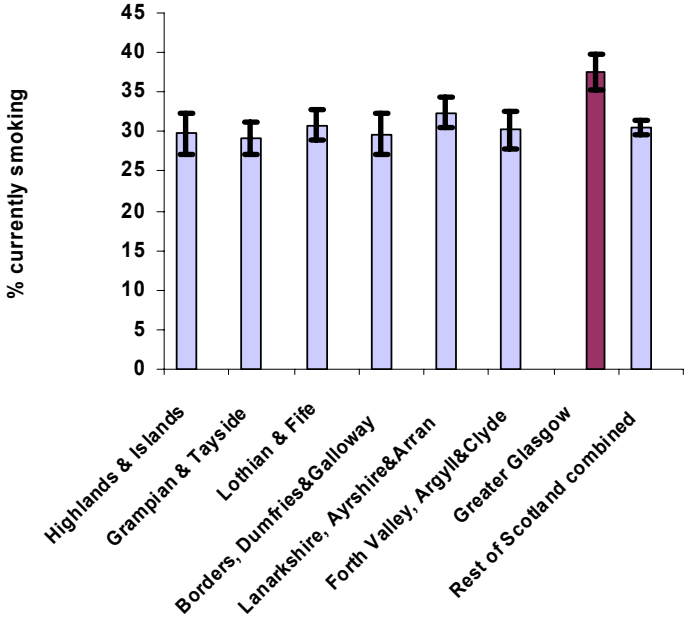
## 2.1 Regional comparisons

Among men, the smoking rate of 36% (95% CI: 34% to 39%) in Greater Glasgow is the highest of all region groups, significantly so compared with Lothian and Fife (Figure 2.1a). The excess smoking rates in Greater Glasgow are significant compared with the rest of Scotland overall (32%; 95% CI: 31% to 33%).

The distinction between Greater Glasgow and other region groups with respect to elevated smoking prevalence is even more obvious in women than men (Figure 2.1b). At 38% (95% CI: 35% to 40%), the figure is significantly higher than those for all other region groups, as well as that for the rest of Scotland as a whole (31%; 95% CI: 30% to 31%).

*Figures 2.1a and b: Percentages currently smoking by region for men (top) and women (bottom)*



## 2.2 Greater Glasgow vs the Rest of Scotland comparisons

Generally, within age, area deprivation, social class, economic activity, and education sub-groups, smoking was higher in Greater Glasgow compared with the rest of Scotland (Table 2.1). Among men, differences were significant for the 55-64 year olds, the economically inactive and those with no educational qualifications. In women, the 45-74 year olds, those in the most deprived areas, those in social classes III and IV, the retired and the economically inactive and those without qualifications living in Greater Glasgow were significantly more likely to smoke. For some groups, however, smoking prevalence was lower in Greater Glasgow (although not significantly so), most notably for those in the least deprived areas, men in the middle deprivation quintile and women in the second least deprived areas.

*Table 2.1: Percentages (with 95% confidence intervals) currently smoking cigarettes for Greater Glasgow and the rest of Scotland by sex, age, Carstairs area deprivation, social class, education and economic activity based on Scottish Health Survey 1995, 1998 and 2003 data*

| | | Men | | Women | |
|---|---|---|---|---|---|
| | | Glasgow n=1,604 (15%) | Rest of Scotland n=9,429 (85%) | Glasgow n=2,186 (16%) | Rest of Scotland n=11,817 (84%) |
| Age | 16-24 | 36 (29, 43) | 35 (32, 38) | 31 (25, 37) | 32 (29, 35) |
| | 25-34 | 44 (38, 50) | 37 (35, 40) | 41 (36, 46) | 36 (34, 38) |
| | 35-44 | 33 (27, 38) | 33 (31, 36) | 36 (32, 41) | 32 (30, 34) |
| | 45-54 | 39 (32, 45) | 31 (29, 33) | 45 (39, 50) | 31 (29, 33) |
| | 55-64 | 37 (31, 43) | 28 (26, 31) | 40 (35, 46) | 29 (27, 31) |
| | 65-74 | 25 (18, 31) | 18 (15, 20) | 33 (26, 39) | 22 (19, 24) |
| | 75 and over | 17 (5, 28) | 15 (11, 19) | 22 (12, 31) | 10 (7, 13) |
| Carstairs quintile | Least deprived | 20 (15, 24) | 25 (23, 27) | 18 (14, 22) | 23 (21, 25) |
| | 2 | 33 (23, 43) | 27 (25, 30) | 19 (12, 25) | 27 (25, 29) |
| | 3 | 23 (16, 30) | 33 (31, 35) | 38 (31, 45) | 31 (29, 33) |
| | 4 | 32 (25, 39) | 35 (33, 37) | 40 (33, 46) | 35 (33, 37) |
| | Most deprived | 48 (44, 52) | 42 (39, 45) | 47 (44, 50) | 40 (37, 42) |
| Social class | I | 17 (9, 25) | 16 (13, 20) | 13 (6, 19) | 15 (12, 18) |
| | II | 28 (23, 33) | 24 (22, 26) | 27 (23, 31) | 23 (21, 25) |
| | III | 38 (34, 42) | 34 (32, 36) | 38 (35, 41) | 31 (30, 33) |
| | IV | 51 (43, 58) | 41 (38, 44) | 54 (48, 60) | 40 (38, 43) |
| | V | 44 (34, 54) | 46 (41, 51) | 49 (41, 56) | 45 (41, 49) |
| | Unknown | 41 (30, 52) | 25 (19, 31) | 43 (34, 53) | 34 (29, 40) |
| Economic activity status | Employed | 31 (27, 34) | 30 (29, 31) | 32 (29, 36) | 30 (28, 31) |
| | Unemployed | 54 (46, 63) | 58 (53, 63) | 55 (42, 69) | 42 (36, 48) |
| | Retired | 24 (18, 29) | 17 (15, 19) | 30 (26, 35) | 20 (18, 22) |
| | Economically inactive | 50 (44, 56) | 39 (36, 42) | 45 (41, 49) | 36 (34, 38) |
| | Unknown | 25 (0, 59) | 42 (5, 79) | 100 (100, 100) | 42 (11, 73) |
| Education | No qualification | 47 (43, 51) | 39 (37, 41) | 47 (44, 51) | 38 (37, 40) |
| | Below degree level | 34 (30, 39) | 32 (30, 33) | 34 (30, 37) | 30 (28, 31) |
| | Degree level or above | 18 (13, 22) | 16 (14, 18) | 17 (13, 22) | 14 (12, 16) |
| | Unknown | 48 (1, 94) | 24 (0, 52) | 100 (100, 100) | 27 (5, 49) |
| Total | | 36 (34, 39) | 32 (31, 33) | 38 (35, 40) | 31 (30, 31) |

2.3 Role of socio-economic factors

The extent to which differences in smoking prevalence between Greater Glasgow, West Central Scotland, and Glasgow City and the rest of Scotland can be explained by the different socio-economic profiles can be examined by comparing unadjusted and adjusted results.

Univariably, compared with the rest of Scotland, men living in Greater Glasgow were 30% more likely to smoke, and women 43% more likely (Table 2.2a). Adjustment by age and survey year alone did not impact on results. Additionally accounting for socio-economic factors, living in Greater Glasgow was no longer significantly associated with current smoking (OR=0.92; 95% CI: 0.78-1.09 for men, and OR=1.08; 95%CI: 0.94-1.23 for women).

Unadjusted results show that men and women in West Central Scotland were 21% and 27% more likely to smoke but adjustment for socio-economic factors explains this excess smoking (Table 2.2b). In fact, the result for women becomes significantly lower on adjustment: once account has been taken of socio-economic factors, women in West Central Scotland smoke less than those elsewhere in the country. Prior to adjustment for socio-economic factors, men and women in Glasgow City are over 70% more likely to smoke but this becomes non-significant on adjustment (Table 2.2c).

*Table 2.2a: Effect of Greater Glasgow residence compared with the rest of Scotland on current smoking*

| | Men | | Women | |
|---|---|---|---|---|
| | OR | 95% CI | OR | 95% CI |
| Unadjusted | 1.30 | 1.08, 1.56 | 1.43 | 1.22, 1.68 |
| Age and survey year adjusted | 1.30 | 1.08, 1.57 | 1.44 | 1.23, 1.69 |
| Age, survey year and socio-economic adjusted | 0.92 | 0.78, 1.09 | 1.08 | 0.94, 1.23 |

*Table 2.2b: Effect of West Central Scotland residence compared with the rest of Scotland on current smoking*

| | Men | | Women | |
|---|---|---|---|---|
| | OR | 95% CI | OR | 95% CI |
| Unadjusted | 1.21 | 1.08, 1.37 | 1.27 | 1.13, 1.41 |
| Age and survey year adjusted | 1.23 | 1.09, 1.38 | 1.28 | 1.14, 1.42 |
| Age, survey year and socio-economic adjusted | 0.91 | 0.81, 1.01 | 0.90 | 0.82, 0.99 |

*Table 2.2c: Effect of Glasgow City residence compared with the rest of Scotland on current smoking*

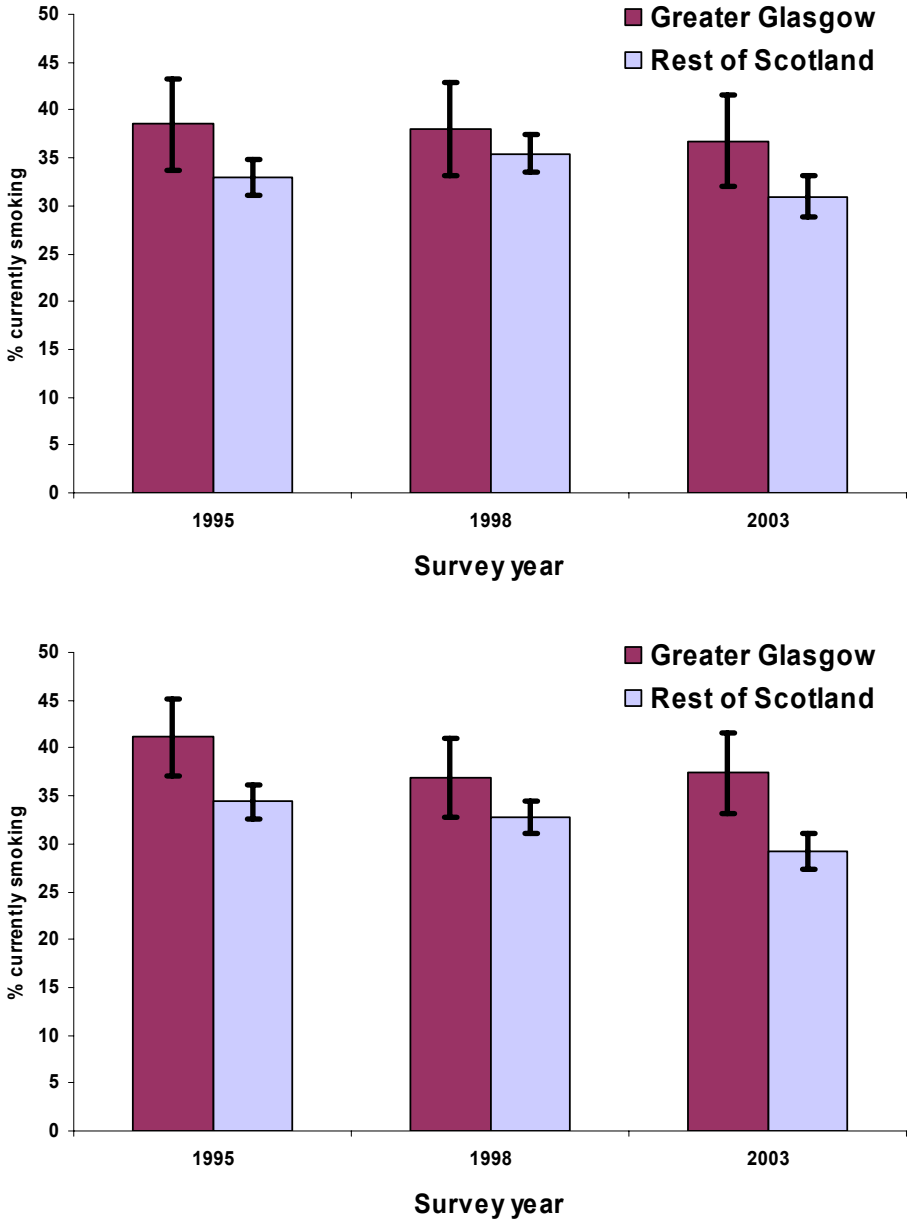
| | Men | | Women | |
|---|---|---|---|---|
| | OR | 95% CI | OR | 95% CI |
| Unadjusted | 1.72 | 1.42, 2.08 | 1.71 | 1.44, 2.08 |
| Age and survey year adjusted | 1.73 | 1.42, 2.10 | 1.73 | 1.46, 2.05 |
| Age, survey year and socio-economic adjusted | 1.04 | 0.85, 1.28 | 1.12 | 0.95, 1.32 |

2.4 Trends in current smoking for Greater Glasgow and the Rest of Scotland over time

Among men, prevalence of current smoking has declined (though not significantly) since 1995 in both Greater Glasgow and the rest of Scotland (Figure 2.2a). While levels for the rest of Scotland increased in 1998 before decreasing in 2003, the decrease has been more consistent in Greater Glasgow, though differences in changes over time were not statistically significant ($p$=0.347 and 0.821).

There were decreases in current smoking overall among women since 1995 (Figure 2.2b). However the prevalence increased slightly from 1998 to 2003 among those living in Greater Glasgow whereas the decline was stepwise and significantly lower in 2003 than in 1995 in those from the rest of Scotland. Changes were not significantly different for the two areas ($p$=0.879 and 0.335).

*Figure 2.2a & b: Trends in currently smoking for Greater Glasgow and the rest of Scotland over time for ages 16-64 years only, men (top) and women (bottom)*




2.5 Comparisons of the most deprived and less deprived areas of Greater Glasgow

From combined 1995, 1998 and 2003 survey data, within Greater Glasgow, current smoking prevalence was significantly higher among those living in the most deprived areas [48% (95% CI: 44% to 52%) for men and 47% (95% CI: 44% to 50%) for women] than those living in other areas in the region [25% (95% CI: 22% to 29%) for men and 27% (95% CI: 24% to 30%) for women]. For a detailed breakdown of comparisons by sex, age, Carstairs area deprivation, social class, education and economic activity, see Appendix A2.

CHAPTER 2 SUMMARY

- The proportions of current smokers in Greater Glasgow are significantly higher than those in the rest of Scotland overall.

- Among sub-groups, smoking was significantly higher in Greater Glasgow compared with the rest of Scotland for 55-64 year old men, economically inactive men, men with no educational qualifications, 45-74 year old women, women in the most deprived areas, women in social classes III and IV, retired women, economically inactive women and women without qualifications.

- Differences in socio-economic factors explained excesses in current smoking in men and women of Greater Glasgow and Glasgow City, and men in West Central Scotland. For women in West Central Scotland, the likelihood of current smoking becomes significantly lower on adjustment for socio-economic factors.

- Among men there have been steady decreases in current smoking prevalence since 1995 in Greater Glasgow; the decrease has been less consistent for the rest of Scotland. Among women the decline was stepwise for the rest of Scotland but not for Greater Glasgow.

- Current smoking prevalence was significantly higher among men and women living in the most deprived areas compared with those living in more affluent areas within Greater Glasgow.

# CHAPTER 3: DIET

Diet is known to have a major impact on health, with many of the putative and protective influences of nutrition on health established (34, 35). For instance, high intake of red and processed meat increases the risk of colorectal cancer (36), excess salt intake is related to high blood pressure (37), and soft drink consumption is associated with weight gain and diabetes (38). On the other hand, there are recognised protective effects of fruit and vegetable consumption against cancers (39) and cardiovascular disease (35). There are socio-economic differences in consumption levels of dietary components such as fruit and vegetables (10) as well as intra-urban variations in reported food consumption in Glasgow (40).

Since they do not provide comprehensive records of the entire diet, health surveys are not as thorough as food frequency questionnaires and methods such as those used in the Expenditure and Food Survey (41) in terms of their ability to accurately measure dietary intake. However, for monitoring trends over time and for the purposes of intra survey geographical comparisons such as those in this report, Scottish Health Survey data (42) provide useful and valid bases for analyses (43).

This chapter covers consumption of selected dietary items, namely salt, meat, meat products, non-diet soft drinks, fruit and vegetables, and green vegetables. Two different modules of questions were used to assess eating habits in the Scottish Health Survey (44). One of these used a modified version of the Dietary Instrument of Nutrition Education questionnaire (45) to assess informants' usual intake of a wide range of foods. The other assessed fruit and vegetable consumption, and was designed with the aim of providing sufficient detail to monitor the '5-a-day' policy effectively.

## 3.1 Salt consumption

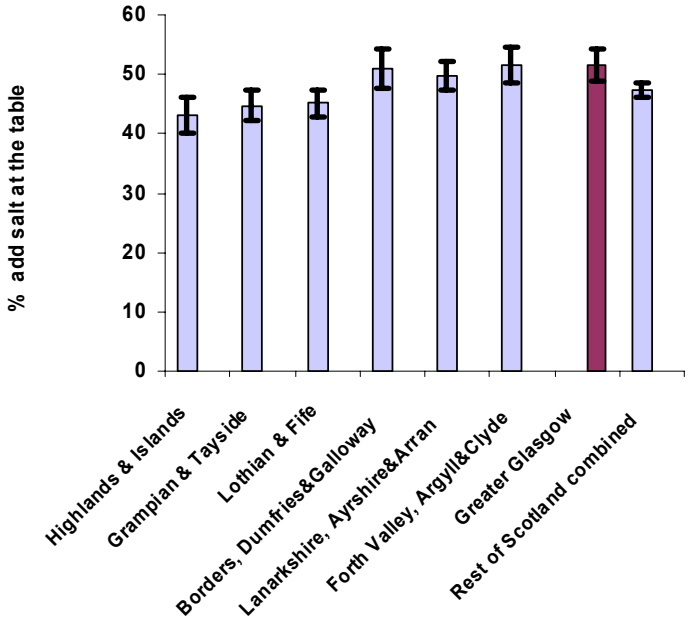
Data on salt consumption from the Scottish Health Survey were considered in terms of whether or not the respondent said they usually add salt to their food (with or without tasting it first) at the table. Data were available for all three surveys.

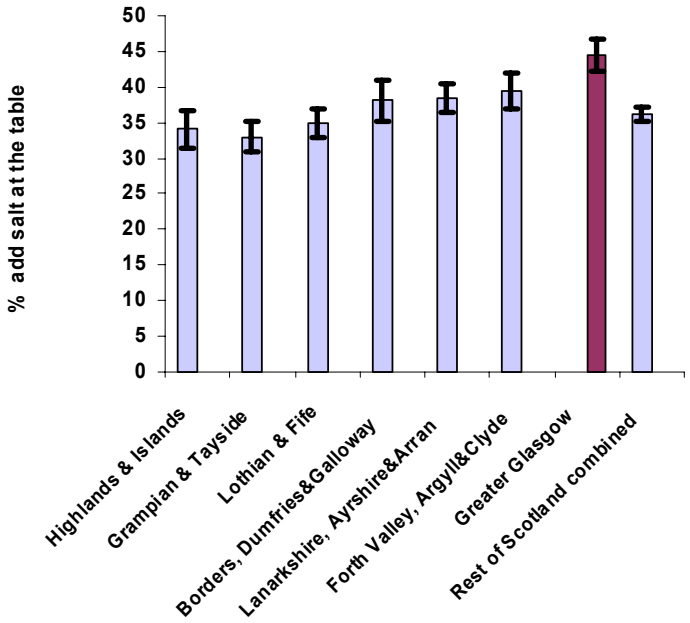
### 3.1.1 Regional comparisons

The proportion of men generally adding salt to food at the table was the second highest in Greater Glasgow, after those in Forth Valley and Argyll & Clyde (Figure 3.1a). A significantly higher proportion of men in Greater Glasgow generally added salt to food at the table compared with those in Highland and Islands, Grampian and Tayside, and Lothian and Fife. The proportion in Greater Glasgow was significantly higher than that for the rest of Scotland taken as a whole.

Among women, the proportion adding salt at the table was significantly higher in Greater Glasgow compared with any other region group (Figure 3.1b).

*Figures 3.1a and b: Percentages usually adding salt to food at the table by region for men (top) and women (bottom)*




3.1.2 Greater Glasgow vs the Rest of Scotland comparisons

Among men, a significantly higher proportion of those aged 55-64 years, those in social class III, and those with no educational qualifications in Greater Glasgow added salt to food at the table compared with those living in the rest of the country (Table 3.1). Women aged 35-74 years, those in the second most and most deprived quintile, those in social classes III and V, those employed, retired or economically inactive, with no or below degree level qualifications in Greater Glasgow were significantly more likely to add salt at the table compared with those living elsewhere.

*Table 3.1: Percentages (with 95% confidence intervals) adding salt to food at the table for Greater Glasgow and the rest of Scotland by sex, age, Carstairs area deprivation, social class, education and economic activity based on Scottish Health Survey 1995, 1998 and 2003 data*

| | | Men | | Women | |
|---|---|---|---|---|---|
| | | Glasgow n=1606 (15%) | Rest of Scotland n=9446 (85%) | Glasgow n= 2190 (16%) | Rest of Scotland n=11,844 (84%) |
| Age | 16-24 | 47 (39, 54) | 43 (39, 46) | 37 (31, 44) | 35 (32, 38) |
| | 25-34 | 51 (45, 57) | 48 (46, 51) | 44 (39, 49) | 41 (38, 43) |
| | 35-44 | 45 (39, 51) | 47 (45, 50) | 49 (44, 54) | 37 (35, 39) |
| | 45-54 | 54 (47, 60) | 48 (45, 51) | 45 (40, 51) | 35 (33, 38) |
| | 55-64 | 65 (59, 71) | 52 (50, 55) | 51 (45, 57) | 37 (35, 39) |
| | 65-74 | 53 (45, 61) | 46 (43, 50) | 40 (33, 47) | 31 (28, 33) |
| | 75 and over | 43 (28, 58) | 36 (30, 42) | 32 (22, 42) | 24 (19, 28) |
| Carstairs quintile | Least deprived | 43 (37, 49) | 42 (40, 44) | 34 (29, 40) | 31 (29, 33) |
| | 2 | 47 (37, 57) | 45 (43, 48) | 40 (32, 49) | 33 (31, 35) |
| | 3 | 43 (34, 51) | 48 (46, 51) | 41 (34, 49) | 36 (34, 38) |
| | 4 | 55 (48, 62) | 49 (47, 52) | 51 (45, 58) | 40 (38, 42) |
| | Most deprived | 57 (53, 61) | 54 (51, 57) | 48 (45, 51) | 42 (39, 45) |
| Social class | I | 37 (27, 48) | 36 (31, 40) | 35 (26, 45) | 24 (21, 28) |
| | II | 41 (35, 46) | 41 (39, 44) | 37 (32, 42) | 31 (29, 32) |
| | III | 58 (54, 62) | 51 (49, 53) | 46 (43, 50) | 38 (36, 39) |
| | IV | 59 (52, 67) | 51 (48, 54) | 48 (42, 54) | 42 (40, 45) |
| | V | 60 (50, 70) | 54 (49, 59) | 56 (49, 63) | 42 (38, 46) |
| | Unknown | 42 (30, 53) | 34 (27, 40) | 46 (36, 56) | 37 (32, 43) |
| Economic activity status | Employed | 48 (44, 52) | 47 (46, 48) | 44 (40, 47) | 37 (36, 38) |
| | Unemployed | 63 (54, 71) | 53 (48, 58) | 47 (34, 61) | 44 (37, 50) |
| | Retired | 53 (47, 60) | 44 (41, 47) | 38 (33, 43) | 30 (28, 32) |
| | Economically inactive | 55 (49, 61) | 48 (45, 51) | 48 (44, 52) | 36 (35, 38) |
| | Unknown | 25 (0, 59) | 49 (15, 83) | 18 (0, 47) | 63 (34, 93) |
| Education | No qualification | 66 (62, 70) | 57 (55, 58) | 53 (50, 56) | 41 (39, 42) |
| | Below degree level | 48 (43, 52) | 46 (44, 48) | 42 (38, 46) | 37 (35, 38) |
| | Degree level or above | 30 (24, 35) | 32 (29, 34) | 26 (21, 31) | 23 (21, 25) |
| | Unknown | 39 (0, 83) | 60 (31, 88) | 54 (17, 92) | 44 (19, 69) |
| Total | | 52 (49, 54) | 47 (46, 48) | 44 (42, 47) | 36 (35, 37) |

3.1.3 Role of socio-economic factors

Overall, men in Greater Glasgow were 23% (95% CI: 6% to 43%) more likely to usually add salt to food at the table than those in the rest of Scotland (Table 3.2a). Adjusting for age and survey year did not alter results. Once socio-economic circumstances had been accounted for, men in Greater Glasgow were no longer significantly different in their salt consumption.

Among women, those living in Greater Glasgow were 43% (95% CI: 26% to 63%) more likely to add salt at the table compared with those in the rest of the country, and this was not attenuated by controlling for age or survey year. On adjustment for socio-economic factors, there remained an excess of salt consumption in Greater Glasgow (27%; 95% CI: 11% to 48%).

Results were similar for West Central Scotland (Table 3.2b) and Glasgow City (Table 3.2c).

*Table 3.2a: Effect of Greater Glasgow residence compared with the rest of Scotland on addition of salt to food at the table*

| | Men | | Women | |
|---|---|---|---|---|
| | OR | 95% CI | OR | 95% CI |
| Unadjusted | 1.23 | 1.06, 1.43 | 1.43 | 1.26, 1.63 |
| Age and year adjusted | 1.24 | 1.08, 1.43 | 1.44 | 1.27, 1.63 |
| Age, year and socio-economic adjusted | 1.11 | 0.96, 1.30 | 1.28 | 1.11, 1.48 |

*Table 3.2b: Effect of West Central Scotland residence compared with the rest of Scotland on addition of salt to food at the table*

| | Men | | Women | |
|---|---|---|---|---|
| | OR | 95% CI | OR | 95% CI |
| Unadjusted | 1.24 | 1.12, 1.37 | 1.35 | 1.23, 1.48 |
| Age and survey year adjusted | 1.23 | 1.11, 1.36 | 1.35 | 1.23, 1.48 |
| Age, survey year and socio-economic adjusted | 1.08 | 0.97, 1.19 | 1.16 | 1.06, 1.28 |

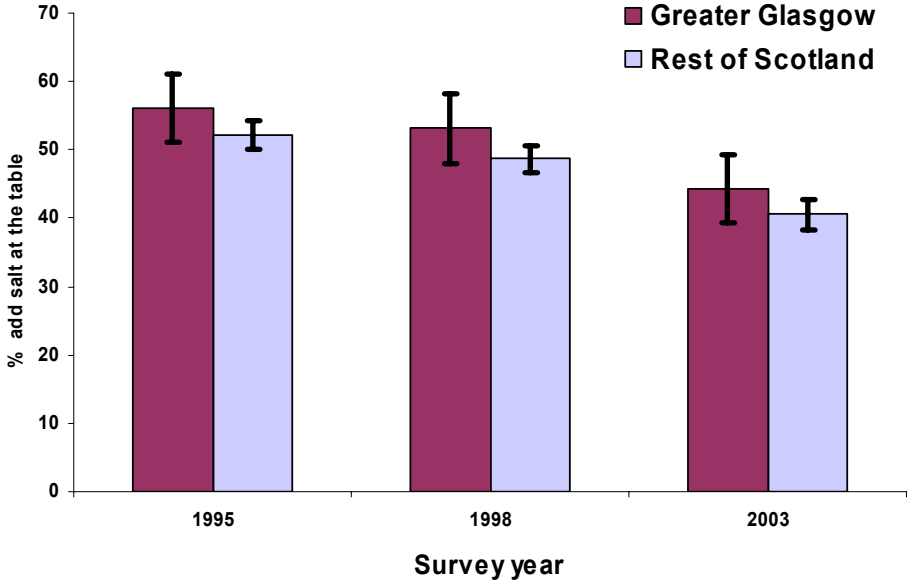
*Table 3.2c: Effect of Glasgow City residence compared with the rest of Scotland on addition of salt to food at the table*

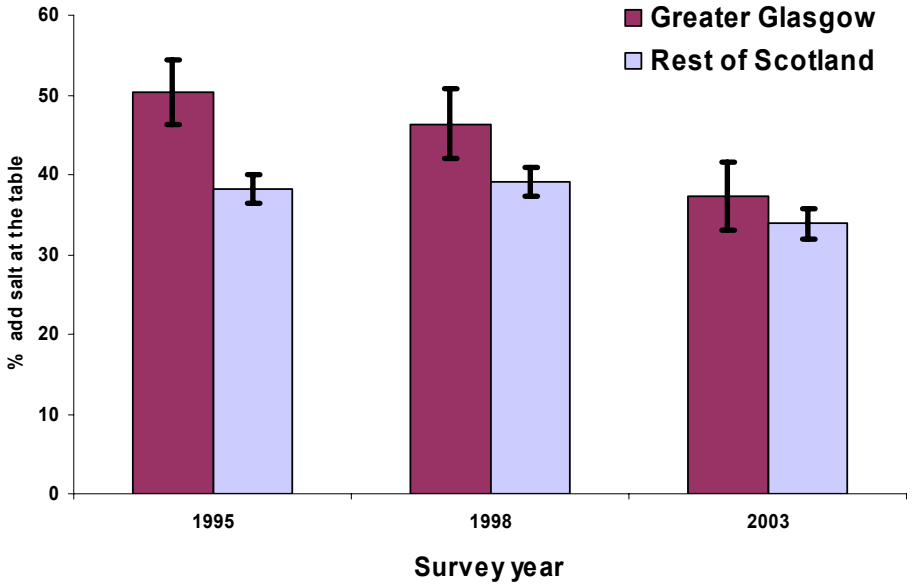
| | Men | | Women | |
|---|---|---|---|---|
| | OR | 95% CI | OR | 95% CI |
| Unadjusted | 1.34 | 1.12, 1.60 | 1.52 | 1.32, 1.76 |
| Age and year adjusted | 1.35 | 1.14, 1.60 | 1.53 | 1.33, 1.75 |
| Age, year and socio-economic adjusted | 1.07 | 0.89, 1.29 | 1.23 | 1.03, 1.45 |

3.1.4 Trends in addition of salt to food at the table for Greater Glasgow and the Rest of Scotland over time

Addition of salt at the table has decreased over the survey time period in both Greater Glasgow and the rest of Scotland (Figure 3.2a). Among men, consumption in 2003 was significantly lower than that for 1995 and also for 1998 in those living outside Greater Glasgow. Differences between Greater Glasgow and the rest of Scotland had not changed over time ($p$= 0.689 and 0.993). Among women, reductions were more dramatic for those living in Greater Glasgow, with prevalence of salt addition in 2003 significantly lower than that for 1995 or 1998; for those resident elsewhere, the 2003 prevalence was lower than 1998 but not 1995 (Figure 3.2b). The difference between Greater Glasgow and the rest of the country in 2003 had significantly changed since 1995 ($p$=0.025).

*Figure 3.2a & b: Trends in addition of salt to food at the table for Greater Glasgow and the rest of Scotland over time for ages 16-64 years only, men (top) and women (bottom)*




3.1.5 Comparisons of the most deprived and less deprived areas of Greater Glasgow

Within Greater Glasgow, the prevalence of usually adding salt to food at the table was significantly higher in the most deprived areas [57% (95% CI: 53% to 61%) for men and 48% (95% CI: 45% to 51%) for women] compared with the other areas [46% (95% CI: 42% to 50%) for men and 41% (95% CI: 38% to 44%) for women]. For a detailed breakdown of comparisons by sex, age, Carstairs area deprivation, social class, education and economic activity, see Appendix A3.1.

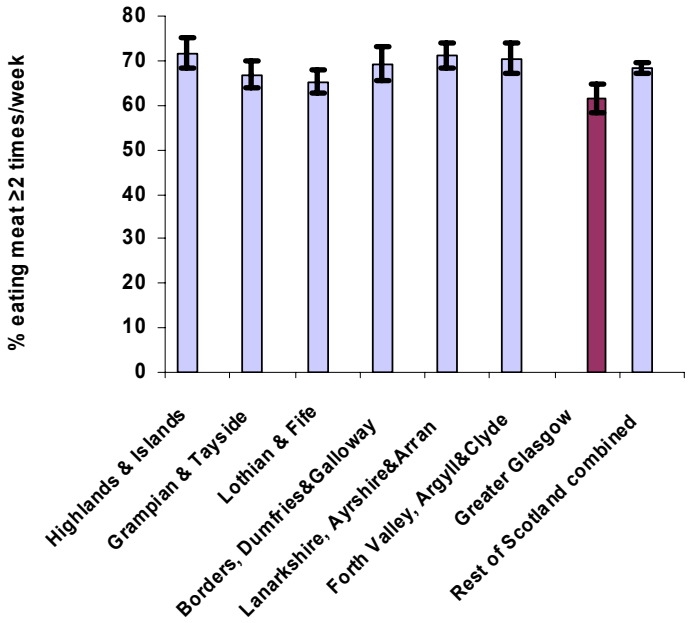
## 3.2 Meat consumption

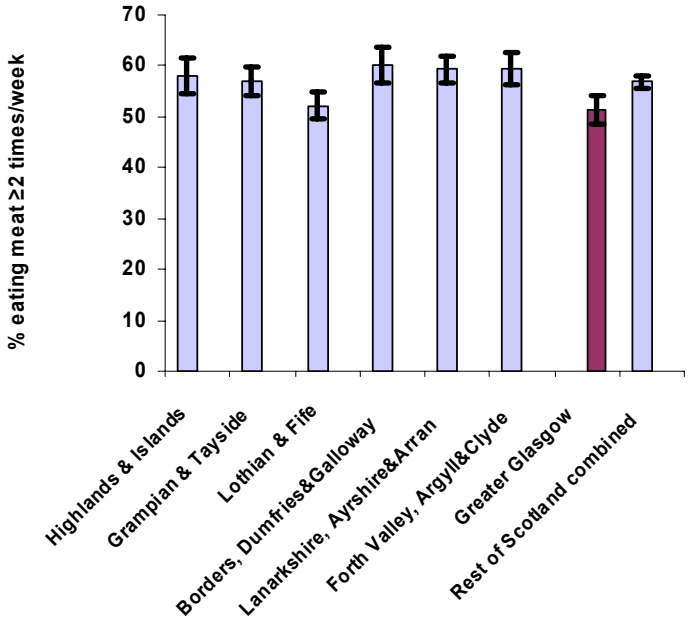
Meat was defined as beef, lamb or pork and consumption was considered in terms of whether or not the respondent said they usually ate meat more than two times per week. Data were available from the surveys in 1995 and 2003.

### 3.2.1 Regional comparisons

Consumption of meat twice a week or more was lower among men in Greater Glasgow than in any other region group (Figure 3.3a). Although not significantly different from Grampian and Tayside, or Lothian and Fife, the proportion in Greater Glasgow was significantly lower than that for the rest of Scotland taken as a whole. Similarly for women, the proportion was lowest for Greater Glasgow and although not significantly different from Highland and Islands, Grampian and Tayside, or Lothian and Fife, was significantly lower that the rest of the country (Figure 3.3b).

*Figures 3.3a and b: Percentages eating meat at least two times per week by region for men (top) and women (bottom)*




3.2.2 Greater Glasgow vs the Rest of Scotland comparisons

Consumption of meat at least two times per week was lower in Greater Glasgow than in the rest of Scotland overall and for some sub-groups (Table 3.3). Among men, those aged 16-24 and 35-44, those living in the most deprived areas, the employed, and those with no qualifications in Greater Glasgow were significantly less likely to consume meat at least twice a week. For women, those aged 35-44, those living in the most deprived areas, the employed and those with qualifications below degree level in Greater Glasgow were significantly less likely to consume meat at least twice a week.

*Table 3.3: Percentages (with 95% confidence intervals) consuming meat at least two times per week for Greater Glasgow and the rest of Scotland by sex, age, Carstairs area deprivation, social class, education and economic activity based on Scottish Health Survey 2003 data*

| | | Men | | Women | |
|---|---|---|---|---|---|
| | | Glasgow n=1060 (15%) | Rest of Scotland n= 6053 (85%) | Glasgow n=1442 (14%) | Rest of Scotland n=7488 (86%) |
| Age | 16-24 | 58 (50, 57) | 69 (65, 73) | 36 (28, 44) | 45 (41, 48) |
| | 25-34 | 57 (49, 64) | 64 (61, 67) | 45 (39, 52) | 50 (48, 53) |
| | 35-44 | 53 (46, 60) | 63 (60, 66) | 48 (42, 54) | 58 (56, 61) |
| | 45-54 | 68 (60, 76) | 72 (69, 75) | 63 (56, 69) | 63 (61, 66) |
| | 55-64 | 68 (60, 76) | 74 (71, 77) | 65 (59, 71) | 63 (60, 66) |
| | 65-74 | 74 (64, 84) | 72 (67, 76) | 53 (43, 64) | 64 (59, 68) |
| | 75 and over | 81 (69, 93) | 75 (70, 81) | 54 (42, 65) | 63 (58, 68) |
| Carstairs quintile | Least deprived | 61 (54, 69) | 67 (64, 70) | 53 (46, 59) | 57 (54, 60) |
| | 2 | 76 (65, 88) | 68 (66, 71) | 55 (44, 65) | 57 (54, 60) |
| | 3 | 62 (53, 72) | 69 (66, 72) | 53 (44, 62) | 57 (54, 59) |
| | 4 | 60 (52, 69) | 68 (66, 71) | 55 (47, 63) | 57 (54, 60) |
| | Most deprived | 60 (55, 65) | 70 (66, 73) | 49 (45, 53) | 57 (54, 61) |
| Social class | I | 62 (50, 75) | 67 (62, 73) | 45 (33, 57) | 60 (55, 65) |
| | II | 63 (56, 70) | 71 (68, 73) | 53 (47, 59) | 56 (53, 58) |
| | III | 63 (58, 68) | 68 (66, 70) | 52 (48, 56) | 56 (54, 58) |
| | IV | 56 (47, 65) | 68 (65, 72) | 51 (44, 58) | 61 (58, 64) |
| | V | 54 (42, 67) | 64 (59, 70) | 54 (45, 62) | 61 (56, 65) |
| | Unknown | 64 (51, 77) | 71 (64, 79) | 46 (33, 58) | 52 (45, 59) |
| Economic activity status | Employed | 60 (55, 64) | 68 (67, 70) | 50 (46, 54) | 56 (54, 58) |
| | Unemployed | 54 (42, 66) | 67 (62, 72) | 38 (23, 53) | 44 (37, 51) |
| | Retired | 77 (70, 84) | 72 (69, 76) | 54 (47, 61) | 63 (60, 66) |
| | Economically inactive | 62 (56, 69) | 67 (64, 71) | 54 (49, 58) | 58 (56, 60) |
| | Unknown | - | - | - | 66 (9, 100) |
| Education | No qualification | 64 (59, 69) | 71 (69, 73) | 57 (53, 61) | 62 (60, 64) |
| | Below degree level | 62 (56, 67) | 68 (66, 70) | 49 (44, 53) | 55 (53, 57) |
| | Degree level or above | 56 (49, 63) | 65 (62, 69) | 44 (37, 51) | 53 (50, 56) |
| | Unknown | - | 62 (8, 100) | 38 (0, 81) | 36 (5, 67) |
| Total | | 62 (58, 65) | 68 (67, 70) | 51 (49, 54) | 57 (56, 58) |

3.2.3 Role of socio-economic factors

Men in Greater Glasgow were 28% (95% CI: 13% to 41%) less likely than those living in the rest of Scotland to consume meat at least twice a week (Table 3.4a). Age and survey year adjustment did not alter the findings, and while further adjustment by socio-economic factors attenuated the degree of association, meat consumption remained significantly lower in Greater Glasgow. Among women, those living in the Greater Glasgow area were 21% less likely to eat meat at least twice a week than those living elsewhere. Results were not altered by taking age or survey year into account, but adjusting by socio-economic circumstances rendered the association non-significant.

Results were similar for Glasgow City (Table 3.4c). For West Central Scotland, the unadjusted relationships between West Central Scotland residence and meat consumption were non-significant and remained so following adjustment (Table 3.4b).

*Table 3.4a: Effect of Greater Glasgow residence compared with the rest of Scotland on consumption of meat at least two times per week*

| | Men | | Women | |
|---|---|---|---|---|
| | OR | 95% CI | OR | 95% CI |
| Unadjusted | 0.72 | 0.59, 0.87 | 0.79 | 0.69, 0.90 |
| Age and year adjusted | 0.72 | 0.60, 0.87 | 0.79 | 0.70, 0.89 |
| Age, year and socio-economic adjusted | 0.79 | 0.64, 0.98 | 0.87 | 0.75, 1.00 |

*Table 3.4b: Effect of West Central Scotland residence compared with the rest of Scotland on consumption of meat at least two times per week*

| | Men | | Women | |
|---|---|---|---|---|
| | OR | 95% CI | OR | 95% CI |
| Unadjusted | 1.03 | 0.90, 1.19 | 1.02 | 0.91, 1.13 |
| Age and year adjusted | 1.02 | 0.89, 1.17 | 1.01 | 0.91, 1.13 |
| Age, year and socio-economic adjusted | 1.10 | 0.95, 1.28 | 1.08 | 0.96, 1.21 |

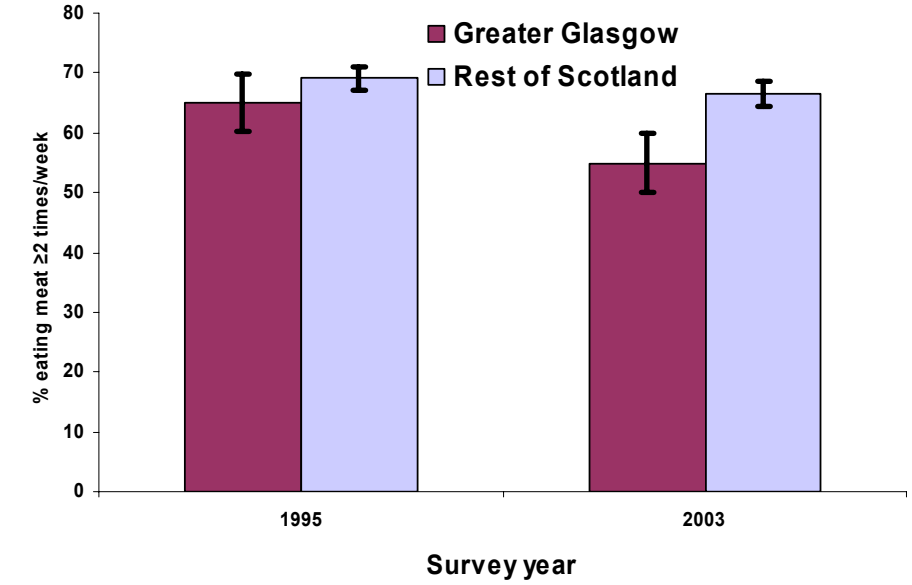
*Table 3.4c: Effect of Glasgow City residence compared with the rest of Scotland on consumption of meat at least two times per week*

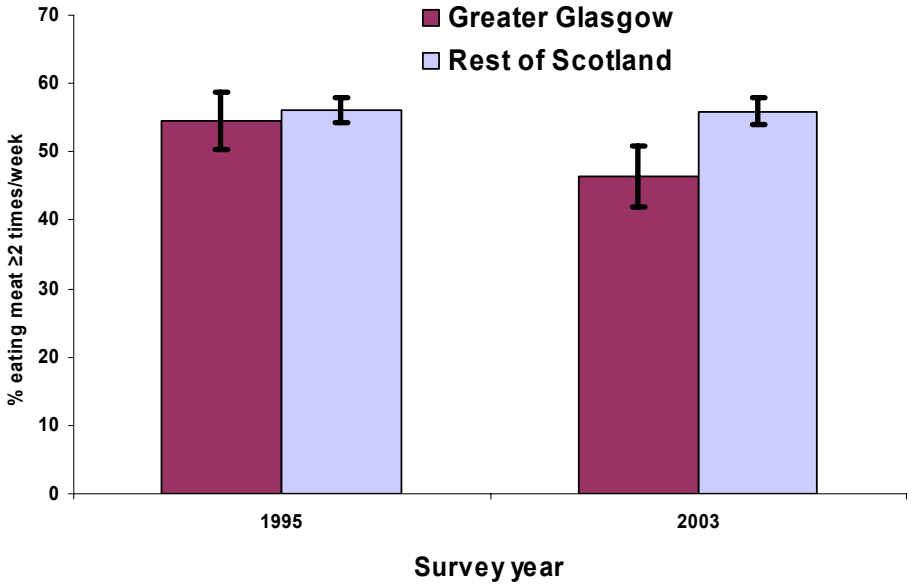
| | Men | | Women | |
|---|---|---|---|---|
| | OR | 95% CI | OR | 95% CI |
| Unadjusted | 0.68 | 0.54, 0.85 | 0.76 | 0.65, 0.89 |
| Age and year adjusted | 0.68 | 0.55, 0.85 | 0.76 | 0.65, 0.88 |
| Age, year and socio-economic adjusted | 0.75 | 0.57, 0.99 | 0.86 | 0.71, 1.04 |

3.2.4 Trends in consumption of two or more portions of meat per week for Greater Glasgow and the Rest of Scotland over time

In 2003, meat consumption had fallen compared with 1995 within Greater Glasgow, but not in the rest of Scotland (Figure 3.4a and b). The decrease was significant for men living in Greater Glasgow. The difference between Greater Glasgow and the rest of Scotland in 2003 had widened since 1995 among women ($p$=0.015) but not among men ($p$=0.237).

*Figure 3.4a & b: Trends in consumption of meat at least two times per week for Greater Glasgow and the rest of Scotland over time for ages 16-64 years only, men (top) and women (bottom)*




3.2.5 Comparisons of the most deprived and less deprived areas of Greater Glasgow

The proportion consuming meat at least twice per week was no different in those living in the most deprived areas in Greater Glasgow [60% (95% CI: 55% to 65%) for men and 49% (95% CI: 45% to 53%) for women] to those in more affluent areas in Greater Glasgow [63% (95% CI: 59% to 67%) for men and 54% (95% CI: 50% to 58%) for women]. For a detailed breakdown of comparisons by sex, age, Carstairs area deprivation, social class, education and economic activity, see Appendix A3.2.

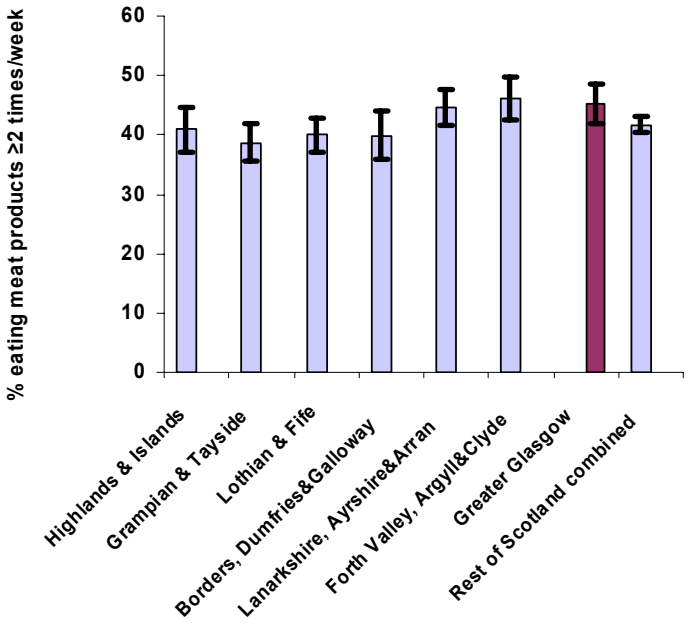
### 3.3 Meat product consumption

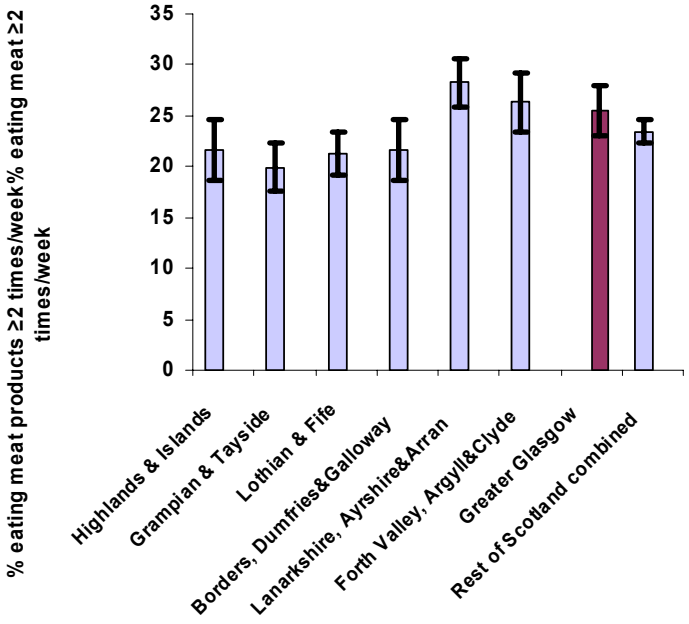
Respondents were categorized according to whether or not they said they ate meat products (e.g. pies, bridies, burgers) two or more times a week. Data were available from the surveys in 1995 and 2003.

#### 3.3.1 Regional comparisons

The proportion of men in Greater Glasgow eating two or more portions of meat products per week was the second highest of the region groups after the Forth Valley, Argyll & Clyde (Figure 3.5a). This proportion was not significantly different to that of any of the regions individually, or for the rest of Scotland combined. Among women, the proportion for Glasgow was significantly higher than that for Grampian and Tayside but lower than those for Lanarkshire, Ayrshire & Arran and Forth Valley, Argyll & Clyde (although not significantly so), and was not different to that for the rest of the country (Figure 3.5b).

*Figures 3.5a and b: Percentages eating meat products at least two times per week by region for men (top) and women (bottom)*




3.3.2 Greater Glasgow vs the Rest of Scotland comparisons

Overall, the differences between Greater Glasgow and the rest of Scotland in the consumption of meat products twice a week or more were not statistically different for men or women (Table 3.5). However, for some sub-groups there were significant differences. Proportions were higher in Greater Glasgow for men aged 55-74 years, those in the Carstairs quintiles 2 and 3, those in social class IV and those with no qualifications than in the rest of the country. Among women, those in social class IV had a significantly higher proportion in Greater Glasgow.

*Table 3.5: Percentages (with 95% confidence intervals) consuming meat products at least two times per week for Greater Glasgow and the rest of Scotland by sex, age, Carstairs area deprivation, social class, education and economic activity based on Scottish Health Survey 2003 data*

| | | Men | | Women | |
|---|---|---|---|---|---|
| | | Glasgow n=1058 (15%) | Rest of Scotland n=6054 (85%) | Glasgow n=1441 (14%) | Rest of Scotland n=7488 (86%) |
| Age | 16-24 | 63 (54, 71) | 61 (57, 65) | 33 (25, 41) | 35 (31, 39) |
| | 25-34 | 46 (38, 53) | 48 (45, 52) | 28 (22, 33) | 29 (26, 31) |
| | 35-44 | 42 (35, 49) | 40 (38, 43) | 24 (19, 29) | 24 (22, 27) |
| | 45-54 | 34 (26, 41) | 34 (31, 37) | 22 (16, 28) | 18 (16, 20) |
| | 55-64 | 46 (38, 53) | 33 (30, 36) | 22 (16, 28) | 15 (13, 17) |
| | 65-74 | 40 (29, 51) | 24 (20, 28) | 25 (16, 34) | 16 (12, 19) |
| | 75 and over | 30 (16, 44) | 28 (23, 34) | 18 (9, 26) | 17 (13, 21) |
| Carstairs quintile | Least deprived | 32 (25, 38) | 34 (32, 37) | 14 (9, 19) | 17 (15, 19) |
| | 2 | 56 (43, 69) | 38 (35, 41) | 25 (16, 35) | 20 (17, 22) |
| | 3 | 31 (22, 40) | 43 (40, 46) | 16 (10, 23) | 23 (21, 26) |
| | 4 | 40 (32, 49) | 47 (44, 51) | 21 (14, 27) | 28 (26, 31) |
| | Most deprived | 55 (50, 60) | 49 (45, 53) | 33 (29, 36) | 32 (29, 35) |
| Social class | I | 29 (17, 41) | 28 (22, 33) | 5 (0, 12) | 14 (10, 18) |
| | II | 30 (24, 37) | 32 (29, 35) | 16 (11, 21) | 15 (13, 17) |
| | III | 47 (43, 52) | 45 (43, 47) | 24 (20, 28) | 25 (23, 26) |
| | IV | 65 (56, 73) | 48 (45, 52) | 40 (32, 47) | 29 (26, 32) |
| | V | 55 (43, 67) | 51 (45, 56) | 40 (32, 47) | 31 (27, 36) |
| | Unknown | 53 (39, 67) | 42 (34, 51) | 32 (21, 43) | 36 (29, 42) |
| Economic activity status | Employed | 41 (37, 46) | 40 (38, 42) | 22 (19, 26) | 21 (20, 23) |
| | Unemployed | 56 (45, 68) | 65 (59, 70) | 33 (18, 48) | 39 (32, 47) |
| | Retired | 36 (28, 45) | 26 (22, 29) | 21 (15, 27) | 16 (13, 18) |
| | Economically inactive | 54 (47, 60) | 48 (45, 52) | 30 (26, 35) | 28 (26, 30) |
| | Unknown | 76 (31, 100) | 79 (39, 100) | - | 28 (0, 83) |
| Education | No qualification | 54 (49, 59) | 45 (42, 47) | 33 (29, 36) | 27 (25, 29) |
| | Below degree level | 46 (40, 51) | 46 (44, 49) | 23 (19, 27) | 26 (24, 28) |
| | Degree level or above | 27 (20, 33) | 22 (20, 25) | 11 (7, 15) | 9 (7, 10) |
| | Unknown | - | 77 (37,100) | 39 (0, 81) | 27 (0, 55) |
| Total | | 45 (42, 49) | 42 (40, 43) | 25 (23, 28) | 23 (22, 25) |

3.3.3 Role of socio-economic factors

Residents of Greater Glasgow are no more likely to consume meat products at least two times per week than those living elsewhere in the country; adjustment by age, survey year and socio-economic circumstances does not change findings (Table 3.6a). Men and women living in West Central Scotland are significantly more likely to consume meat products at least twice a week but associations are attenuated by adjustment for socio-economic factors and are no longer statistically significant (Table 3.6b). In Glasgow City, results are similar to those for West Central Scotland for men, but there are no associations among women (Table 3.6c).

*Table 3.6a: Effect of Greater Glasgow residence compared with the rest of Scotland on consumption of meat products at least two times per week*

| | Men | | Women | |
|---|---|---|---|---|
| | OR | 95% CI | OR | 95% CI |
| Unadjusted | 1.19 | 0.99, 1.44 | 1.11 | 0.90, 1.36 |
| Age and year adjusted | 1.17 | 0.96, 1.43 | 1.11 | 0.90, 1.36 |
| Age, year and socio-economic adjusted | 0.97 | 0.80, 1.18 | 0.84 | 0.68, 1.04 |

*Table 3.6b: Effect of West Central Scotland residence compared with the rest of Scotland on consumption of meat products at least two times per week*

| | Men | | Women | |
|---|---|---|---|---|
| | OR | 95% CI | OR | 95% CI |
| Unadjusted | 1.25 | 1.10, 1.43 | 1.39 | 1.20, 1.61 |
| Age and year adjusted | 1.29 | 1.12, 1.48 | 1.42 | 1.23, 1.63 |
| Age, year and socio-economic adjusted | 1.08 | 0.94, 1.24 | 1.12 | 0.97, 1.30 |

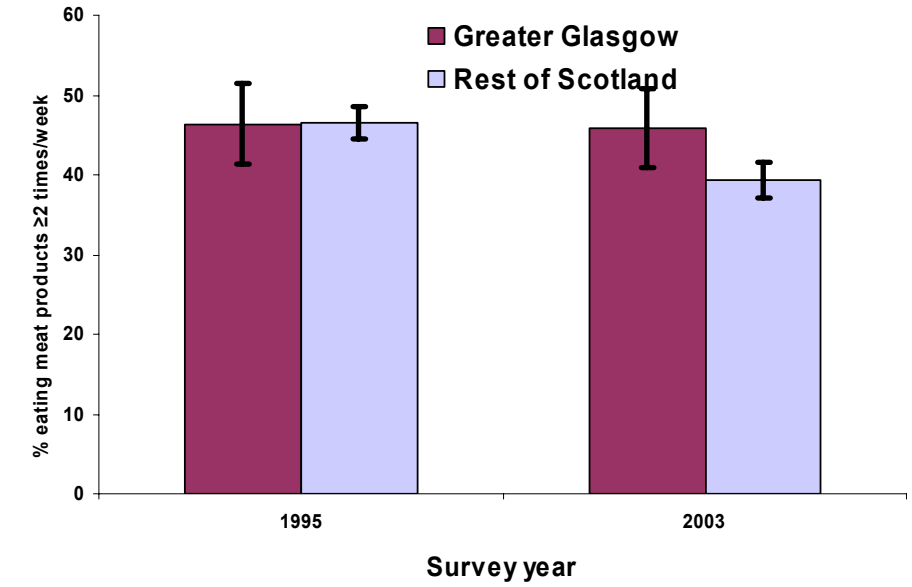
*Table 3.6c: Effect of Glasgow City residence compared with the rest of Scotland on consumption of meat products at least two times per week*

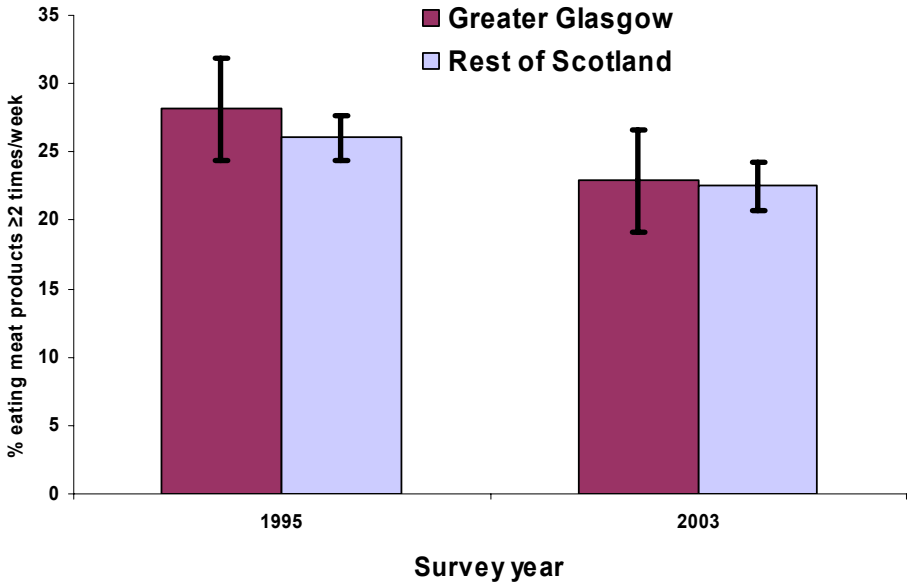
| | Men | | Women | |
|---|---|---|---|---|
| | OR | 95% CI | OR | 95% CI |
| Unadjusted | 1.41 | 1.15, 1.74 | 1.22 | 0.97, 1.54 |
| Age and year adjusted | 1.39 | 1.12, 1.74 | 1.21 | 0.95, 1.55 |
| Age, year and socio-economic adjusted | 1.03 | 0.83, 1.27 | 0.77 | 0.59, 1.02 |

3.3.4 Trends in consumption of meat products for Greater Glasgow and the Rest of Scotland over time

Among men, the proportion consuming meat products at least two times per week had fallen since 1995 for those living outside Greater Glasgow, but had not changed for those in Greater Glasgow (Table 3.6a). Differences in 2003 were not significantly different to those in 1995 ($p$=0.130). In women, proportions had decreased in Greater Glasgow as well as the rest of Scotland, with the greatest drop in those living in Greater Glasgow (Table 3.6b); changes in differences were not significant ($p$=0.693).

*Figure 3.6a & b: Trends in consumption of meat products at least two times per week for Greater Glasgow and the rest of Scotland over time for ages 16-64 years only, men (top) and women (bottom)*



### 3.3.5 Comparisons of the most deprived and less deprived areas of Greater Glasgow

Within Greater Glasgow, consumption of at least two portions of meat products per week was significantly higher among those living in the most deprived areas [55% (95% CI: 50% to 60%) for men and 33% (95% CI: 29% to 36%) for women] than those living in other areas in the region [37% (95% CI: 32% to 41%) for men and 18% (95% CI: 14% to 21%) for women]. For a detailed breakdown of comparisons by sex, age, Carstairs area deprivation, social class, education and economic activity, see Appendix A3.3.

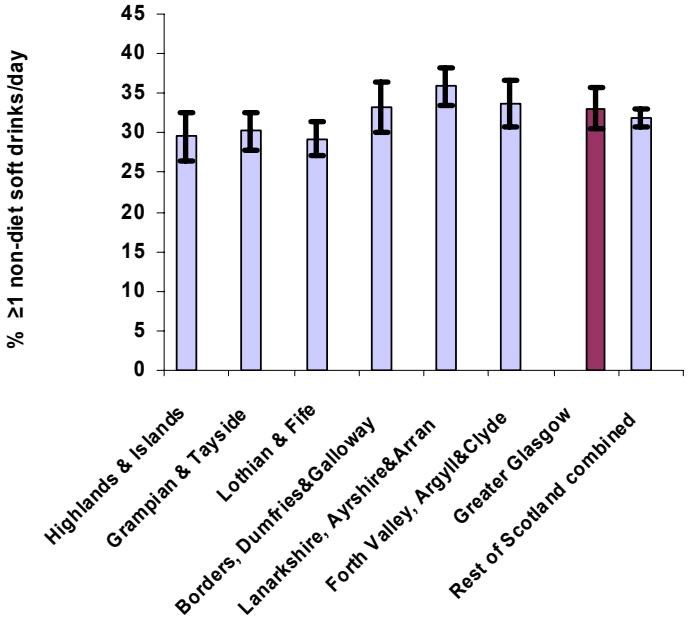
## 3.4 Non-diet soft drink consumption

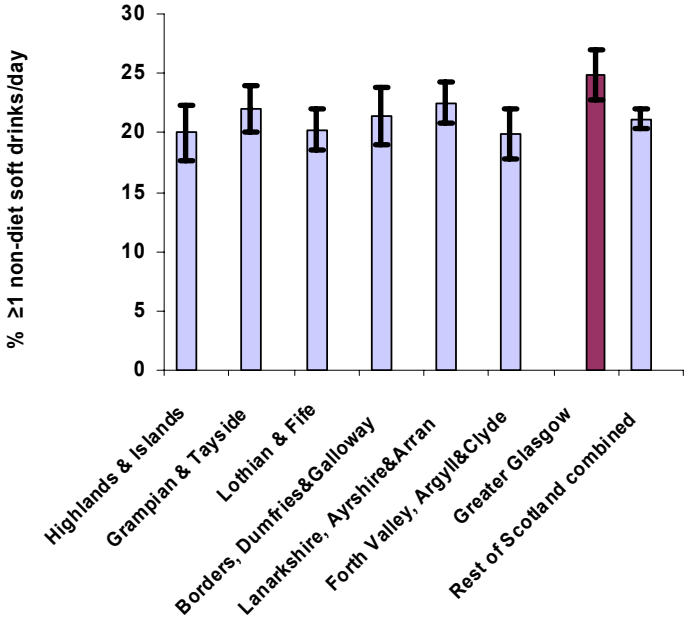
Consumption levels of non-diet soft drinks once a day or more were analysed. Data were available from all three surveys.

### 3.4.1 Regional comparisons

For men, consumption of non-diet soft drinks once a day or more was not significantly different in Greater Glasgow compared with any other region group, or with the rest of Scotland combined (Figure 3.7a). Among women, the proportion was highest in Greater Glasgow, significantly so compared with Highland and Islands, Lothian and Fife, and Forth Valley and Argyll & Clyde as well as with the whole country outwith Greater Glasgow (Figure 3.7b).

*Figures 3.7a and b: Percentages consuming non-diet soft drinks once a day or more by region for men (top) and women (bottom)*




3.4.2 Greater Glasgow vs the Rest of Scotland comparisons

The proportion of men consuming non-diet soft drinks once a day or more was neither significantly different in Greater Glasgow to that of the rest of the country overall nor in any of the sub-groups (Table 3.7). Among women, the proportion was significantly higher in Greater Glasgow overall and for those in the most deprived area quintile, those in social class III, the economically inactive and those with no qualification.

*Table 3.7: Percentages (with 95% confidence intervals) consuming non-diet soft drinks once a day or more for Greater Glasgow and the rest of Scotland by sex, age, Carstairs area deprivation, social class, education and economic activity based on Scottish Health Survey 2003 data*

| | | Men | | Women | |
|---|---|---|---|---|---|
| | | Glasgow n=1603 (15%) | Rest of Scotland n=9444 (85%) | Glasgow n=2187 (16%) | Rest of Scotland n=11843 (84%) |
| Age | 16-24 | 62 (55, 70) | 59 (56, 63) | 44 (37, 51) | 40 (37, 43) |
| | 25-34 | 41 (35, 47) | 40 (37, 42) | 31 (26, 35) | 27 (25, 29) |
| | 35-44 | 23 (18, 28) | 27 (25, 29) | 20 (16, 24) | 17 (16, 19) |
| | 45-54 | 24 (19, 30) | 21 (19, 24) | 18 (14, 23) | 14 (12, 15) |
| | 55-64 | 22 (17, 27) | 20 (18, 22) | 17 (13, 21) | 13 (11, 14) |
| | 65-74 | 17 (11, 23) | 17 (15, 20) | 19 (13, 24) | 16 (14, 18) |
| | 75 and over | 15 (4, 27) | 17 (12, 22) | 10 (3, 17) | 17 (13, 21) |
| Carstairs quintile | Least deprived | 23 (17, 29) | 28 (26, 30) | 12 (8, 16) | 16 (14, 18) |
| | 2 | 32 (22, 42) | 30 (28, 33) | 28 (20, 36) | 19 (17, 21) |
| | 3 | 27 (19, 35) | 32 (29, 34) | 22 (16, 29) | 22 (20, 23) |
| | 4 | 35 (28, 42) | 36 (33, 38) | 18 (13, 23) | 25 (23, 27) |
| | Most deprived | 38 (35, 42) | 36 (33, 39) | 32 (29, 35) | 26 (23, 28) |
| Social class | I | 23 (14, 32) | 23 (19, 27) | 8 (2, 13) | 13 (10, 16) |
| | II | 28 (23, 34) | 26 (24, 28) | 18 (14, 22) | 17 (16,19) |
| | III | 34 (30, 38) | 33 (32, 35) | 27 (24, 31) | 22 (21, 23) |
| | IV | 37 (30, 45) | 36 (33, 38) | 28 (23, 34) | 24 (22, 26) |
| | V | 27 (18, 36) | 39 (34, 44) | 27 (20, 33) | 26 (23, 30) |
| | Unknown | 48 (37, 60) | 40 (33, 47) | 39 (29, 48) | 29 (24, 35) |
| Economic activity status | Employed | 31 (28, 35) | 31 (30, 33) | 20 (17, 23) | 20 (19, 21) |
| | Unemployed | 44 (35, 52) | 41 (37, 46) | 41 (28, 55) | 30 (24, 36) |
| | Retired | 18 (13, 23) | 17 (15, 20) | 17 (13, 21) | 15 (13, 17) |
| | Economically inactive | 39 (34, 45) | 39 (36, 42) | 32 (29, 36) | 25 (23, 26) |
| | Unknown | - | 47 (11, 83) | 42 (0, 93) | 8 (0, 18) |
| Education | No qualification | 35 (31, 39) | 30 (29, 32) | 28 (25, 31) | 22 (21, 23) |
| | Below degree level | 39 (34, 43) | 38 (36, 40) | 27 (24, 31) | 24 (23, 25) |
| | Degree level or above | 17 (12, 22) | 18 (16, 20) | 9 (5, 13) | 10 (9, 12) |
| | Unknown | 71 (32,100) | 50 (20, 81) | 11 (0, 31) | 8 (0, 19) |
| Total | | 33 (30, 36) | 32 (31, 33) | 25 (23, 27) | 21 (20, 22) |

3.4.3 Role of socio-economic factors

The proportion of men consuming non-diet soft drinks once a day or more was not significantly different for Greater Glasgow, West Central Scotland or Glasgow City compared with the rest of the country as a whole (Tables 3.8a, b and c). Among women, the higher proportions in Greater Glasgow, West Central Scotland and Glasgow City were all explained by socio-economic factors (Tables 3.8a, b and c).

*Table 3.8a: Effect of Greater Glasgow residence compared with the rest of Scotland on consumption of non-diet soft drinks once a day or more*

| | Men | | Women | |
|---|---|---|---|---|
| | OR | 95% CI | OR | 95% CI |
| Unadjusted | 1.08 | 0.93, 1.26 | 1.26 | 1.06, 1.50 |
| Age and year adjusted | 1.07 | 0.91, 1.26 | 1.26 | 1.05, 1.51 |
| Age, year and socio-economic adjusted | 0.93 | 0.79, 1.09 | 1.01 | 0.84, 1.20 |

*Table 3.8b: Effect of West Central Scotland residence compared with the rest of Scotland on consumption non-diet soft drinks once a day or more*

| | Men | | Women | |
|---|---|---|---|---|
| | OR | 95% CI | OR | 95% CI |
| Unadjusted | 1.16 | 1.04, 1.28 | 1.14 | 1.01, 1.29 |
| Age and year adjusted | 1.21 | 1.08, 1.35 | 1.16 | 1.03, 1.31 |
| Age, year and socio-economic adjusted | 1.07 | 0.95, 1.19 | 0.90 | 0.80, 1.02 |

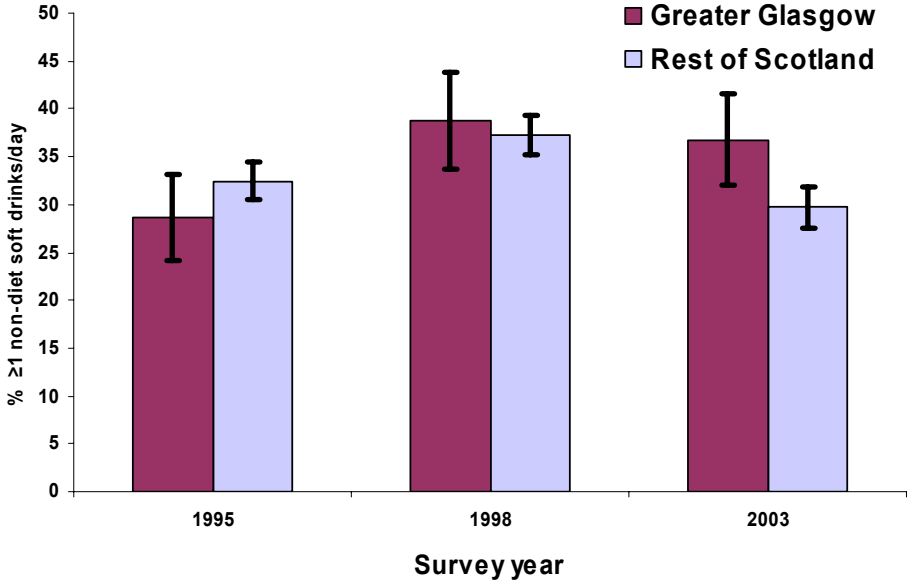
*Table 3.8c: Effect of Glasgow City residence compared with the rest of Scotland on current consumption of non-diet soft drinks once a day or more*

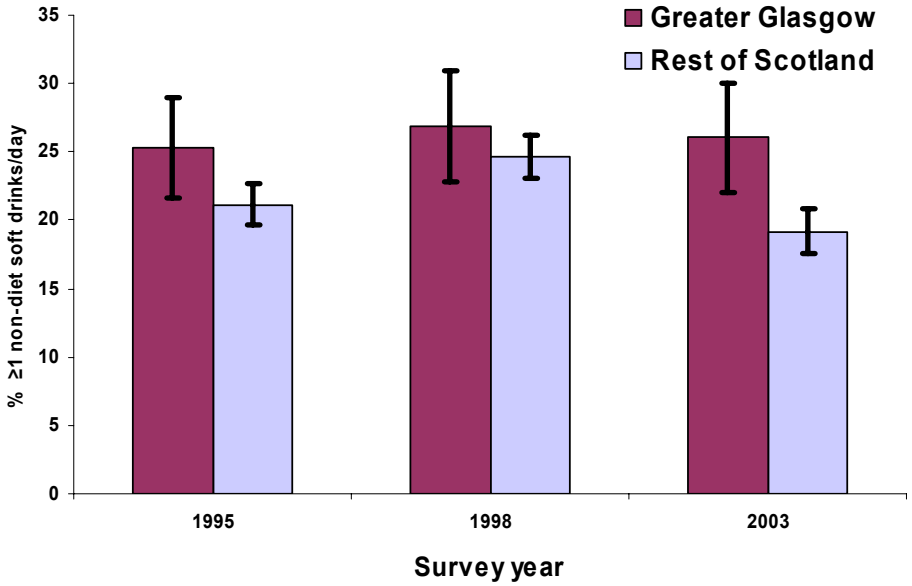
| | Men | | Women | |
|---|---|---|---|---|
| | OR | 95% CI | OR | 95% CI |
| Unadjusted | 1.18 | 0.96, 1.44 | 1.51 | 1.23, 1.85 |
| Age and year adjusted | 1.18 | 0.96, 1.44 | 1.51 | 1.23, 1.85 |
| Age, year and socio-economic adjusted | 0.92 | 0.74, 1.13 | 1.08 | 0.86, 1.36 |

3.4.4 Trends in consumption of non-diet soft drinks once a day or more for Greater Glasgow and the Rest of Scotland over time

Proportions consuming non-diet soft drinks once a day or more varied over the period covered by the surveys. Among men, the figures for Greater Glasgow rose sharply in 1998 from 1995 levels, falling only slightly in 2003; for the rest of the country a smaller rise occurred between 1995 and 1998, with a significant drop in 2003 (Figure 3.8a). The difference in proportions in 2003 had significantly changed from that recorded in 1995 ($p$=0.040). For women, proportions were similar for all three survey years among those in Greater Glasgow, whereas for the rest of Scotland they fell again in 2003 having increased between 1995 and 1998. In 2003 the figure for Greater Glasgow was significantly higher than that for the rest of the country (Figure 3.8b). The differences in proportions in 1998 and 2003 were not significantly different to that in 1995 ($p$=0.373 and 0.979, respectively).

*Figure 3.8a & b: Trends in consumption of non-diet soft drinks once a day or more for Greater Glasgow and the rest of Scotland over time for ages 16-64 years only, men (top) and women (bottom)*



3.4.5 Comparisons of the most deprived and less deprived areas of Greater Glasgow

Within Greater Glasgow, the proportion consuming non-diet soft drinks once a day or more was significantly higher in the most deprived areas [38% (95% CI: 35% to 42%) for men and 32% (95% CI: 29% to 35%) for women] compared with the other areas [28% (95% CI: 24% to 32%) for men and 18% (95% CI: 15% to 21%) for women], mirroring the trend by deprivation for the rest of the nation overall (Table 3.7). For a detailed breakdown of comparisons by sex, age, Carstairs area deprivation, social class, education and economic activity, see Appendix A3.4.

## 3.5 Fruit and vegetable consumption

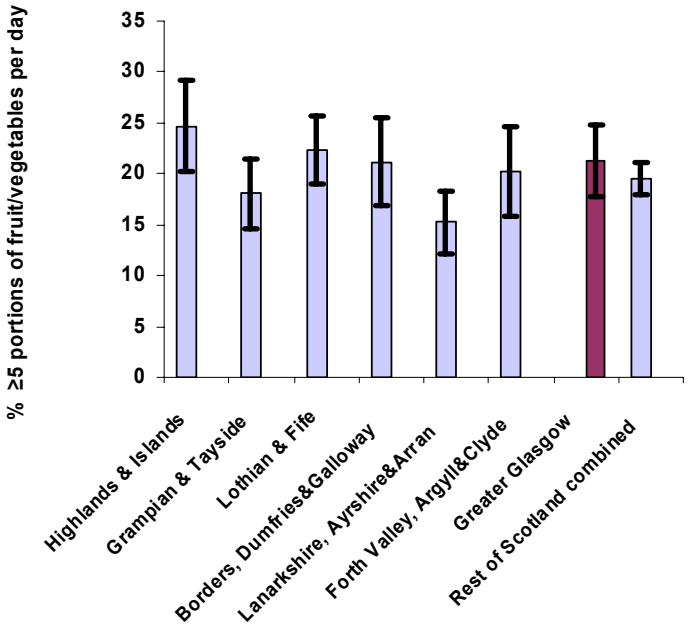
The recommended intake of fruit and vegetables is at least five portions every day. Respondents were asked about the total number of portions (one portion=80g) of vegetables (fresh, frozen or canned); vegetables in composites (e.g. vegetable curry); salads; pulses; fruit (fresh, frozen or canned); dried fruit; and fruit in composites (e.g. apple pie) consumed in the 24 hours preceding the interview (44). Respondents were classified according to whether or not they ate five or more portions of fruit and vegetables per day; these data were available from the 2003 survey only; comparable data were not available for the other survey years.

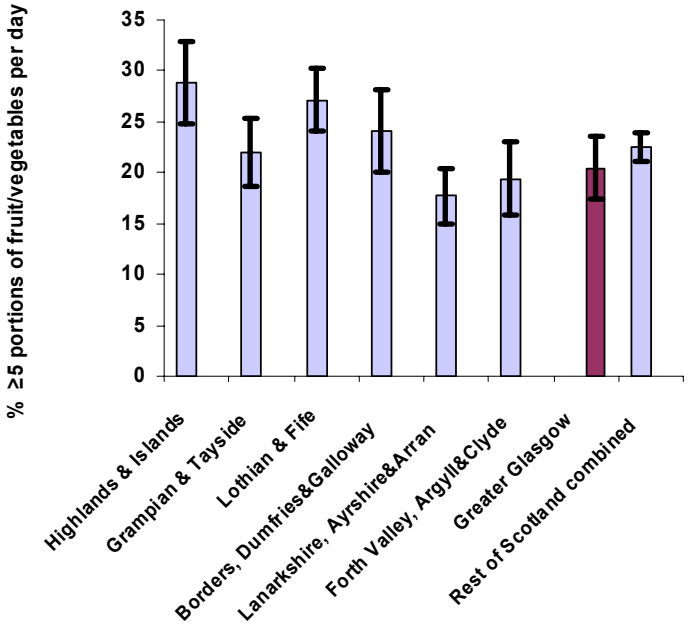
### 3.5.1 Regional comparisons

The proportion of men in Greater Glasgow who were eating five or more portions of fruit and vegetables per day was the third highest after Highland and Islands, and Lothian and Fife (Figure 3.9a). However, there were few significant differences between the regions overall; in addition, the figure for Greater Glasgow was not significantly different from that for the rest of Scotland combined.

The proportion of women in Greater Glasgow consuming five or more portions of fruit and vegetables per day was the third lowest after Lanarkshire, Ayrshire & Arran, and Forth Valley, Argyll & Clyde (Figure 3.9b). The Greater Glasgow proportion was significantly lower than those for Highland and Islands, and Lothian and Fife, but was not significantly different from that for the rest of the country.

*Figures 3.9a and b: Percentages consuming five or more portions of fruit and vegetables per day by region for men (top) and women (bottom)*




3.5.2 Greater Glasgow vs the Rest of Scotland comparisons

At sub-group level, the only significant difference in proportions consuming five or more portions of fruit and vegetables per day between Greater Glasgow and the Rest of Scotland was for men in the least deprived quintile: the proportion was higher for men in Greater Glasgow (Table 3.9).

*Table 3.9: Percentages (with 95% confidence intervals) consuming five or more portions of fruit and vegetables per day for Greater Glasgow and the rest of Scotland by sex, age, Carstairs area deprivation, social class, education and economic activity based on Scottish Health Survey 2003 data*

| | | Men | | Women | |
|---|---|---|---|---|---|
| | | Glasgow n=553 (15%) | Rest of Scotland n=3037 (85%) | Glasgow n=707 (16%) | Rest of Scotland n=3819 (84%) |
| Age | 16-24 | 16 (7, 25) | 17 (12, 23) | 15 (6, 23) | 18 (13, 23) |
| | 25-34 | 27 (17, 37) | 16 (12, 20) | 25 (17, 34) | 24 (20, 28) |
| | 35-44 | 24 (16, 32) | 19 (15, 22) | 20 (14, 27) | 21 (18, 24) |
| | 45-54 | 26 (16, 36) | 22 (18, 26) | 27 (19, 35) | 27 (23, 30) |
| | 55-64 | 21 (13, 30) | 25 (21, 29) | 25 (16, 33) | 28 (24, 31) |
| | 65-74 | 10 (4, 17) | 20 (16, 24) | 18 (10, 25) | 18 (14, 21) |
| | 75 and over | 19 (7, 30) | 16 (11, 20) | 11 (4, 18) | 20 (16, 24) |
| Carstairs quintile | Least deprived | 35 (27, 44) | 23 (20, 26) | 29 (21, 36) | 28 (25, 31) |
| | 2 | 30 (16, 44) | 24 (20, 27) | 23 (12, 34) | 28 (25, 32) |
| | 3 | 20 (9, 31) | 19 (16, 22) | 27 (16, 38) | 21 (18, 24) |
| | 4 | 21 (12, 30) | 16 (12, 19) | 22 (14, 31) | 18 (15, 20) |
| | Most deprived | 13 (9, 17) | 15 (11, 19) | 15 (11, 19) | 16 (12, 19) |
| Social class | I | 29 (10, 47) | 31 (23, 39) | 45 (28, 61) | 41 (33, 48) |
| | II | 34 (25, 43) | 24 (20, 27) | 30 (22, 39) | 31 (27, 34) |
| | III | 18 (13, 23) | 19 (17, 21) | 18 (14, 22) | 20 (18, 22) |
| | IV | 20 (11, 28) | 15 (12, 19) | 17 (10, 24) | 18 (15, 22) |
| | V | 13 (3, 23) | 13 (7, 18) | 11 (4, 18) | 16 (11, 21) |
| | Unknown | 12 (0, 24) | 21 (12, 30) | 11 (1, 22) | 13 (6, 21) |
| Economic activity status | Employed | 24 (19, 29) | 20 (18, 22) | 25 (20, 30) | 25 (23, 27) |
| | Unemployed | 16 (3, 29) | 18 (11, 25) | 25 (9, 42) | 22 (13, 30) |
| | Retired | 17 (10, 23) | 19 (16, 22) | 16 (11, 21) | 20 (17, 22) |
| | Economically inactive | 18 (11, 26) | 20 (16, 25) | 16 (11, 21) | 21 (18, 24) |
| | Unknown | 24 (0, 69) | - | - | - |
| Education | No qualification | 8 (5, 12) | 13 (11, 15) | 13 (9, 16) | 16 (14, 18) |
| | Below degree level | 23 (17, 29) | 18 (16, 21) | 20 (15, 25) | 21 (19, 23) |
| | Degree level or above | 38 (29, 47) | 31 (28, 35) | 37 (29, 46) | 36 (33, 40) |
| | Unknown | - | - | - | - |
| Total | | 21 (18, 25) | 20 (18, 21) | 20 (17, 24) | 23 (21, 24) |

3.5.3 Role of socio-economic factors

Compared with men living in the Rest of Scotland, those in Greater Glasgow did not have a significantly different likelihood of consuming five or more portions of fruit and vegetables per day, before adjustment for socio-economic factors (Table 3.10a). However, on adjustment, it was revealed that men in Greater Glasgow were actually more likely to consume five or more portions. In other words, given the poorer socio-economic profile in Greater Glasgow than the rest of the country, comparing like with like, men in Greater Glasgow were more likely to consume five or more portions of fruit and vegetables per day. Results were non significant for all analyses of men in West Central Scotland (Table 3.10b) and in Glasgow City (Table 3.10c).

Among women, those in Greater Glasgow and Glasgow City were not significantly different in their likelihood of eating five or more portions of fruit and vegetables per day; adjustment by socio-economic circumstances did not alter the findings (Tables 3.10a and c). Although women in West Central Scotland were significantly less likely to eat five or more portions of fruit and vegetables per day, this difference disappeared following adjustment by socio-economic factors (Table 3.10b).

*Table 3.10a: Effect of Greater Glasgow residence compared with the rest of Scotland on consumption of five or more portions of fruit and vegetables per day*

| | Men | | Women | |
|---|---|---|---|---|
| | OR | 95% CI | OR | 95% CI |
| Unadjusted | 1.12 | 0.85, 1.48 | 0.88 | 0.70, 1.11 |
| Age adjusted | 1.15 | 0.87, 1.52 | 0.89 | 0.71, 1.12 |
| Age and socio-economic adjusted | 1.54 | 1.20, 1.98 | 1.09 | 0.86, 1.38 |

*Table 3.10b: Effect of West Central Scotland residence compared with the rest of Scotland on consumption of five or more portions of fruit and vegetables per day*

| | Men | | Women | |
|---|---|---|---|---|
| | OR | 95% CI | OR | 95% CI |
| Unadjusted | 0.85 | 0.68, 1.08 | 0.71 | 0.59, 0.86 |
| Age adjusted | 0.85 | 0.68, 1.08 | 0.72 | 0.59, 0.87 |
| Age and socio-economic adjusted | 1.06 | 0.84, 1.34 | 0.89 | 0.74, 1.08 |

*Table 3.10c: Effect of Glasgow City residence compared with the rest of Scotland on consumption of five or more portions of fruit and vegetables per day*

| | Men | | Women | |
|---|---|---|---|---|
| | OR | 95% CI | OR | 95% CI |
| Unadjusted | 0.79 | 0.56, 1.10 | 0.81 | 0.63, 1.04 |
| Age adjusted | 0.81 | 0.57, 1.14 | 0.83 | 0.64, 1.08 |
| Age and socio-economic adjusted | 1.32 | 0.94, 1.85 | 1.25 | 0.95, 1.65 |

### 3.5.5 Comparisons of the most deprived and less deprived areas of Greater Glasgow

The proportion consuming five or more portions of fruit and vegetables per day was significantly lower in the most deprived areas in Greater Glasgow [13% (95% CI: 9% to 17%) for men and 15% (95% CI: 11% to 19%) for women] than in more affluent areas in Greater Glasgow [28% (95% CI: 23% to 33%) for men and 26% (95% CI: 21% to 30%) for women], reflecting the deprivation trend for the rest of the nation combined (Table 3.9). For a detailed breakdown of comparisons by sex, age, Carstairs area deprivation, social class, education and economic activity, see Appendix A3.5.

## 3.6 Green vegetable consumption

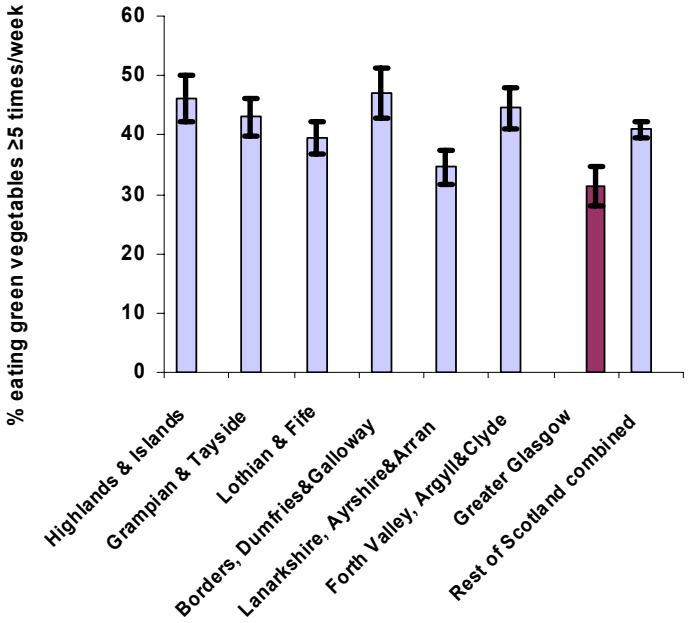
An important element of a healthy diet is green vegetable consumption which impacts on risk of developing coronary heart disease and some cancers (colorectal, gastric) (35, 46). Respondents were asked how often they usually ate cooked green vegetables, such as peas, broccoli, cabbage, spinach, cauliflower and green beans (47); they were classified according to whether or not they said they ate five or more portions of cooked green vegetables per week. The analyses were based on data from 1995 and 1998 health surveys only since 2003 data were not available in a comparable form.

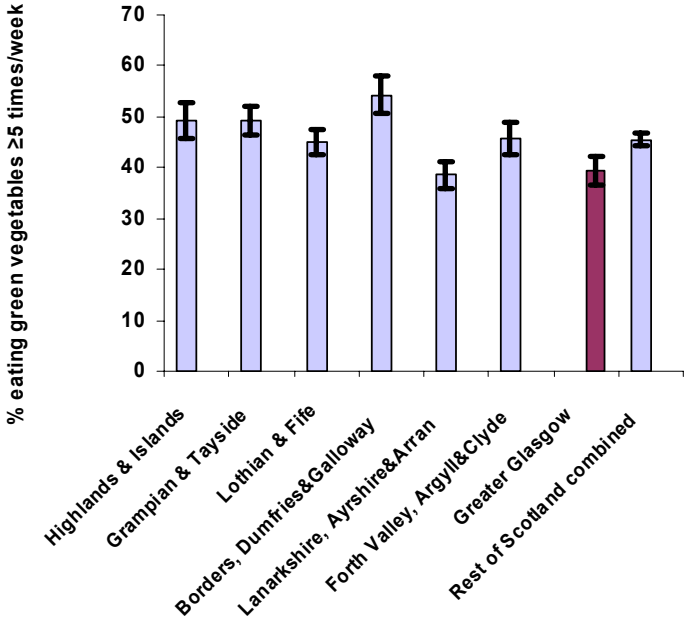
### 3.6.1 Regional comparisons

A statistically significantly lower proportion of men living in the Greater Glasgow Health Board region consumed green vegetables at least five times per week compared with those in all the individual region groups, with the exception of Lanarkshire, Ayrshire & Arran (Figures 3.10a). The figure for Greater Glasgow compared with the rest of the country combined was also significantly lower.

As for men, women living in Greater Glasgow had significantly lower recorded consumption levels of green vegetables at least five times per week compared with those in all the individual region groups with the exception of Lanarkshire, Ayrshire & Arran (Figures 3.10b). Again, there was a significant difference between Greater Glasgow and the rest of Scotland.

*Figures 3.10a and b: Percentages consuming at least five portions of green vegetables per week for men (top) and women (bottom)*




3.6.2 Greater Glasgow vs the Rest of Scotland comparisons

For both men and women, levels of consumption of five or more portions of cooked green vegetables per week were significantly lower in Greater Glasgow than in the rest of Scotland combined (Table 3.11). This was the case for a number of sub-groups as follows. Among men: the 25-34 year olds and the 45-64 year olds; those in social classes II and III; the retired and economically inactive; and those in all educational qualification categories; among women: the 35-44 year olds and 55-64 year olds; those living in areas in the second least deprived Carstairs quintile; the retired and economically inactive and those with no qualifications.

*Table 3.11: Percentages (with 95% confidence intervals) consuming five or more portions of cooked green vegetables per week for Greater Glasgow and the rest of Scotland by sex, age, Carstairs area deprivation, social class, education and economic activity based on Scottish Health Survey 1995 and 1998 data*

| | | Men | | Women | |
|---|---|---|---|---|---|
| | | Glasgow n=1053 (14%) | Rest of Scotland n=6408 (86%) | Glasgow n=8025 (16%) | Rest of Scotland n=1484 (84%) |
| Age | 16-24 | 23 (15, 32) | 27 (23, 30) | 37 (29, 45) | 35 (32, 39) |
| | 25-34 | 25 (19, 31) | 34 (31, 37) | 31 (26, 37) | 38 (35, 40) |
| | 35-44 | 32 (25, 39) | 41 (38, 44) | 35 (29, 41) | 46 (43, 48) |
| | 45-54 | 36 (28, 44) | 51 (47, 54) | 52 (45, 59) | 52 (49, 55) |
| | 55-64 | 40 (32, 48) | 52 (49, 55) | 46 (39, 53) | 57 (54, 59) |
| | 65-74 | 40 (29, 52) | 51 (47, 56) | 41 (32, 50) | 50 (46, 54) |
| Carstairs quintile | Least deprived | 43 (35, 51) | 48 (45, 51) | 49 (42, 56) | 53 (50, 55) |
| | 2 | 30 (18, 42) | 44 (41, 47) | 29 (19, 39) | 49 (46, 52) |
| | 3 | 32 (22, 42) | 40 (37, 43) | 39 (30, 48) | 45 (42, 47) |
| | 4 | 34 (25, 43) | 38 (35, 41) | 44 (36, 52) | 41 (38, 44) |
| | Most deprived | 26 (22, 30) | 32 (28, 35) | 36 (33, 40) | 37 (34, 41) |
| Social class | I | 48 (36, 60) | 50 (45, 55) | 52 (40, 65) | 53 (48, 58) |
| | II | 32 (25, 38) | 49 (46, 52) | 44 (38, 50) | 51 (49, 54) |
| | III | 32 (27, 37) | 39 (37, 41) | 39 (35, 43) | 44 (42, 46) |
| | IV | 24 (16, 31) | 34 (30, 37) | 33 (26, 40) | 38 (35, 41) |
| | V | 23 (11, 34) | 29 (24, 35) | 30 (21, 39) | 37 (33, 42) |
| | Unknown | 28 (14, 41) | 31 (24, 38) | 39 (28, 50) | 48 (41, 55) |
| Economic activity status | Employed | 35 (30, 39) | 41 (40, 43) | 40 (36, 45) | 45 (43, 46) |
| | Unemployed | 24 (16, 32) | 28 (23, 33) | 42 (25, 60) | 30 (23, 38) |
| | Retired | 36 (26, 46) | 52 (48, 57) | 39 (30, 47) | 51 (48, 55) |
| | Economically inactive | 25 (19, 31) | 39 (36, 43) | 38 (34, 43) | 46 (44, 49) |
| | Unknown | 47 (0, 100) | 24 (0, 55) | 27 (0, 69) | 39 (9, 70) |
| Education | No qualification | 30 (25, 35) | 40 (38, 43) | 36 (32, 40) | 45 (43, 47) |
| | Below degree level | 30 (25, 36) | 38 (37, 40) | 39 (35, 44) | 44 (42, 46) |
| | Degree level or above | 37 (29, 45) | 51 (47, 54) | 53 (45, 62) | 54 (51, 58) |
| | Unknown | 34 (0, 83) | 45 (13, 76) | 50 (6, 94) | 51 (16, 86) |
| Total | | 31 (28, 35) | 41 (40, 42) | 40 (37, 42) | 45 (44, 47) |

3.6.3 Role of socio-economic factors

Univariably, compared with the rest of Scotland, men living in Greater Glasgow were 36% less likely to consume green vegetables five times or more per week, and women 23% less likely (Table 3.12a). Results are statistically significant. Accounting for just age and survey year did not alter the findings in either men or women. Further accounting for socio-economic circumstances explained the association between Greater Glasgow residence and consumption of green vegetables in women but not in men, for whom the association remained. Lower prevalence of eating green vegetables five times or more per week in West Central Scotland relative to the rest of the country remained for men and women after adjustment by age, survey year and socio-economic factors (Table 3.12b). For Glasgow City comparisons, significantly lower consumption of green vegetables was explained by socio-economic circumstances (Table 3.12c).

*Table 3.12a: Effect of Greater Glasgow residence compared with the rest of Scotland on consumption of at least five portions of green vegetables per week*

| | Men | | Women | |
|---|---|---|---|---|
| | OR | 95% CI | OR | 95% CI |
| Unadjusted | 0.64 | 0.54, 0.76 | 0.76 | 0.66, 0.88 |
| Age and year adjusted | 0.62 | 0.52, 0.74 | 0.76 | 0.65, 0.89 |
| Age, year and socio-economic adjusted | 0.73 | 0.60, 0.87 | 0.87 | 0.74, 1.02 |

*Table 3.12b: Effect of West Central Scotland residence compared with the rest of Scotland on consumption of at least five portions of green vegetables per week*

| | Men | | Women | |
|---|---|---|---|---|
| | OR | 95% CI | OR | 95% CI |
| Unadjusted | 0.67 | 0.59, 0.76 | 0.68 | 0.61, 0.76 |
| Age and year adjusted | 0.64 | 0.57, 0.73 | 0.67 | 0.60, 0.74 |
| Age, year and socio-economic adjusted | 0.76 | 0.66, 0.86 | 0.75 | 0.67, 0.84 |

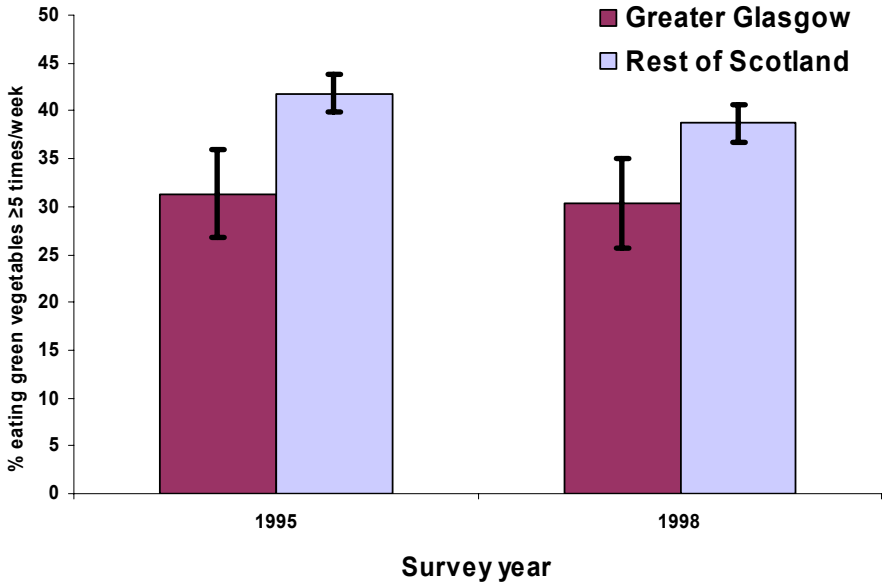
*Table 3.12c: Effect of Glasgow City residence compared with the rest of Scotland on consumption of at least five portions of green vegetables per week*

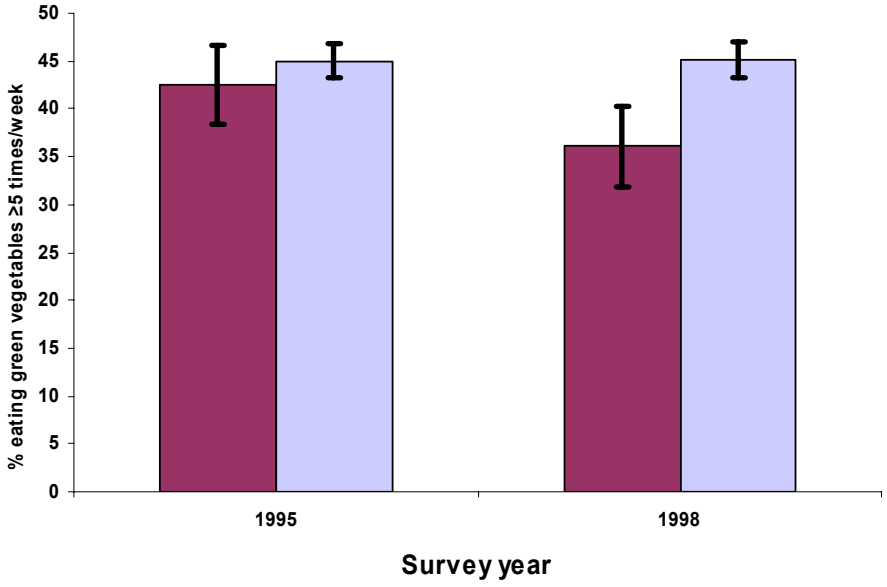
| | Men | | Women | |
|---|---|---|---|---|
| | OR | 95% CI | OR | 95% CI |
| Unadjusted | 0.60 | 0.49, 0.74 | 0.73 | 0.61, 0.88 |
| Age and year adjusted | 0.59 | 0.48, 0.73 | 0.74 | 0.61, 0.89 |
| Age, year and socio-economic adjusted | 0.84 | 0.67, 1.06 | 0.98 | 0.80, 1.21 |

3.6.4 Trends in consumption of at least five portions of green vegetables per week for Greater Glasgow and the Rest of Scotland over time

Between 1995 and 1998, levels of consumption among men of five or more portions of green vegetables per week remained stable in Greater Glasgow but decreased in the rest of Scotland (Figure 3.11a). The differential in men between Greater Glasgow and the rest of the country in 1998 was not significantly different than in 1995 ($p$=0.488). Among women, the figure had dropped in Greater Glasgow but was steady for the rest of the country (Figure 3.11b); the change in the difference from 1995 to 1998 was significantly different ($p$=0.049).

*Figure 3.11a & b: Trends in consumption of at least five portions of green vegetables per week for Greater Glasgow and the rest of Scotland over time for ages 16-64 years only, men (top) and women (bottom)*



3.6.5 Comparisons of the most deprived and less deprived areas of Greater Glasgow

The proportion consuming at least five portions of green vegetables per week was significantly lower in the most deprived areas in Greater Glasgow among men [26% (95% CI: 22% to 30%)] than in other areas in Greater Glasgow [36% (95% CI: 33% to 40%)] but not for women [37% (95% CI: 32% to 41%) for deprived areas compared with 43% (95% CI: 39% to 47%) for non-deprived areas], in line with figures for the rest of the country as a whole (Table 3.11). For a detailed breakdown of comparisons by sex, age, Carstairs area deprivation, social class, education and economic activity, see Appendix A3.6.

CHAPTER 3 SUMMARY

Salt

- The proportions of the population adding salt at the table in Greater Glasgow were significantly higher than for the rest of Scotland combined.

- A significantly higher proportion of men aged 55-64 years, those in social class III, and those with no educational qualifications in Greater Glasgow added salt to food at the table compared with those living elsewhere. Among women, significantly higher proportions in Greater Glasgow were found in those aged 35-74 years, those in the second most and most deprived quintile, those in social classes III and V, those employed, retired or economically inactive, with no or below degree level qualifications.

- On adjustment for socio-economic factors, there remained an excess of salt consumption in Greater Glasgow, West Central Scotland and Glasgow City among women but not men.

- Addition of salt at the table has fallen steadily since 1995, with a significant narrowing of differences between Greater Glasgow and the rest of Scotland among women.

- The prevalence of usually adding salt to food at the table was significantly higher in the most deprived areas compared with the more affluent areas in Greater Glasgow.

Meat

- Consumption of meat twice or more a week was lower among men and women in Greater Glasgow than in the rest of the country.

- Compared with the rest of Scotland, men in Greater Glasgow aged 16-24 and 35-44, those living in the most deprived areas, the employed, and those with no qualifications, and women aged 35-44, those living in the most deprived areas, the employed and those with qualifications below degree level were less likely to consume meat at least twice a week.

- On adjustment for socio-economic factors, men in Greater Glasgow and Glasgow City remained significantly lower in their likelihood of consumption of meat twice a week or more than those living elsewhere. Adjustment by socio-economic circumstances resulted in a non-significant association among women. Individuals in West Central Scotland did not have significantly lower prevalence of meat consumption.

- Levels of meat consumption twice a week or more fell between 1995 and 2003, especially among those living in Greater Glasgow. The difference between Greater Glasgow and the rest of the country had increased from 1995 to 2003 among women.

- A higher proportion of men and women living in the most deprived areas in Greater Glasgow consumed meat twice or more a week than those in more affluent areas in the region.

Meat products

- Overall, there were no significant differences in the consumption of two or more portions of meat products per week between respondents in Greater Glasgow and those in the rest of Scotland combined.

- Proportions were significantly higher in Greater Glasgow than in the rest of the country for men aged 55-74 years, those in the Carstairs quintiles 2 and 3, those in social class IV and those with no qualifications, and women in social class IV only.

- The higher levels of consumption of meat products twice or more per week among those living in West Central Scotland and men in Glasgow City were explained by socio-economic factors.

- The proportion consuming meat products at least two times per week fell between 1995 and 2003 for men living outside Greater Glasgow and all women in Scotland.

- Consumption of at least two portions of meat products per week was significantly higher among those living in the most deprived areas than those living in other areas in Greater Glasgow.

Non-diet soft drinks

- Consumption of non-diet soft drinks once a day or more was significantly higher in Greater Glasgow compared with the rest of Scotland among women, but not men overall.

- At the sub-group level, the proportion consuming non-diet soft drinks once a day or more was significantly higher in Greater Glasgow for women in the most deprived area quintile, those in social class III, the economically inactive and those with no qualification.

- Higher proportions among women in Greater Glasgow, West Central Scotland and Glasgow City were all explained by socio-economic factors.

- Proportions consuming non-diet soft drinks once a day or more rose between 1995 and 1998 (most dramatically among men in Greater Glasgow) then fell again in 2003 (especially among respondents resident elsewhere in Scotland).

- The proportions consuming non-diet soft drinks once a day or more were significantly higher in the most deprived areas compared with more affluent areas within Greater Glasgow.

Fruit and vegetables

- There were no overall significant differences between Greater Glasgow and the Rest of Scotland in the consumption of five or more portions of fruit and vegetables per day.

- The proportion consuming five or more portions of fruit and vegetables per day was significantly higher in Greater Glasgow than in the Rest of Scotland for men in the least deprived quintile.

- On adjustment for socio-economic factors, however, it was found that men in Greater Glasgow were more likely to consume five or more portions than those living elsewhere.

- Proportions eating five or more portions of fruit and vegetables per day were significantly lower in the most deprived areas compared with other areas in Greater Glasgow.

Green vegetables

- Overall, significantly lower proportions of men and women living in Greater Glasgow consumed green vegetables at least five times per week compared with those in the rest of the country.

- The sub-groups for which those in Greater Glasgow had lower prevalence of consuming green vegetables at least five times per week than those in the rest of Scotland were men: 25-34 year olds; 45-64 year olds; those in social classes II and III; the retired; the economically inactive; and those in all educational qualification categories; women: 35-44 year olds; 55-64 year olds; those living in areas in the second least deprived Carstairs quintile; the retired; the economically inactive and those with no qualifications.

- Adjustment by socio-economic factors explained the association between Greater Glasgow residence and low consumption of green vegetables in women but not in men. Associations in Glasgow City men and women were explained by socio-economic circumstances, but lower levels of consumption in West Central Scotland remained after adjustment for men and women.

- Among men, levels of consumption of five or more portions of green vegetables per week remained static between 1995 and 1998 for Greater Glasgow but had dropped in the rest of the country. In women, there was a decrease in Greater Glasgow but not in the rest of Scotland.

- Consumption of at least five portions of green vegetables per week was significantly lower in the most deprived areas compared with more affluent areas in Greater Glasgow among men but not women.

# CHAPTER 4: PHYSICAL ACTIVITY

Physical activity is defined as "bodily movement produced by skeletal muscles that results in the expenditure of energy" (48). Regular participation in physical activity not only increases general fitness, it can reduce the risk of illness and premature death from conditions such as cardiovascular disease, obesity, and diabetes (49). Recognising the importance of addressing Scotland's high prevalence of inactivity, the Scottish Executive has adopted all of the recommendations of its Physical Activity Task Force (50). The main recommendation is that adults should undertake a minimum of 30 minutes of at least moderate activity on most days of the week.

The questionnaire in the Scottish Health Surveys 1998 and 2003 (51) followed a standard adult physical activity module (52), allowing identification of those meeting the Scottish Executive's recommended levels of participation in 30 minutes or more of moderate to vigorous accumulated physical activity on at least five days a week (53). Physical activity included forms of activity such as walking, housework or a physically demanding job as well as participation in sports and structured exercise.

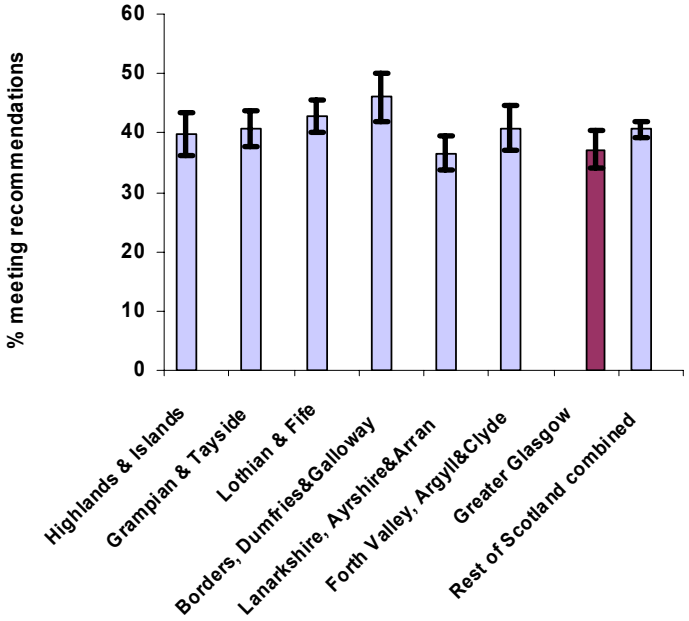
This chapter focuses on moderate and vigorous intensity activities.

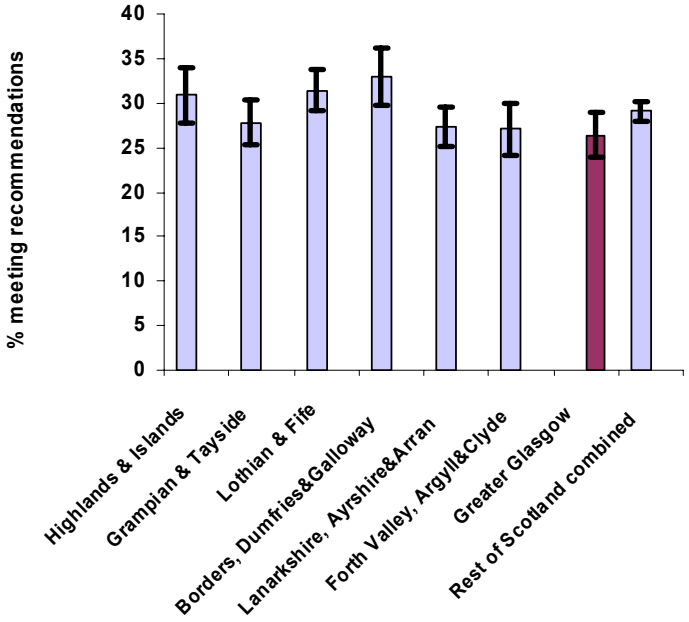
## 4.1 Regional comparisons

Among men, Greater Glasgow was the second lowest of the region groups in terms of the proportion meeting recommended physical activity levels (37%; 95% CI: 34% to 40%), with Lanarkshire and Ayrshire & Arran having the lowest proportion (Figure 4.1a). There were no significant differences between figures for Greater Glasgow and those for the rest of Scotland (41%; 95% CI: 39% to 42%).

In women, although the proportion of women meeting recommended physical activity levels was lowest in Greater Glasgow (26%; 95% CI: 24% to 29%) and significantly lower than that of the Borders and Dumfries & Galloway, this was not significantly different than the rest of Scotland (29%; 95% CI: 28% to 30%) (Figure 4.1b).

*Figures 4.1a and b: Percentages meeting physical activity recommendations by region for men (top) and women (bottom)*




4.2 Greater Glasgow vs the Rest of Scotland comparisons

Within sub-groups, proportions of respondents meeting physical activity recommendations tended to be lower in those living in Greater Glasgow compared with those living in the rest of Scotland overall (Table 4.1). For men, differences were significant for those aged 55-64 years, those in the second least deprived area quintiles and in social class V. Among men and women with no qualifications, those living in Glasgow were significantly less likely to meet recommendations.

*Table 4.1: Percentages (with 95% confidence intervals) meeting physical activity recommendations for Greater Glasgow and the rest of Scotland by sex, age, Carstairs area deprivation, social class, education and economic activity based on Scottish Health Survey 1995, 1998 and 2003 data*

| | | Men | | Women | |
|---|---|---|---|---|---|
| | | Greater Glasgow n= 1,097 (15%) | Rest of Scotland n= 6,431 (85%) | Greater Glasgow n=1,451 (15%) | Rest of Scotland n=8,170 (85%) |
| Age | 16-24 | 57 (48, 66) | 56 (52, 61) | 33 (25, 41) | 35 (31, 39) |
| | 25-34 | 49 (42, 57) | 52 (49, 56) | 35 (29,41) | 35 (32, 38) |
| | 35-44 | 41 (34, 47) | 43 (40, 46) | 31 (26, 37) | 37 (35, 40) |
| | 45-54 | 29 (22, 36) | 38 (34, 41) | 31 (25, 38) | 31 (29, 34) |
| | 55-64 | 20 (14, 26) | 32 (29, 35) | 18 (13, 23) | 24 (22, 27) |
| | 65-74 | 15 (9, 21) | 19 (16, 21) | 9 (5, 13) | 12 (10, 14) |
| | 75 and over | 14 (4, 25) | 13 (9, 17) | 4 (0, 8) | 6 ( 4, 9) |
| Carstairs quintile | Least deprived | 41 (34, 48) | 40 (37, 43) | 30 (24, 36) | 31 (28, 33) |
| | 2 | 26 (16, 35) | 41 (38, 44) | 33 (23, 43) | 29 (27, 32) |
| | 3 | 42 (31, 54) | 41 (38, 44) | 33 (23, 42) | 30 (28, 32) |
| | 4 | 41 (33, 50) | 42 (38, 45) | 25 (18, 31) | 27 (24, 29) |
| | Most deprived | 35 (31, 40) | 39 (36, 43) | 23 (20, 26) | 29 (26, 32) |
| Social class | I | 39 (26, 52) | 38 (33, 44) | 35 (23, 47) | 35 (30, 40) |
| | II | 35 (29, 41) | 36 (34, 39) | 33 (27, 38) | 33 (31, 36) |
| | III | 38 (33, 43) | 41 (39, 43) | 26 (22, 30) | 28 (26, 29) |
| | IV | 37 (29, 46) | 44 (40, 47) | 20 (15, 26) | 28 (25, 30) |
| | V | 25 (15, 35) | 45 (39, 51) | 22 (15, 28) | 25 (20, 29) |
| | Unknown | 47 (33, 61) | 42 (34, 49) | 19 (9, 29) | 24 (17, 30) |
| Economic activity status | Employed | 46 (42, 51) | 48 (46, 50) | 37 (33, 41) | 38 (36, 39) |
| | Unemployed | 39 (28, 49) | 45 (39, 52) | 35 (21, 50) | 33 (26, 41) |
| | Retired | 17 (12, 22) | 20 (17, 22) | 9 (6, 12) | 12 (11, 14) |
| | Economically inactive | 27 (20, 34) | 27 (23, 31) | 21 (16, 25) | 24 (22, 26) |
| | Unknown | 36 (0, 76) | 25 (3, 48) | 64 (25, 100) | 26 (5, 47) |
| Education | No qualification | 23 (19, 27) | 33 (31, 35) | 15 (12, 18) | 21 (19, 22) |
| | Below degree level | 49 (44, 55) | 47 (45, 50) | 34 (30, 38) | 33 (31, 35) |
| | Degree level or above | 40 (33, 47) | 38 (34, 41) | 37 (30, 43) | 37 (34, 40) |
| | Unknown | 49 (0, 99) | 28 (7, 49) | 25 (0, 66) | 40 (19, 62) |
| Total | | 37 (34, 40) | 41 (39, 42) | 26 (24, 29) | 29 (28, 30) |

4.3 Role of socio-economic factors

Formally, Greater Glasgow residents were no different in their likelihood of meeting physical activity recommendations than those living in the rest of the country (Table 4.2a). Adjustment for age, survey year and socio-economic factors did not alter conclusions. Male and female respondents in West Central Scotland, however, were 17% (95% CI: 6% to 26%) and 13% (95% CI: 3% to 23%) less likely to meet recommendations, but this was attenuated by adjustment for social factors (Table 4.2b). For women only, living in Glasgow City was associated with being less likely to meet physical activity recommendations but this became non-significant on full adjustment.

*Table 4.2a: Effect of Greater Glasgow residence compared with the rest of Scotland on meeting physical activity recommendations*

| | Men | | Women | |
|---|---|---|---|---|
| | OR | 95% CI | OR | 95% CI |
| Unadjusted | 0.87 | 0.73, 1.03 | 0.87 | 0.75, 1.02 |
| Age and survey year adjusted | 0.82 | 0.70, 0.97 | 0.86 | 0.74, 1.00 |
| Age, survey year and socio-economic adjusted | 0.96 | 0.79, 1.17 | 0.96 | 0.81, 1.14 |

*Table 4.2b: Effect of West Central Scotland residence compared with the rest of Scotland on meeting physical activity recommendations*

| | Men | | Women | |
|---|---|---|---|---|
| | OR | 95% CI | OR | 95% CI |
| Unadjusted | 0.83 | 0.74, 0.94 | 0.87 | 0.77, 0.97 |
| Age and survey year adjusted | 0.83 | 0.74, 0.94 | 0.87 | 0.77, 0.97 |
| Age, survey year and socio-economic adjusted | 0.88 | 0.77, 1.01 | 0.95 | 0.47, 1.08 |

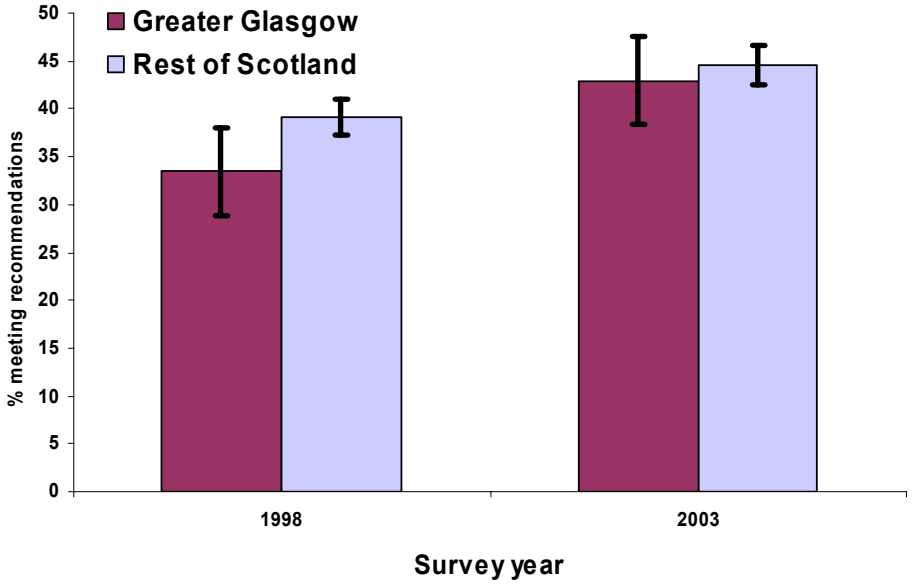
*Table 4.2c: Effect of Glasgow City residence compared with the rest of Scotland on meeting physical activity recommendations*

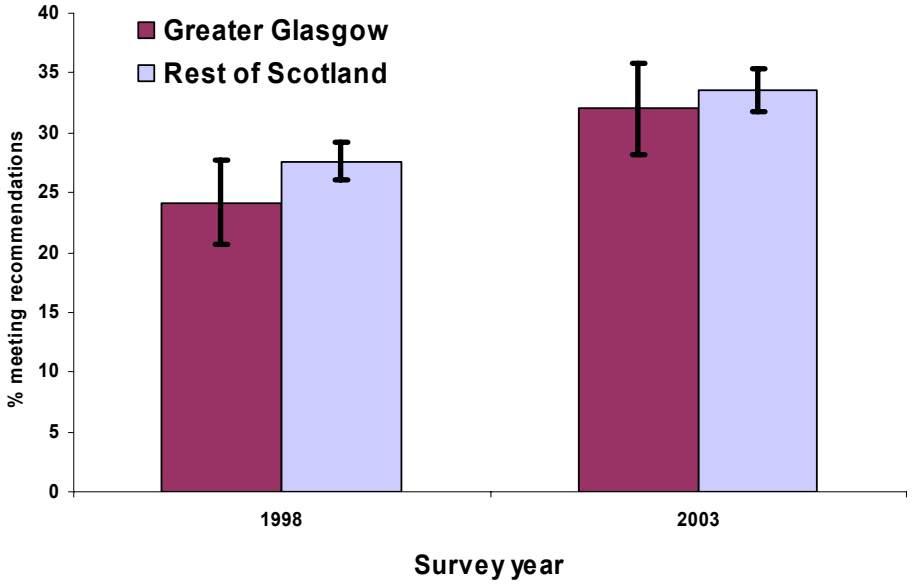
| | Men | | Women | |
|---|---|---|---|---|
| | OR | 95% CI | OR | 95% CI |
| Unadjusted | 0.87 | 0.70, 1.08 | 0.82 | 0.68, 0.98 |
| Age and survey year adjusted | 0.83 | 0.67, 1.02 | 0.82 | 0.68, 0.99 |
| Age, survey year and socio-economic adjusted | 1.01 | 0.76, 1.34 | 0.99 | 0.80, 1.23 |

4.4 Trends in percentages meeting physical activity recommendations for Greater Glasgow and the Rest of Scotland over time

The proportion of individuals aged 16-74 years meeting physical activity recommendations increased from 1998 to 2003 among men and women, for both Greater Glasgow and the rest of Scotland. For both men and women the increases were significant for Greater Glasgow as well as the rest of the country. Differences between Greater Glasgow and the rest of Scotland appeared to lessen over time, though the formal tests for changes in the differences yielded non-significant results ($p$=0.482 for men and $p$=0.456 for women).

*Figure 4.2a & b: Trends in percentages meeting physical activity recommendations for Greater Glasgow and the rest of Scotland over time for ages 16-64 years only, men (top) and women (bottom)*




4.5 Comparisons of the most deprived and less deprived areas of Greater Glasgow

Within Greater Glasgow, for 1998 and 2003 surveys combined, proportions meeting physical activity recommendations were not significantly different in the most deprived areas [35% (95% CI: 31% to 40%) for men and 23% (95% CI: 20% to 26%) for women] compared with the rest of the areas [39% (95% CI: 34% to 43%) for men and 30% (95% CI: 26% to 33%) for women]. For a detailed breakdown of comparisons by sex, age, Carstairs area deprivation, social class, education and economic activity, see Appendix A4.

CHAPTER 4 SUMMARY

- Although lower, the proportions of adults in Greater Glasgow meeting recommended physical activity levels were not significantly different to those living elsewhere in Scotland.

- For men in the second least deprived area quintiles and in social class V as well as men and women with no qualifications, significantly fewer of those living in Greater Glasgow were likely to meet physical activity recommendations.

- Men and women in West Central Scotland, and women in Glasgow City were significantly less likely to meet recommendations, but this was explained by social factors.

- The proportion of men and women meeting recommendations has significantly increased since 1998, especially for Greater Glasgow.

- Proportions meeting physical activity recommendations were significantly lower in the most deprived areas compared with the rest of the areas in Greater Glasgow.

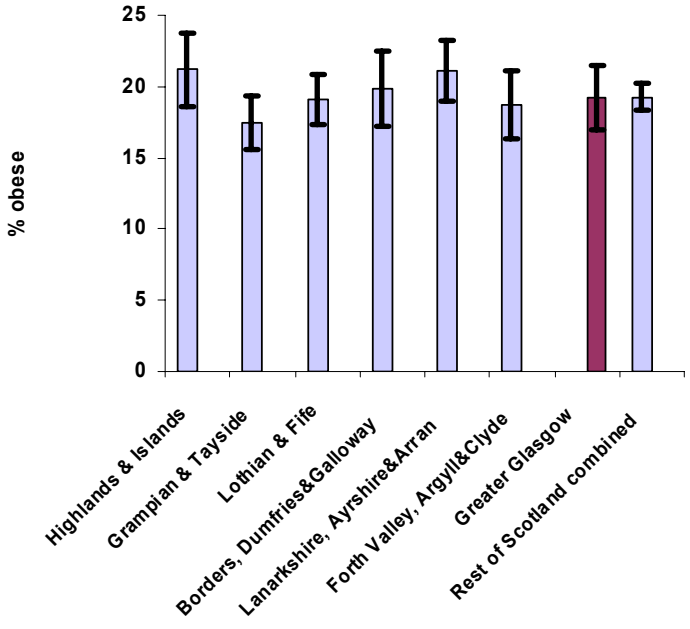
# CHAPTER 5: OBESITY

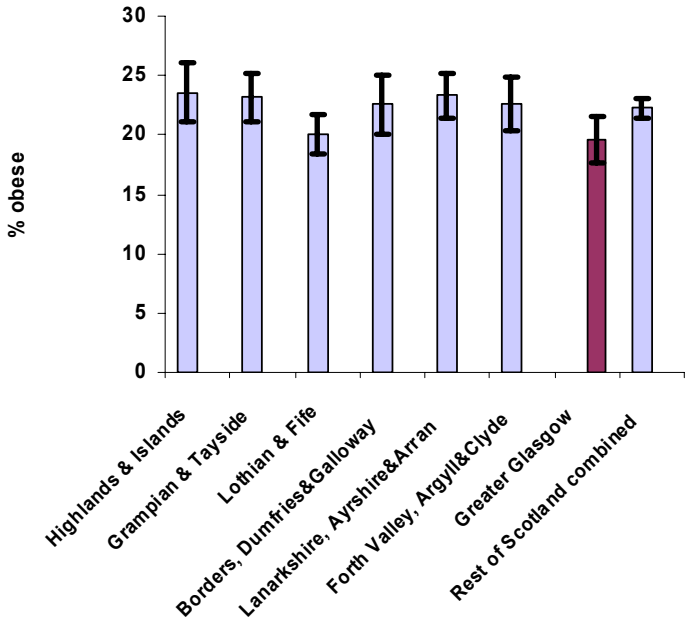
Prevalence of overweight and obesity in the UK are among the highest in Europe (54). Within the UK, obesity is higher in Scotland than elsewhere (55). The relationship between obesity and socio-economic status is complex – obesity is associated with low socio-economic groups among women but this is inconsistent for men (56). Obesity is defined in terms of a body mass index of 30kg/$m^2$ or more.

## 5.1 Regional comparisons

In relation to the other region groups, Greater Glasgow men were not unusual in the prevalence of obesity (19%; 95% CI: 17% to 21% compared with 19%; 95% CI: 18% to 20% for the rest of Scotland overall) (Figure 5.1a). Among women, obesity prevalence in those living in Greater Glasgow (20%; 95% CI: 18% to 21%) was the lowest of all the regions but differences compared with the rest of Scotland overall were not significant (Figure 5.1b).

*Figures 5.1a and b: Obesity by region for men (top) and women (bottom)*




5.2 Greater Glasgow vs the Rest of Scotland comparisons

With the exception of women educated to below degree level, obesity prevalence was not significantly different in respondents living in Greater Glasgow compared with those living elsewhere in Scotland for any sub-groups (Table 5.1).

*Table 5.1: Percentages (with 95% confidence intervals)obese for Greater Glasgow and the rest of Scotland by sex, age, Carstairs area deprivation, social class, education and economic activity based on Scottish Health Survey 1995, 1998 and 2003 data*

| | | Men | | Women | |
|---|---|---|---|---|---|
| | | Greater Glasgow n= 1,438 (14%) | Rest of Scotland n= 8,701 (86%) | Greater Glasgow n=1,907 (14%) | Rest of Scotland n=10,582 (85%) |
| Age | 16-24 | 7 (3, 12) | 6 (4, 8) | 8 (5, 12) | 10 (8, 12) |
| | 25-34 | 13 (9, 17) | 16 (14, 18) | 14 (11, 18) | 18 (16, 20) |
| | 35-44 | 21 (16, 26) | 21 (19, 23) | 20 (16, 25) | 21 (19, 32) |
| | 45-54 | 30 (24, 36) | 25 (23, 28) | 20 (16, 25) | 25 (23, 28) |
| | 55-64 | 20 (15, 25) | 27 (25, 29) | 29 (23, 34) | 30 (28, 33) |
| | 65-74 | 30 (22, 38) | 26 (23, 30) | 34 (27, 42) | 35 (32, 38) |
| | 75 and over | 29 (12, 46) | 16 (11, 21) | 21 (10, 33) | 28 (22, 34) |
| Carstairs quintile | Least deprived | 18 (13, 23) | 17 (15, 19) | 13 (9, 17) | 18 (16, 19) |
| | 2 | 20 (11, 28) | 18 (16, 20) | 14 (8, 21) | 20 (18, 22) |
| | 3 | 19 (12, 26) | 21 (19, 23) | 23 (17, 30) | 25 (23, 27) |
| | 4 | 17 (11, 23) | 18 (16, 20) | 19 (14, 25) | 24 (22, 26) |
| | Most deprived | 20 (17, 23) | 23 (20, 26) | 22 (19, 25) | 26 (24, 29) |
| Social class | I | 6 (1, 11) | 13 (10, 15) | 19 (11, 27) | 16 (12, 19) |
| | II | 18 (13, 22) | 19 (17, 21) | 13 (10, 17) | 17 (15, 18) |
| | III | 23 (19, 26) | 20 (19, 22) | 20 (17, 23) | 24 (23, 25) |
| | IV | 19 (13, 25) | 20 (18, 23) | 23 (17, 28) | 25 (23, 28) |
| | V | 29 (19, 39) | 20 (16, 24) | 32 (24, 39) | 31 (27, 35) |
| | Unknown | 10 (2, 18) | 12 (8, 16) | 13 (7, 20) | 20 (16, 25) |
| Economic activity status | Employed | 20 (17, 23) | 19 (18, 20) | 16 (14, 19) | 19 (18, 21) |
| | Unemployed | 11 (5, 16) | 15 (12, 18) | 9 (1, 16) | 16 (11, 20) |
| | Retired | 25 (19, 32) | 26 (23, 29) | 30 (24, 36) | 35 (32, 38) |
| | Economically inactive | 18 (13, 22) | 18 (16, 21) | 21 (18, 25) | 23 (21, 25) |
| | Unknown | 14 (0, 41) | 37 (0, 81) | - | 9 (0, 26) |
| Education | No qualification | 23 (19, 27) | 26 (24, 27) | 26 (23, 29) | 30 (28, 32) |
| | Below degree level | 17 (14, 21) | 16 (15, 17) | 14 (12, 17) | 18 (17, 20) |
| | Degree level or above | 15 (10, 20) | 16 (13, 18) | 16 (11, 20) | 16 (14, 18) |
| | Unknown | - | 30 (0, 62) | 17 (0, 48) | 29 (1, 56) |
| Total | | 19 (17, 21) | 19 (18, 20) | 20 (18, 21) | 22 (21, 23) |

5.3 Role of socio-economic factors

Respondents in Greater Glasgow were no different in their likelihood of being obese compared with those living in the rest of Scotland (Table 5.2a). Among women, adjustment for socio-economic factors revealed that those in Greater Glasgow were significantly less likely to be obese. Findings for West Central Scotland and Glasgow City were consistent with those of Greater Glasgow (Tables 5.2b and 5.2c).

*Table 5.2a: Effect of Greater Glasgow residence compared with the rest of Scotland on obesity*

| | Men | | Women | |
|---|---|---|---|---|
| | OR | 95% CI | OR | 95% CI |
| Unadjusted | 0.97 | 0.81, 1.15 | 0.85 | 0.72, 1.01 |
| Age and survey year adjusted | 0.97 | 0.82, 1.16 | 0.87 | 0.74, 1.02 |
| Age, survey year and socio-economic adjusted | 0.96 | 0.78, 1.17 | 0.74 | 0.62, 0.87 |

*Table 5.2b: Effect of West Central Scotland residence compared with the rest of Scotland on obesity*

| | Men | | Women | |
|---|---|---|---|---|
| | OR | 95% CI | OR | 95% CI |
| Unadjusted | 1.07 | 0.95, 1.21 | 1.01 | 0.90, 1.13 |
| Age and survey year adjusted | 1.05 | 0.93, 1.18 | 1.01 | 0.90, 1.13 |
| Age, survey year and socio-economic adjusted | 0.99 | 0.87, 1.12 | 0.88 | 0.78, 0.98 |

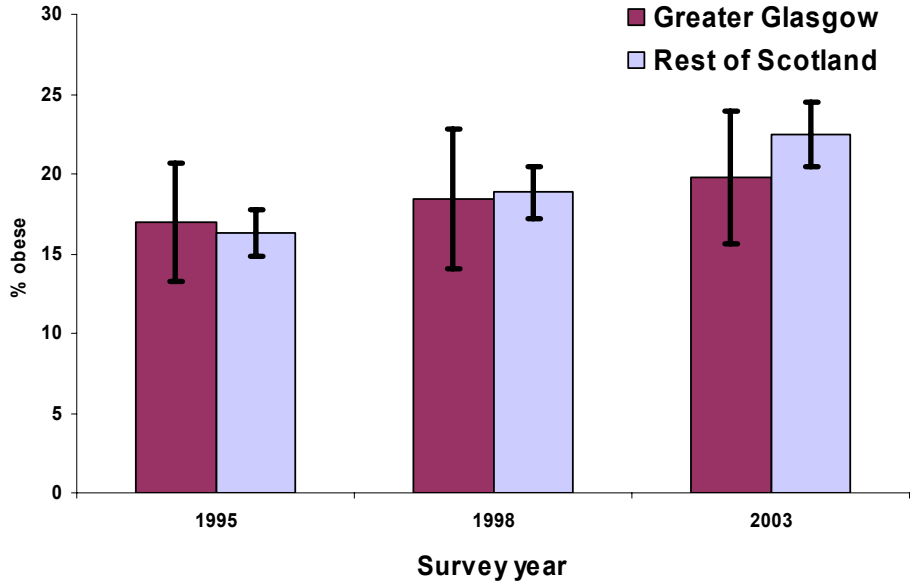
*Table 5.2c: Effect of Glasgow City residence compared with the rest of Scotland on obesity*

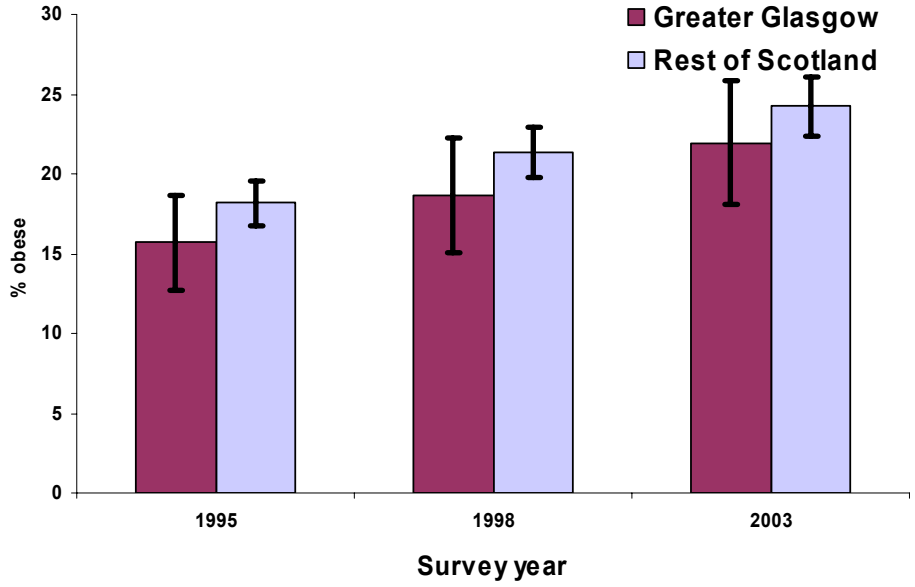
| | Men | | Women | |
|---|---|---|---|---|
| | OR | 95% CI | OR | 95% CI |
| Unadjusted | 0.95 | 0.77, 1.16 | 0.95 | 0.78, 1.17 |
| Age and survey year adjusted | 0.96 | 0.79, 1.17 | 0.98 | 0.80, 1.19 |
| Age, survey year and socio-economic adjusted | 0.87 | 0.68, 1.11 | 0.76 | 0.61, 0.94 |

5.4 Trends in obesity for Greater Glasgow and the Rest of Scotland over time

In line with national and international trends (54), obesity levels in both Greater Glasgow and the rest of Scotland have steadily increased since 1995. Increases among women have been more marked than those for men, with men in Greater Glasgow having a markedly slower rate of increase. This has resulted in an increasing difference between levels among men in Greater Glasgow and those in the rest of the country, though from the formal testing this is not statistically significant ($p$=0.867 and 0.803). The difference between women in Greater Glasgow and those in the rest of Scotland has been constant over time (p=0.522 and 0.514).

*Figure 5.2a & b: Trends in obesity for Greater Glasgow and the rest of Scotland over time for ages 16-64 years only, men (top) and women (bottom)*




5.5 Comparisons of the most deprived and less deprived areas of Greater Glasgow

Within Greater Glasgow, 20% of men in the most deprived area were obese compared with 18% of those in other areas. For women, the percentage was 22% in the most deprived areas, significantly higher than 17% for those living in other areas. For a detailed breakdown of comparisons by sex, age, Carstairs area deprivation, social class, education and economic activity, see Appendix A5.

CHAPTER 5 SUMMARY

- Overall, obesity levels in Greater Glasgow were not significantly different to those in the rest of Scotland.

- Obesity was less prevalent among women educated to below degree level living in Greater Glasgow, compared with those living elsewhere in Scotland.

- Accounting for socio-economic factors, women in Greater Glasgow/West Central Scotland/Glasgow City were significantly less likely to be obese than those in the rest of the country.

- For both Greater Glasgow and the rest of Scotland, obesity levels have increased steadily since 1995, especially among women. The increase has been slowest among men living in Greater Glasgow.

- Within Greater Glasgow, obesity among adults living in the most deprived areas compared with those living in less deprived areas, significantly so for women.

# CHAPTER 6: CARDIOVASCULAR DISEASE

Cardiovascular disease (CVD) is one of the main components of the disease burden in the developed world. Its major elements are coronary (or ischaemic) heart disease (CHD) and stroke. CHD mortality in Scotland is among the highest in the world, and is the second highest in Western Europe (57). The Glasgow area has the highest rates in Scotland. Although rates have decreased over the last two decades (58), further improvement is still a priority for the Scottish Executive.

Individuals from more deprived socio-economic backgrounds experience higher rates of morbidity and mortality from CVD than other sections of the population (59). From work based on Scottish Health Survey and Health Survey for England data, higher rates in Scotland compared with England are not explained by the usual risk factors, including social circumstances (1). Examination of the role of socio-economic factors in elevated rates in the Glasgow area provides a useful comparison within Scotland.

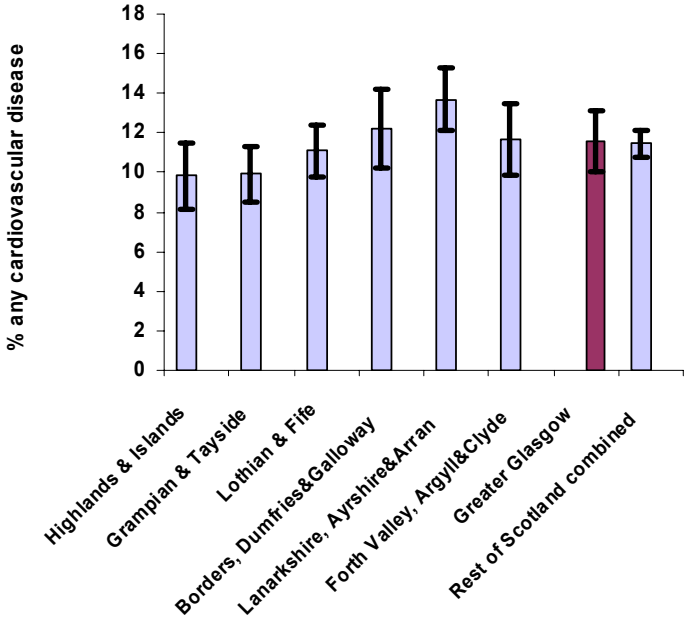
This chapter makes comparisons for any self-reported CVD conditions (60). Results for CHD alone, and stroke alone are reported briefly in the summary box at the end of the chapter.

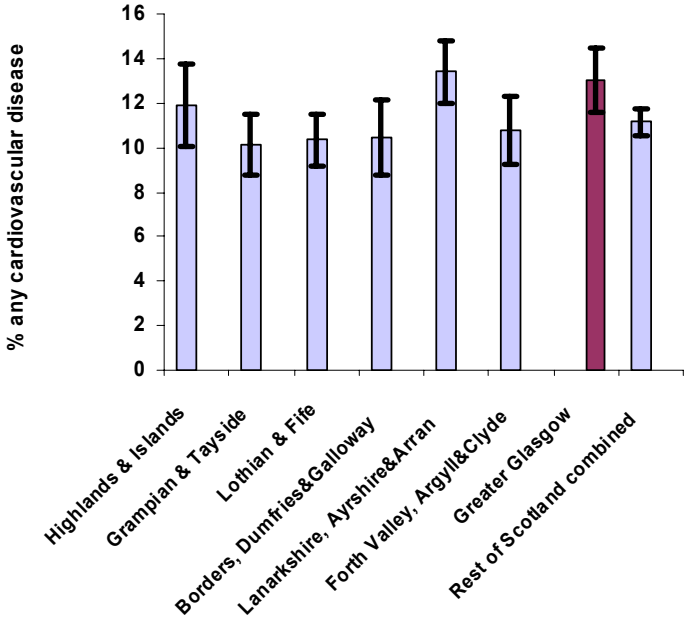
Respondents to the Scottish Health Survey were classified as having any CVD condition if they reported ever having any of the following conditions confirmed by a doctor: angina, heart attack, stroke, heart murmur, irregular heart rhythm, or 'other heart trouble' (and does not include diabetes and high blood pressure).

## 6.1 Regional comparisons

Prevalence of any cardiovascular condition was higher (although not significantly so) in male respondents in Borders, Dumfries & Galloway, Lanarkshire, Ayrshire & Arran, and Forth Valley and Argyll & Clyde, compared with those in Greater Glasgow (12%; 95% CI: 10% to 13%), (Figures 6.1a). The figure for the rest of Scotland (11%; 95% CI: 10% to 12%) was not significantly different. Women living in Greater Glasgow (13%; 95% CI: 12% to 15%) had significantly higher cardiovascular condition prevalence compared with those living in Grampian and Tayside, and Lothian and Fife but were not different from women living in the rest of Scotland as a whole (prevalence of 11%; 95% CI: 11% to 12%) (Figures 6.1b).

*Figures 6.1a and b: Percentages with a doctor-diagnosed cardiovascular disease by region for men (top) and women (bottom)*




6.2 Greater Glasgow vs the Rest of Scotland comparisons

None of the sub-groups of those living in Greater Glasgow differed significantly from those elsewhere in Scotland (Table 6.1)

*Table 6.1: Percentages (with 95% confidence intervals) with a doctor-diagnosed cardiovascular condition for Greater Glasgow and the rest of Scotland by sex, age, Carstairs area deprivation, social class, education and economic activity based on Scottish Health Survey 1995, 1998 and 2003 data*

| | | Men | | Women | |
|---|---|---|---|---|---|
| | | Greater Glasgow n= 1,610 (15%) | Rest of Scotland n= 9,463 (85%) | Greater Glasgow n=2,194 (16%) | Rest of Scotland n=11,854 (84%) |
| Age | 16-24 | 1 (0, 2) | 3 (2, 4) | 4 (2, 7) | 4 (3, 5) |
| | 25-34 | 3 (1, 5) | 4 (3, 5) | 5 (3, 7) | 4 (3, 5) |
| | 35-44 | 6 (3, 8) | 6 (5, 8) | 8 (5, 11) | 7 (6, 8) |
| | 45-54 | 13 (9, 17) | 10 (9, 12) | 13 (9, 17) | 11 (9, 12) |
| | 55-64 | 26 (20, 31) | 22 (20, 25) | 24 (20, 29) | 18 (16, 20) |
| | 65-74 | 35 (28, 43) | 37 (33, 40) | 30 (24, 29) | 29 (26, 31) |
| | 75 and over | 52 (36, 67) | 44 (38, 50) | 41 (30, 52) | 36 (31, 40) |
| Carstairs quintile | Least deprived | 9 (6, 12) | 10 (9, 11) | 8 (6, 11) | 10 (9, 12) |
| | 2 | 8 (3, 12) | 11 (10,13) | 8 (4, 13) | 11 (10, 13) |
| | 3 | 8 (4, 12) | 12 (10, 13) | 13 (8, 18) | 11 (9, 12) |
| | 4 | 9 (5, 12) | 12 (10, 13) | 13 (9, 17) | 11 (10, 12) |
| | Most deprived | 15 (12, 17) | 13 (11, 15) | 15 (13, 18) | 13 (11, 15) |
| Social class | I | 7 (2, 12) | 7 (5, 9) | 6 (1, 10) | 10 (7, 12) |
| | II | 9 (6, 12) | 11 (9, 12) | 12 (9, 15) | 9 (8, 11) |
| | III | 12 (10, 15) | 13 (12, 14) | 13 (11, 15) | 11 (11, 12) |
| | IV | 16 (11, 21) | 11 (9, 12) | 14 (10, 18) | 12 (11, 14) |
| | V | 21 (13, 29) | 14 (11, 17) | 21 (15, 27) | 16 (13, 19) |
| | Unknown | 4 (1, 7) | 10 (6, 14) | 12 (6, 17) | 9 (6, 12) |
| Economic activity status | Employed | 5 (4, 7) | 6 (6, 7) | 7 (5, 8) | 6 (5, 7) |
| | Unemployed | 2 (0, 4) | 7 (4, 9) | 12 (3, 20) | 8 (5, 11) |
| | Retired | 35 (29, 42) | 37 (34, 40) | 34 (28, 39) | 28 (26, 30) |
| | Economically inactive | 20 (16, 24) | 19 (17, 21) | 14 (11, 17) | 13 (12, 14) |
| | Unknown | 5 (0, 14) | 4 (0, 10) | 10 (0, 29) | - |
| Education | No qualification | 20 (17, 23) | 19 (17, 20) | 19 (16, 21) | 17 (16, 18) |
| | Below degree level | 6 (4, 7) | 7 (6, 8) | 9 (7, 11) | 7 (7, 8) |
| | Degree level or above | 6 (4, 9) | 9 (8, 11) | 8 (5, 11) | 9 (8, 10) |
| | Unknown | 16 (0, 38) | 11 (1, 21) | 38 (9, 67) | 9 (0, 19) |
| Total | | 12 (10, 13) | 11 (11, 12) | 13 (12, 15) | 11 (11, 12) |

6.3 Role of socio-economic factors

In men, prevalence of any cardiovascular condition (confirmed by a doctor) was no different in Greater Glasgow than elsewhere in Scotland until adjustment was made for socio-economic circumstances, revealing a marginally significant lower likelihood among those living in Greater Glasgow (Table 6.2a). In other words, comparing like for like in terms of socio-economic profile, statistically a lower proportion of men in Greater Glasgow report having a CVD condition that has been confirmed by a doctor than men elsewhere in Scotland. The apparent high prevalence among women in Greater Glasgow disappeared on adjustment for socio-economic factors.

Higher rates of cardiovascular disease in West Central Scotland compared with the rest of the country were explained by socio-economic circumstances (Table 6.2b).

Significantly higher likelihood of cardiovascular disease among women in Glasgow City was explained by socio-economic factors (Table 6.2c).

*Table 6.2a: Effect of Greater Glasgow residence compared with the rest of Scotland on a doctor-diagnosed cardiovascular condition*

| | Men | | Women | |
|---|---|---|---|---|
| | OR | 95% CI | OR | 95% CI |
| Unadjusted | 1.02 | 0.85, 1.22 | 1.21 | 1.02, 1.44 |
| Age and survey year adjusted | 1.03 | 0.87, 1.22 | 1.25 | 1.06, 1.47 |
| Age, survey year and socio-economic adjusted | 0.83 | 0.70, 0.98 | 1.08 | 0.90, 1.28 |

*Table 6.2b: Effect of West Central Scotland residence compared with the rest of Scotland on a doctor-diagnosed cardiovascular condition*

| | Men | | Women | |
|---|---|---|---|---|
| | OR | 95% CI | OR | 95% CI |
| Unadjusted | 1.26 | 1.11, 1.42 | 1.26 | 1.12, 1.43 |
| Age and survey year adjusted | 1.21 | 1.07, 1.38 | 1.25 | 1.11, 1.42 |
| Age, survey year and socio-economic adjusted | 1.06 | 0.93, 1.21 | 1.11 | 0.96, 1.27 |

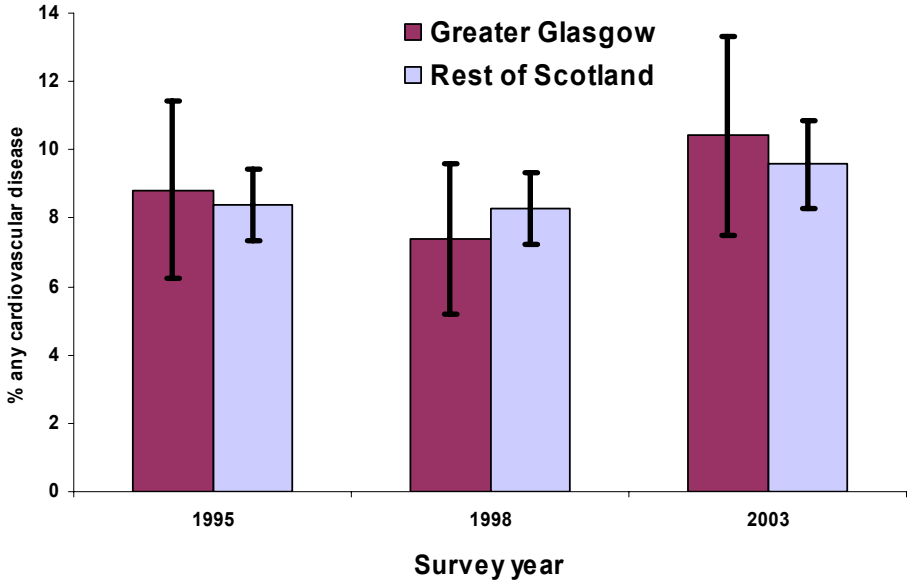
*Table 6.2c: Effect of Glasgow City residence compared with the rest of Scotland on a doctor-diagnosed cardiovascular condition*

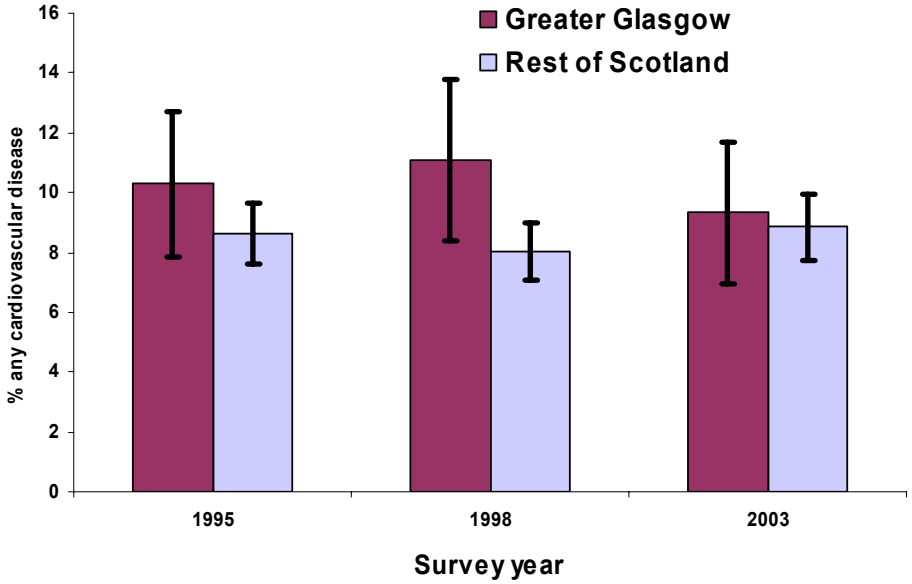
| | Men | | Women | |
|---|---|---|---|---|
| | OR | 95% CI | OR | 95% CI |
| Unadjusted | 1.16 | 0.93, 1.44 | 1.41 | 1.18, 1.69 |
| Age and survey year adjusted | 1.20 | 0.98, 1.47 | 1.46 | 1.22, 1.74 |
| Age, survey year and socio-economic adjusted | 0.91 | 0.73, 1.14 | 1.23 | 0.99, 1.52 |

## 6.4 Trends in percentages with a doctor-diagnosed cardiovascular condition for Greater Glasgow and the Rest of Scotland over time

In men there was an increase in the prevalence of any cardiovascular condition between 1998 and 2003, especially for those in Greater Glasgow (Figure 6.2a). For women, the differences in prevalence of any cardiovascular disorder between Greater Glasgow and the rest of Scotland in 1995 and 1998 had decreased by 2003 (Figure 6.2b). However, differences between Greater Glasgow and the rest of the country did not vary significantly over time (p=0.915 and 0.247 for men and p=0.479 and 0.753 for women).

*Figure 6.2a & b: Trends in percentages with a doctor-diagnosed cardiovascular condition for Greater Glasgow and the rest of Scotland over time for ages 16-64 years only, men (top) and women (bottom)*



6.5 Comparisons of the most deprived and less deprived areas of Greater Glasgow

The proportions of men and women with a cardiovascular condition were significantly higher in the most deprived areas in Greater Glasgow [15% (95% CI: 12% to 17%) and 15% (95% CI: 13% to 18%)] than in more affluent areas in Greater Glasgow [9% (95% CI: 7% to 11%) and 11% (95% CI: 9% to 12%)]. For a detailed breakdown of comparisons by sex, age, Carstairs area deprivation, social class, education and economic activity, see Appendix A6.

CHAPTER 6 SUMMARY

- From basic analyses, prevalence of a doctor-diagnosed cardiovascular condition in Greater Glasgow did not differ significantly from that in the rest of Scotland.

- In men, adjustment for socio-economic factors revealed a slightly lower likelihood of any cardiovascular condition among those living in Greater Glasgow. Conversely, among women, the higher rates in Greater Glasgow, and in Glasgow City, which were identified from formal results, disappeared on adjustment for socio-economic factors. Elevated prevalences in the West of Scotland compared with the rest of the country were also explained by socio-economic circumstances.

- Prevalence of any cardiovascular condition increased in men between 1998 and 2003, especially for those in Greater Glasgow. For women, elevated rates in Greater Glasgow compared with the rest of Scotland in 1995 and 1998 had decreased by 2003. However, none of these differences were statistically significant.

- Cardiovascular disease prevalence was significantly higher in the most deprived areas than in other areas in Greater Glasgow.

- For CHD alone, significantly higher prevalence among men and women in Greater Glasgow compared with those in the rest of Scotland was explained by socio-economic factors.

- For stroke alone, significantly higher prevalence among women in Greater Glasgow compared with those in the rest of Scotland was explained by socio-economic factors. Prevalence in men did not differ between the two areas.

# CHAPTER 7: DIABETES

As for other Western nations, diabetes is a growing problem in Scotland (61). This chapter deals with type 1 and the more common type 2 diabetes combined (61).

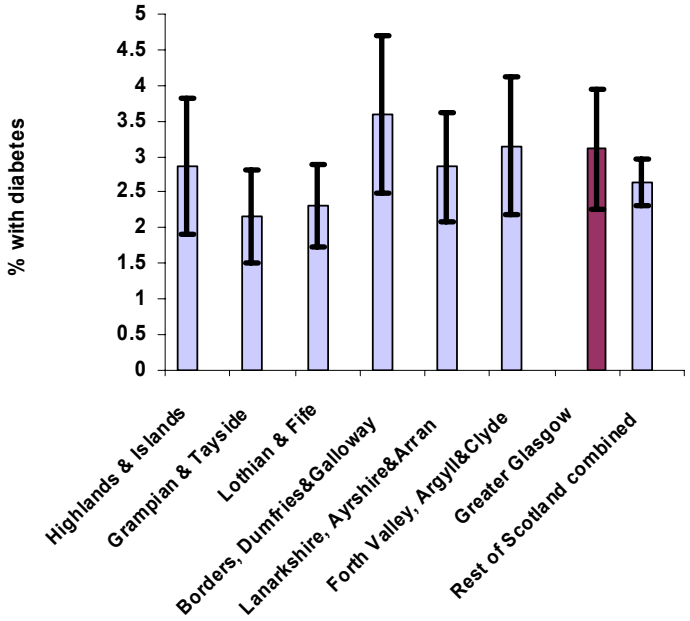
In the Scottish Health Survey, diabetes was defined as doctor-diagnosed, excluding women who had only had diabetes during pregnancy (62)

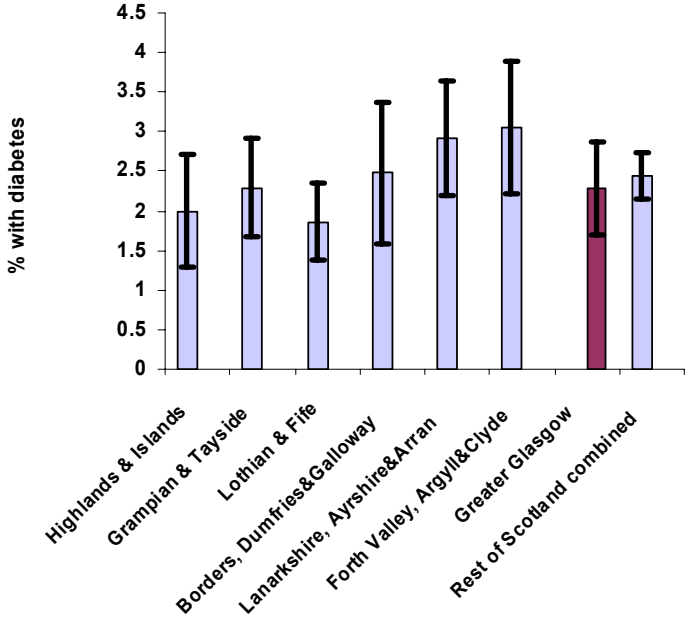
## 7.1 Regional comparisons

Among the region groups, with a prevalence of 3.1%, men in Greater Glasgow had the third highest prevalence of diabetes after Borders, Dumfries & Galloway, and Forth Valley and Argyll & Clyde (Figure 7.1a). There were no statistically significant differences between region groups or with the rest of Scotland overall (2.6%). This is not unexpected, given the relatively low prevalence and resulting wide confidence intervals.

Women in Greater Glasgow had a relatively low diabetes prevalence, with only Highland and Islands, and Lothian and Fife having smaller proportions (Figure 7.1b). However, as for men, differences were not statistically different.

*Figures 7.1a and b: Percentages with doctor-diagnosed diabetes by region for men (top) and women (bottom)*




7.2 Greater Glasgow vs the Rest of Scotland comparisons

As was the case with the overall comparisons between Greater Glasgow and the rest of Scotland, there was little difference in diabetes prevalence at sub-group level (Table 7.1). Exceptions were men in the second least deprived area quintile and women with below degree level qualifications, among whom prevalence was significantly lower in Greater Glasgow than in the rest of the country combined.

*Table 7.1: Percentages (with 95% confidence intervals) with doctor-diagnosed diabetes for Greater Glasgow and the rest of Scotland by sex, age, Carstairs area deprivation, social class, education and economic activity based on Scottish Health Survey 1995, 1998 and 2003 data*

| | | Men | | Women | |
|---|---|---|---|---|---|
| | | Greater Glasgow n= 1,610 (15%) | Rest of Scotland n= 9,464 (85%) | Greater Glasgow n=2,195 (16%) | Rest of Scotland n=11,856 (84%) |
| Age | 16-24 | 0.0 (0.0, 0.0) | 0.7 (0.1, 1.3) | 0.2 (0.0, 0.7) | 0.9 (0.3, 1.4) |
| | 25-34 | 1.3 (0.0, 2,6) | 0.5 (0.1, 0.8) | 0.3 (0.0, 0.9) | 0.6 (0.3, 0.9) |
| | 35-44 | 0.7 (0.0, 1.6) | 1.5 (1.0, 2.1) | 1.5 (0.3, 2.7) | 1.4 (0.9, 1.9) |
| | 45-54 | 3.7 (1.1, 6.2) | 2.7 (1.9, 3.6) | 0.9 (0.0, 1.8) | 1.7 (1.1, 2.3) |
| | 55-64 | 6.9 (3.9, 10.0) | 5.3 (4.2, 6.4) | 3.5 (1.8, 5.3) | 4.5 (3.5, 5.5) |
| | 65-74 | 11.3 (5.9, 16.7) | 8.8 (6.9, 10.7) | 8.5 (4.7, 12.3) | 7.8 (6.1, 9.5) |
| | 75 and over | 11.6 (1.2, 21.1) | 9.9 (6.2, 13.6) | 13.6 (6.1, 21.1) | 7.7 (5.1, 10.3) |
| Carstairs quintile | Least deprived | 2.4 (0.8, 3.9) | 2.2 (1.5, 2.9) | 0.9 (0.0, 1.7) | 1.8 (1.3, 2.3) |
| | 2 | 0.4 (0.0, 1.1) | 2.6 (1.9, 3.2) | 1.4 (0.0, 3.1) | 2.1 (1.5, 2.6) |
| | 3 | 3.8 (0.2, 7.5) | 2.9 (2.2, 3.7) | 1.9 (0.0, 3.7) | 2.4 (1.8, 3.1) |
| | 4 | 3.6 (1.0, 6.1) | 2.9 (2.2, 3.6) | 2.0 (0.4, 3.6) | 2.8 (2.1, 3.4) |
| | Most deprived | 3.5 (2.3, 4.8) | 2.6 (1.7, 3.5) | 3.1 (2.1, 4.1) | 3.5 (2.5, 4.4) |
| Social class | I | 0.6 (0.0, 1.7) | 1.1 (0.3, 2.0) | 0.6 (0.0, 1.7) | 1.7 (0.6, 2.7) |
| | II | 1.7 (0.5, 2.8) | 2.5 (1.8, 3.2) | 1.0 (0.2, 1.9) | 1.6 (1.1, 2.1) |
| | III | 4.2 (2.6, 5.8) | 2.9 (2.4, 3.4) | 2.6 (1.6, 3.6) | 2.4 (2.0, 2.9) |
| | IV | 4.3 (1.8, 6.9) | 3.0 (2.1, 3.9) | 2.8 (1.1, 4.6) | 3.7 (2.7, 4.6) |
| | V | 3.6 (0.0, 7.6) | 3.4 (1.8, 5.0) | 3.5 (1.2, 5.9) | 3.7 (2.3, 5.1) |
| | Unknown | 1.2 (0.0, 2.8) | 0.9 (0.1, 1.8) | 3.2 (0.3, 6.1) | 2.0 (0.8, 3.2) |
| Economic activity status | Employed | 1.2 (0.4, 2.0) | 1.4 (1.1, 1.7) | 0.6 (0.1, 1.1) | 1.1 (0.8, 1.3) |
| | Unemployed | 0.5 (0.0, 1.3) | 1.4 (0.5, 2.3) | 0.0 (0.0, 0.0) | 0.5 (0.0, 0.1) |
| | Retired | 10.0 (5.8, 14.2) | 8.6 (7.0, 10.2) | 9.0 (5.9, 12.0) | 7.6 (6.3, 8.9) |
| | Economically inactive | 5.5 (3.2, 7.8) | 4.6 (3.4, 5.7) | 2.2 (1.2, 3.2) | 2.7 (2.1, 3.3) |
| | Unknown | 4.5 (0.0, 13.6) | 3.3 (0.0, 9.7) | - | 7.6 (0.0, 18.0) |
| Education | No qualification | 4.8 (3.2, 6.5) | 4.6 (3.9, 5.3) | 4.1 (2.9, 5.3) | 4.3 (3.7, 4.9) |
| | Below degree level | 2.1 (1.0, 3.2) | 1.4 (1.1, 1.8) | 0.5 (0.1, 0.9) | 1.3 (1.0, 1.6) |
| | Degree level or above | 1.5 (0.3, 2.6) | 2.1 (1.4, 2.8) | 1.6 (0.3, 3.0) | 1.6 (1.0, 2.2) |
| | Unknown | 4.3 (0.0, 12.8) | 2.1 (0.0, 6.3) | 10.9 (0.0, 30.8) | 4.1 (0.0, 12.1) |
| Total | | 3.1 (2.3, 4.0) | 2.6 (2.3, 3.0) | 2.3 (1.7, 2.9) | 2.4 (2.1, 2.7) |

7.3 Role of socio-economic factors

The likelihood of having diabetes was no different in Greater Glasgow than in the rest of Scotland combined for either men or women, and this was not altered by adjustment for age, year or socio-economic factors (Table 7.2a). Results were similar for West Central Scotland and Glasgow City comparisons (Tables 7.2b and 7.2c), with the exception of a marginally significant result for women in West Central Scotland; however, this difference was explained by controlling for age and survey year alone (Table 7.2b).

*Table 7.2a: Effect of Greater Glasgow residence compared with the rest of Scotland on having doctor-diagnosed diabetes*

| | Men | | Women | |
|---|---|---|---|---|
| | OR | 95% CI | OR | 95% CI |
| Unadjusted | 1.20 | 0.85, 1.68 | 0.94 | 0.68, 1.29 |
| Age and survey year adjusted | 1.22 | 0.86, 1.74 | 0.96 | 0.70, 1.31 |
| Age, survey year and socio-economic adjusted | 1.19 | 0.81, 1.75 | 0.73 | 0.52, 1.03 |

*Table 7.2b: Effect of West Central Scotland residence compared with the rest of Scotland on having doctor-diagnosed diabetes*

| | Men | | Women | |
|---|---|---|---|---|
| | OR | 95% CI | OR | 95% CI |
| Unadjusted | 1.18 | 0.91, 1.55 | 1.27 | 1.01, 1.60 |
| Age and survey year adjusted | 1.13 | 0.85, 1.50 | 1.24 | 0.99, 1.56 |
| Age, survey year and socio-economic adjusted | 1.01 | 0.74, 1.39 | 1.01 | 0.79, 1.31 |

*Table 7.2c: Effect of Glasgow City residence compared with the rest of Scotland on having doctor-diagnosed diabetes*

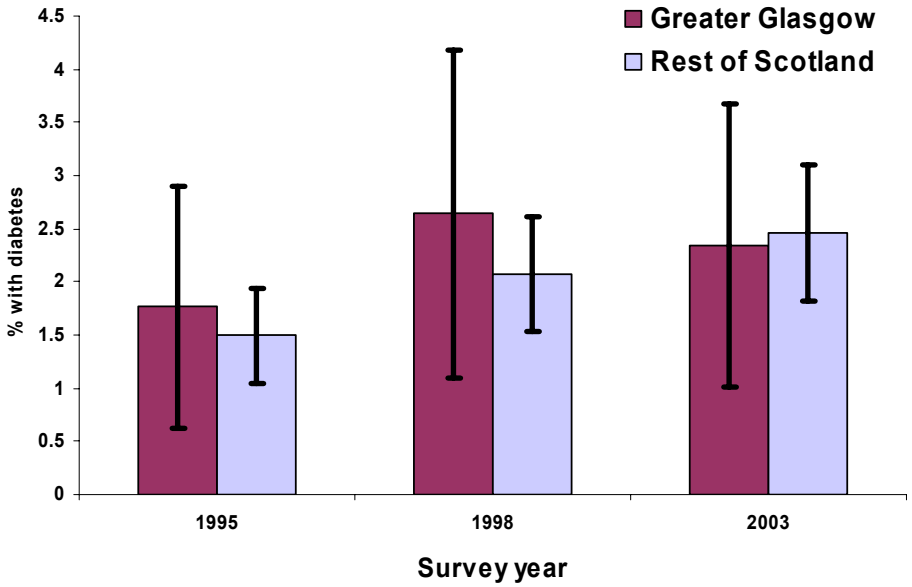
| | Men | | Women | |
|---|---|---|---|---|
| | OR | 95% CI | OR | 95% CI |
| Unadjusted | 1.26 | 0.84, 1.89 | 1.16 | 0.82, 1.65 |
| Age and survey year adjusted | 1.31 | 0.90, 1.92 | 1.17 | 0.83, 1.64 |
| Age, survey year and socio-economic adjusted | 1.27 | 0.75, 2.14 | 0.82 | 0.55, 1.24 |

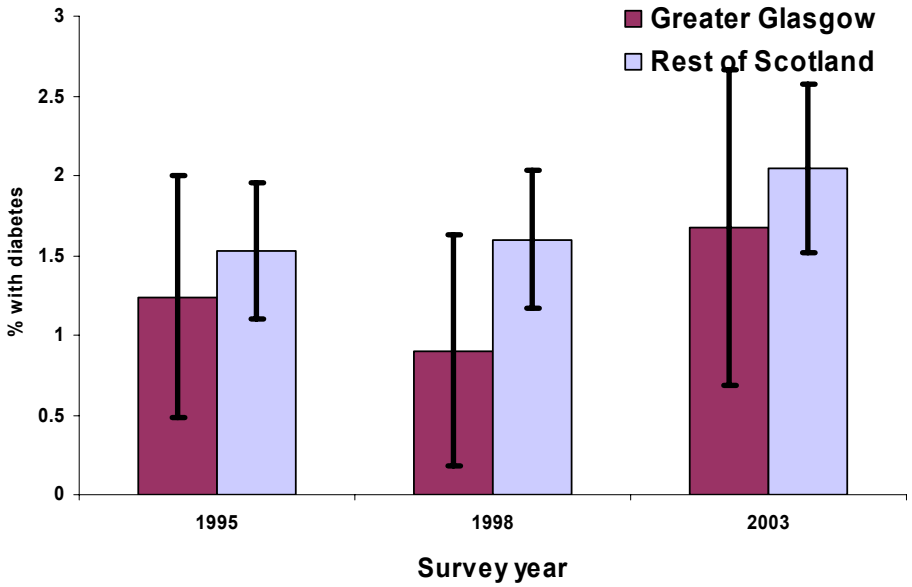
7.4 Trends in percentages with doctor-diagnosed diabetes for Greater Glasgow and the Rest of Scotland over time

Diabetes prevalence in men increased from 1995, particularly among those living outside of Greater Glasgow (Figure 7.2a). The excess in Greater Glasgow in 1995 had disappeared by 2003, although changes were not significant ($p$=0.459 and 0.985).

Among women, prevalence had also increased since 1995, although there was a dip in those living in Greater Glasgow in 1998 (Figure 7.2b). Prevalence was higher in those living in the rest of Scotland throughout and differences did not vary significantly over time ($p$=0.943 and 0.236).

*Figure 7.2a & b: Trends in percentages with doctor-diagnosed diabetes for Greater Glasgow and the rest of Scotland over time for ages 16-64 years only, men (top) and women (bottom)*



7.5 Comparisons of the most deprived and less deprived areas of Greater Glasgow

Within Greater Glasgow, diabetes prevalence among men in the most deprived areas was higher (but not significantly so) than in less deprived areas [3.5% (95% CI: 2.3% to 4.8%) and 2.7% (95% CI: 1.5% to 3.9%), respectively ]. In women, the prevalence was significantly higher among those in most deprived areas [3.1% (95% CI: 2.1% to 4.1%)] compared with other areas [1.4% (95% CI: 0.7% to 2.1%)]. For a detailed breakdown of comparisons by sex, age, Carstairs area deprivation, social class, education and economic activity, see Appendix A7.1.

CHAPTER 7 SUMMARY

- There were no statistically significant differences in the prevalence of doctor-diagnosed diabetes between Greater Glasgow and other region groups or with the rest of Scotland overall.

- At sub-group level, prevalence was lower for Greater Glasgow than for the rest of the country combined for men in the second least deprived area quintile and for women with below degree level qualifications.

- The likelihood of having diabetes was no different in Greater Glasgow, or Glasgow City, than in the rest of Scotland for either men or women, and this was not altered by adjustment for age, year or socio-economic factors (Table 7.2a). The slightly higher rate for women in West Central Scotland was explained by controlling for age and survey year.

- Diabetes prevalence had increased between 1995 and 2003; (non-significant) excess levels among men in Greater Glasgow disappeared by 2003, whereas (non-significant) lower levels in women in Greater Glasgow remained.

- Diabetes prevalence was higher in the most deprived areas than in less deprived areas in Greater Glasgow, significantly so among women.

# CHAPTER 8: GENERAL HEALTH

Self reported health is a simple but useful gauge of a person's general condition and is a strong predictor of subsequent morbidity and mortality (63, 64). As for most health indicators, self-rated health is associated with low social status, and there are reports of a British north-south divide in inequalities, with a wider health gap between social classes in Scotland than in England (3). There are a number of commonly used aspects of self reported health, including general health, long-standing illness and acute sickness.

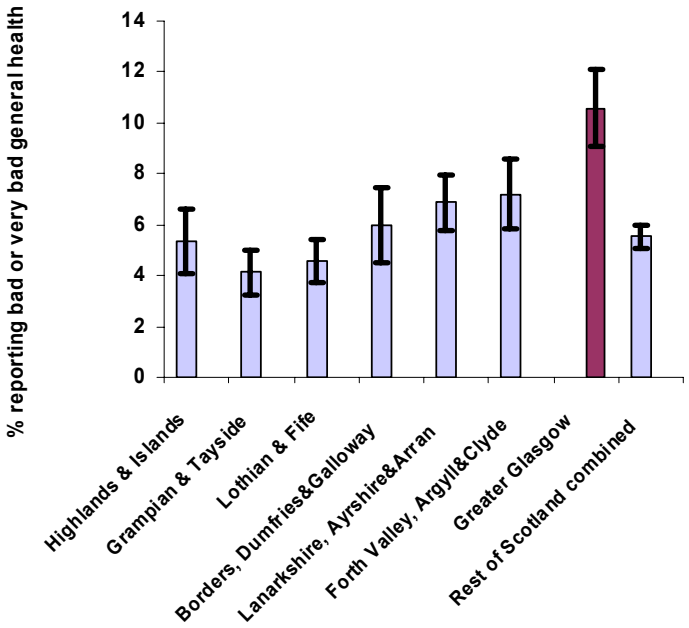
## 8.1 Self-reported general health

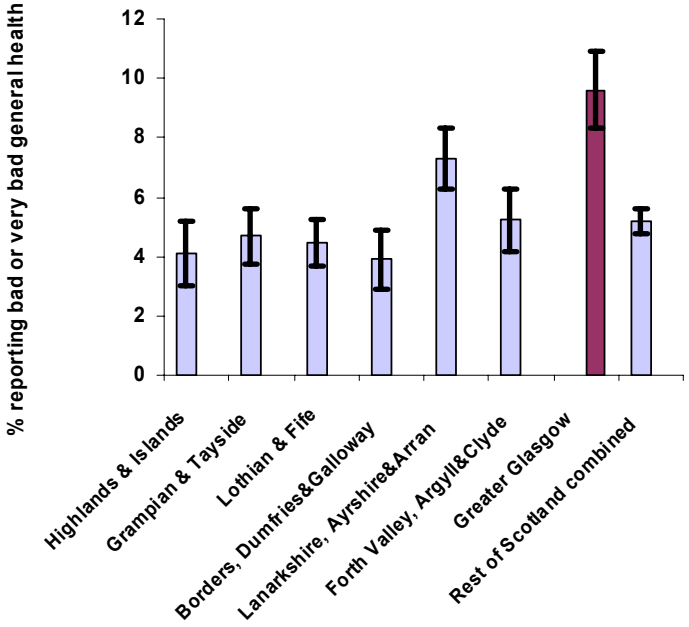
All respondents to the Scottish Health Survey were asked to asses their health in general as either 'very good', 'good', 'fair', 'bad' or 'very bad' (65). For the work in this report, the responses were dichotomised to 'very good'/'good'/'fair' and 'bad'/'very bad'.

### 8.1.1 Regional comparisons

The percentage of men self-reporting bad or very bad general health was significantly higher in Greater Glasgow than in any of the other region groups (Figure 8.1a). Among women, the proportion was highest in Greater Glasgow, significantly so compared with all the region groups with the sole exception of Lanarkshire, Ayrshire & Arran, and was significantly higher than the areas in Scotland outside Greater Glasgow combined (Figure 8.1b).

*Figures 8.1a and b: Percentages self reporting bad or very bad general health by region for men (top) and women (bottom)*



8.1.2 Greater Glasgow vs the Rest of Scotland comparisons

As well as being significantly higher in Greater Glasgow than the rest of the country overall, there were several significant sub-group differences in reporting of bad or very bad general health (Table 8.1). Among men, for those age 25-34 years, those aged 45-64 years, those in the second most and most deprived area quintiles, those in social class IV, the economically inactive, and those with no or below degree level qualifications, there was a higher proportion of bad or very bad general health reporting in Greater Glasgow compared to those living elsewhere in Scotland. For women, those aged 35-74, those in the least and most deprived quintiles, those in social classes III, IV, V as well as those with unknown social class, the retired and economically inactive, and those with no or below degree level qualifications living in Greater Glasgow had higher levels of reporting bad or very bad health than those living outside the area.

*Table 8.1: Percentages (with 95% confidence intervals) self reporting bad or very bad general health for Greater Glasgow and the rest of Scotland by sex, age, Carstairs area deprivation, social class, education and economic activity based on Scottish Health Survey 1995, 1998 and 2003 data*

| | | Men | | Women | |
|---|---|---|---|---|---|
| | | Greater Glasgow n= 1,610 (15%) | Rest of Scotland n= 9,462 (85%) | Greater Glasgow n=2,195 (16%) | Rest of Scotland n=11,855 (84%) |
| Age | 16-24 | 3 (0, 5) | 1 (0, 1) | 3 (1, 5) | 2 (1, 2) |
| | 25-34 | 6 (3, 8) | 2 (1, 3) | 3 (2, 5) | 3 (2, 3) |
| | 35-44 | 6 (4, 9) | 3 (3, 4) | 9 (6, 11) | 4 (3, 5) |
| | 45-54 | 15 (10 ,19) | 7 (5, 8) | 12 (9, 16) | 6 (5, 7) |
| | 55-64 | 24 (18, 29) | 13 (11, 14) | 17 (13, 21) | 8 (7, 9) |
| | 65-74 | 16 (10, 22) | 13 (11, 16) | 19 (14, 24) | 11 (9, 13) |
| | 75 and over | 23 (11, 36) | 14 (9, 18) | 16 (8, 24) | 15 (11, 19) |
| Carstairs quintile | Least deprived | 3 (1, 5) | 2 (2, 3) | 0 (0, 1) | 3 (2, 4) |
| | 2 | 1 (0, 2) | 4 (3, 5) | 4 (1, 6) | 4 (3, 5) |
| | 3 | 6 (2, 9) | 6 (5, 7) | 8 (4, 12) | 5 (4, 6) |
| | 4 | 12 (8, 17) | 7 (6, 8) | 8 (4, 12) | 7 (6, 8) |
| | Most deprived | 16 (13, 18) | 10 (9, 12) | 15 (12, 17) | 8 (7, 9) |
| Social class | I | 4 (0, 9) | 2 (1, 3) | 1 (0, 3) | 2 (1, 3) |
| | II | 5 (3, 7) | 3 (2, 4) | 4 (2, 6) | 3 (3, 4) |
| | III | 12 (9, 14) | 6 (5, 7) | 9 (7, 11) | 6 (5, 6) |
| | IV | 16 (11, 21) | 7 (5, 8) | 16 (12, 21) | 6 (5, 8) |
| | V | 23 (14, 32) | 12 (9, 15) | 18 (13, 23) | 10 (7, 12) |
| | Unknown | 10 (4, 16) | 5 (3, 7) | 14 (7, 20) | 5 (3, 7) |
| Economic activity status | Employed | 2 (1, 3) | 1 (1, 1) | 1 (0, 2) | 1 (1, 2) |
| | Unemployed | 4 (0, 7) | 2 (1, 3) | 6 (0, 15) | 2 (0, 3) |
| | Retired | 17 (12, 22) | 13 (11, 15) | 20 (15, 24) | 12 (10, 13) |
| | Economically inactive | 30 (25, 35) | 21 (19, 23) | 18 (15, 20) | 10 (9, 11) |
| | Unknown | 14 (0, 33) | 10 (0, 22) | - | 18 (1, 36) |
| Education | No qualification | 20 (17, 23) | 11 (10, 12) | 17 (14, 19) | 10 (9, 11) |
| | Below degree level | 5 (3, 7) | 3 (2, 3) | 5 (3, 6) | 3 (2, 3) |
| | Degree level or above | 2 (0, 3) | 2 (1, 2) | 1 (0, 2) | 2 (2, 3) |
| | Unknown | 17 (0, 42) | 12 (1, 23) | 38 (10, 66) | 13 (1, 25) |
| Total | | 11 (9, 12) | 6 (5, 6) | 10 (8, 11) | 5 (5, 6) |

8.1.3 Role of socio-economic factors

Greater Glasgow residents are around twice as likely to have bad or very bad general health than those living elsewhere in Scotland (Table 8.2a). Adjustment by age and survey year only does not explain any of this excess. Accounting for socio-economic status explains most of the excess although results remain borderline.

Similarly, the prevalence of bad or very bad general health in West Central Scotland is around double that in the rest of the country but results become non-significant on adjustment for socio-economic factors (Table 8.2b).

Reporting of bad or very bad general health is even more likely for those living in Glasgow City compared with elsewhere (Table 8.2c). Results cease to be significant on adjustment for socio-economic factors among men, but in women there is a significantly higher risk which persists after adjustment for all other factors.

*Table 8.2a: Effect of Greater Glasgow residence compared with the rest of Scotland on self reporting bad or very bad general health*

| | Men | | Women | |
|---|---|---|---|---|
| | OR | 95% CI | OR | 95% CI |
| Unadjusted | 2.16 | 1.66, 2.80 | 2.08 | 1.66, 2.61 |
| Age and survey year adjusted | 2.28 | 1.74, 2.98 | 2.15 | 1.72, 2.70 |
| Age, survey year and socio-economic adjusted | 1.32 | 1.00, 1.75 | 1.25 | 1.01, 1.55 |

*Table 8.2b: Effect of West Central Scotland residence compared with the rest of Scotland on self reporting bad or very bad general health*

| | Men | | Women | |
|---|---|---|---|---|
| | OR | 95% CI | OR | 95% CI |
| Unadjusted | 2.13 | 1.74, 2.60 | 1.93 | 1.62, 2.31 |
| Age and survey year adjusted | 2.08 | 1.69, 2.56 | 1.92 | 1.60, 2.31 |
| Age, survey year and socio-economic adjusted | 1.21 | 0.99, 1.48 | 1.15 | 0.97, 1.37 |

*Table 8.2c: Effect of Glasgow City residence compared with the rest of Scotland on self reporting bad or very bad general health*

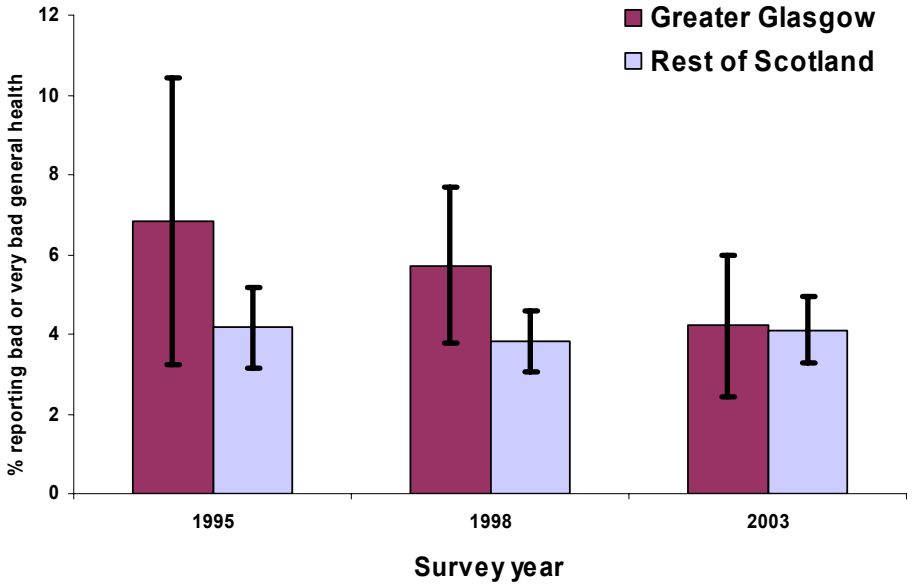
| | Men | | Women | |
|---|---|---|---|---|
| | OR | 95% CI | OR | 95% CI |
| Unadjusted | 2.44 | 1.83, 3.23 | 2.78 | 2.24, 3.45 |
| Age and survey year adjusted | 2.63 | 1.97, 3.51 | 2.91 | 2.35, 3.61 |
| Age, survey year and socio-economic adjusted | 1.20 | 0.87, 1.66 | 1.54 | 1.18, 2.01 |

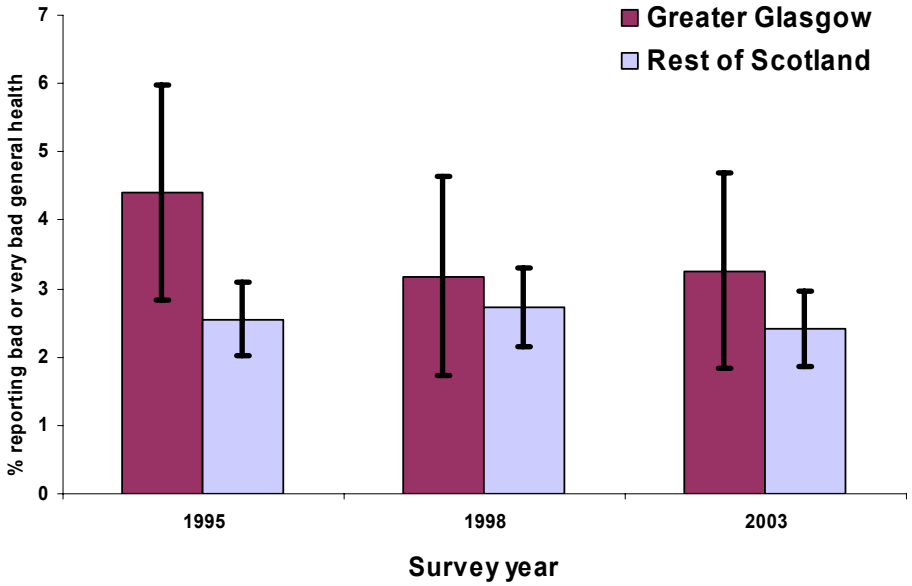
8.1.4 Trends in percentages self reporting bad or very bad general health for Greater Glasgow and the Rest of Scotland over time

While reporting of bad or very bad general health by men remained steady outwith Greater Glasgow Health Board region from 1995 to 2003, it decreased steadily for those living within the region (Figure 8.2a). However, differences between those living in and out of the region did not vary significantly over time ($p$=0.911 and 0.113).

The rate for women in Greater Glasgow decreased between 1995 and 1998 but had not changed in 2003 (Figure 8.2b). As for men, differences had not changed significantly over time ($p$=0.473 and 0.206).

*Figure 8.2a & b: Trends in percentages self reporting bad or very bad general health for Greater Glasgow and the rest of Scotland over time for ages 16-64 years only, in men (top) and women (bottom)*



8.1.5 Comparisons of the most deprived and less deprived areas of Greater Glasgow

Within Greater Glasgow, the prevalence of self reporting bad or very bad general health was significantly higher in the most deprived areas [15% (95% CI: 12% to 18%) for men and 16% (95% CI: 13% to 19%) for women] compared with the more affluent areas [9% (95% CI: 7% to 11%) for men and 11% (95% CI: 9% to 12%) for women]. For a detailed breakdown of comparisons by sex, age, Carstairs area deprivation, social class, education and economic activity, see Appendix A8.1.

## 8.2 Long standing illness

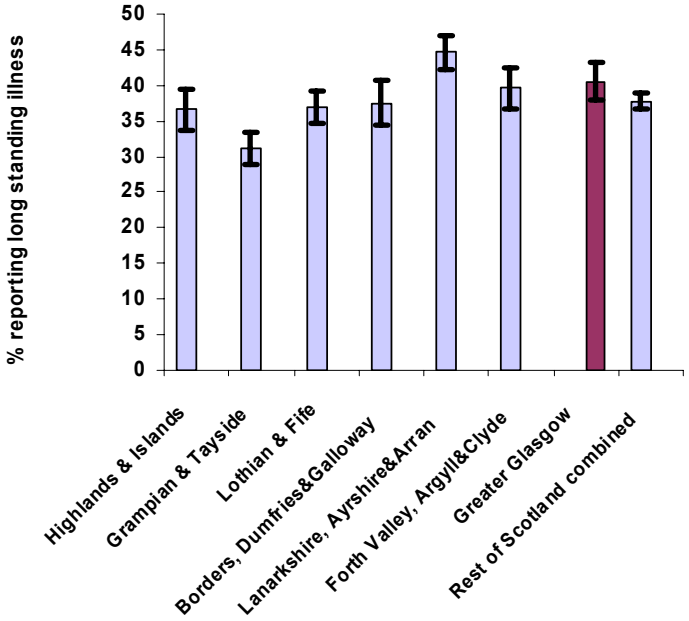
With regard to long-standing illness, respondents were asked whether they had an illness, disability or infirmity affecting them over a period of time.

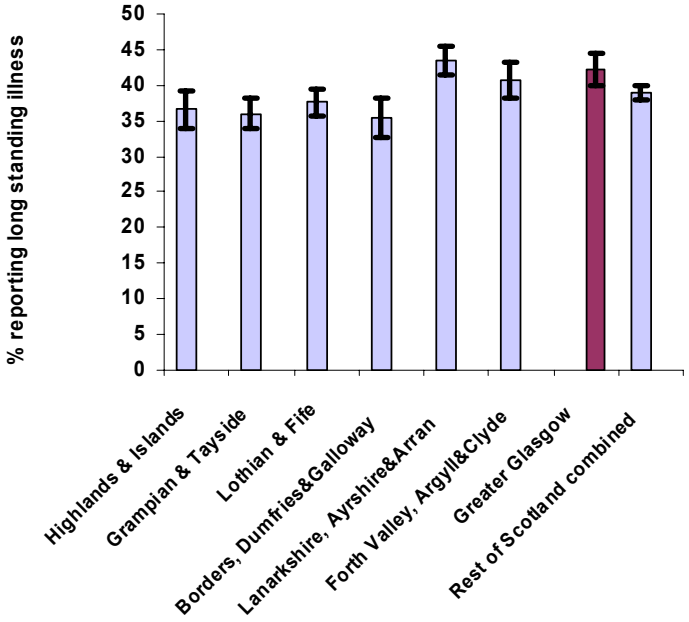
8.2.1 Regional comparisons

Long standing illness prevalence in men was second highest in Greater Glasgow, after Lanarkshire, Ayrshire & Arran; only Grampian and Tayside was significantly lower and there was no significant difference within and outwith Greater Glasgow (Figure 8.3a).

Among women, Greater Glasgow was again second highest after Lanarkshire, Ayrshire & Arran; however, the Greater Glasgow rate was significantly higher than that of the rest of Scotland combined (Figure 8.3b).

*Figures 8.3a and b: Percentages with 95% confidence intervals with long standing illness by region for men (top) and women (bottom)*




8.2.2 Greater Glasgow vs the Rest of Scotland comparisons

Prevalence of long standing illness was significantly higher in Greater Glasgow than in the rest of Scotland for a small number of sub-groups: among men, those age 45-54 and those in social class V and among women those in social class IV (Table 8.3).

*Table 8.3: Percentages (with 95% confidence intervals) with long standing illness for Greater Glasgow and the rest of Scotland by sex, age, Carstairs area deprivation, based on Scottish Health Survey 1995, 1998 and 2003 data*

| | | Men | | Women | |
|---|---|---|---|---|---|
| | | Greater Glasgow n= 1,610 (15%) | Rest of Scotland n= 9,461 (85%) | Greater Glasgow n=2,195 (16%) | Rest of Scotland n=11,855 (84%) |
| Age | 16-24 | 18 (12, 23) | 20 (18, 23) | 21 (16, 27) | 22 (19, 25) |
| | 25-34 | 31 (25, 36) | 28 (25, 30) | 32 (27, 36) | 27 (25, 29) |
| | 35-44 | 35 (29, 40) | 32 (30, 34) | 35 (31, 40) | 33 (31, 35) |
| | 45-54 | 51 (45, 58) | 42 (39, 44) | 50 (45, 56) | 43 (40, 45) |
| | 55-64 | 61 (55, 67) | 57 (54, 60) | 60 (55, 66) | 56 (54, 59) |
| | 65-74 | 64 (57, 72) | 66 (62, 69) | 64 (57, 70) | 61 (59, 64) |
| | 75 and over | 66 (51, 80) | 65 (59, 71) | 74 (64, 83) | 66 (61, 71) |
| Carstairs quintile | Least deprived | 29 (23, 34) | 34 (31, 36) | 29 (24, 34) | 35 (33, 37) |
| | 2 | 40 (30, 50) | 36 (33, 38) | 34 (27, 42) | 36 (34, 38) |
| | 3 | 33 (25, 42) | 38 (36, 41) | 41 (34, 49) | 40 (38, 42) |
| | 4 | 36 (29, 43) | 38 (35, 40) | 40 (33, 46) | 40 (37, 42) |
| | Most deprived | 48 (45, 52) | 46 (43, 49) | 49 (46, 52) | 47 (44, 49) |
| Social class | I | 39 (28, 49) | 33 (29, 38) | 29 (20, 38) | 33 (29, 37) |
| | II | 32 (27, 37) | 34 (32, 36) | 34 (30, 39) | 35 (33, 37) |
| | III | 43 (39, 47) | 40 (38, 41) | 43 (39, 46) | 39 (38, 41) |
| | IV | 41 (34, 48) | 37 (35, 40) | 52 (46, 58) | 43 (40, 45) |
| | V | 62 (52, 71) | 46 (41, 50) | 57 (50, 64) | 49 (45, 53) |
| | Unknown | 40 (29, 51) | 38 (32, 44) | 36 (27, 45) | 35 (30, 40) |
| Economic activity status | Employed | 28 (25, 32) | 29 (28, 30) | 29 (26, 32) | 29 (28, 30) |
| | Unemployed | 30 (22, 38) | 30 (26, 35) | 32 (20, 44) | 27 (22, 33) |
| | Retired | 66 (59, 72) | 65 (63, 68) | 69 (64, 74) | 64 (61, 66) |
| | Economically inactive | 63 (57, 69) | 61 (58, 64) | 51 (47, 54) | 46 (44, 48) |
| | Unknown | 17 (0, 42) | 45 (20, 70) | 17 (0, 43) | 47 (23, 71) |
| Education | No qualification | 55 (51, 59) | 50 (48, 52) | 55 (52, 59) | 51 (49, 52) |
| | Below degree level | 31 (27, 35) | 31 (29, 33) | 32 (29, 35) | 32 (31, 33) |
| | Degree level or above | 29 (24, 35) | 32 (30, 35) | 31 (26, 37) | 32 (30, 34) |
| | Unknown | 40 (7, 74) | 36 (18, 54) | 66 (35, 97) | 61 (42, 80) |
| Total | | 40 (38, 43) | 38 (37, 39) | 42 (40, 44) | 39 (38, 40) |

8.2.3 Role of socio-economic factors

The formal statistical analysis (based on logistic regression models) showed, prior to adjustment, higher rates of long standing illness in men in Greater Glasgow compared with those in the rest of Scotland (Table 8.4a). However, this difference disappeared after adjustment for socio-economic factors. Similar significant results in women were also explained by socio-economic circumstances.

However, higher prevalence in West Central Scotland compared with the rest of the country persisted after adjustment by socio-economic factors in men but not in women (Table 8.4b).

Elevated rates in Glasgow City were explained by socio-economic circumstances in both men and women (Table 8.4c).

*Table 8.4a: Effect of Greater Glasgow residence compared with the rest of Scotland on having long standing illness*

| | Men | | Women | |
|---|---|---|---|---|
| | OR | 95% CI | OR | 95% CI |
| Unadjusted | 1.17 | 1.01, 1.36 | 1.18 | 1.03, 1.35 |
| Age and survey year adjusted | 1.20 | 1.04, 1.40 | 1.21 | 1.05, 1.40 |
| Age, survey year and socio-economic adjusted | 0.92 | 0.78, 1.09 | 0.95 | 0.83, 1.10 |

*Table 8.4b: Effect of West Central Scotland residence compared with the rest of Scotland on having long standing illness*

| | Men | | Women | |
|---|---|---|---|---|
| | OR | 95% CI | OR | 95% CI |
| Unadjusted | 1.40 | 1.26, 1.55 | 1.29 | 1.17, 1.42 |
| Age and survey year adjusted | 1.39 | 1.25, 1.54 | 1.29 | 1.17, 1.44 |
| Age, survey year and socio-economic adjusted | 1.19 | 1.06, 1.33 | 1.08 | 0.98, 1.20 |

*Table 8.4c: Effect of Glasgow City residence compared with the rest of Scotland on having long standing illness*

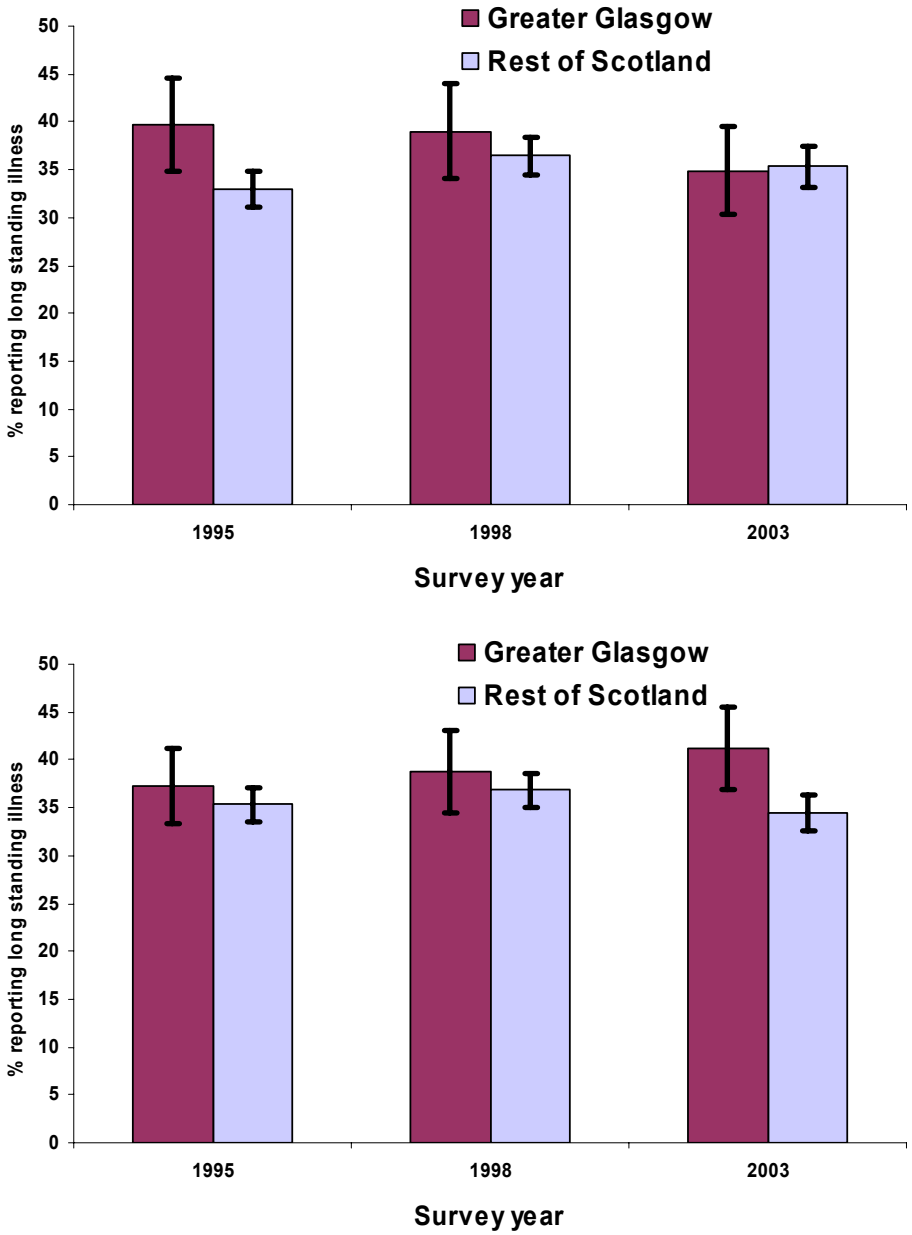
| | Men | | Women | |
|---|---|---|---|---|
| | OR | 95% CI | OR | 95% CI |
| Unadjusted | 1.40 | 1.19, 1.64 | 1.39 | 1.18, 1.64 |
| Age and survey year adjusted | 1.47 | 1.26, 1.72 | 1.46 | 1.23, 1.73 |
| Age, survey year and socio-economic adjusted | 1.07 | 0.89, 1.30 | 1.06 | 0.87, 1.29 |

8.2.4 Trends in percentages with longstanding illness for Greater Glasgow and the Rest of Scotland over time

While the proportion with longstanding illness for men in the rest of the country remained fairly constant over time, figures in Greater Glasgow declined steadily and the higher rates relative to the rest of the country declined after 1995 (Figure 8.4a), although the change was not significant ($p$=0.443 and 0.324).

The reverse was true for women: differences between Greater Glasgow and the rest of Scotland increased over time, and by 2003, the difference in rates was significant (Figure 8.4b). The change from 1995 to 2003 in the difference between Greater Glasgow and the rest of Scotland was statistically significant ($p$=0.025).

*Figure 8.4a & b: Trends in percentages with long standing illness for Greater Glasgow and the rest of Scotland over time for ages 16-64 years only, men (top) and women (bottom)*




8.2.5 Comparisons of the most deprived and less deprived areas of Greater Glasgow

The prevalence of long-standing illness within Greater Glasgow was significantly higher in the most deprived areas [48% (95% CI: 45% to 52%) for men and 49% (95% CI: 46% to 52%) for women] compared with the other areas [33% (95% CI: 29% to 36%) for men and 35% (95% CI: 32% to 38%) for women]. For a detailed breakdown of comparisons by sex, age, Carstairs area deprivation, social class, education and economic activity, see Appendix A8.2.

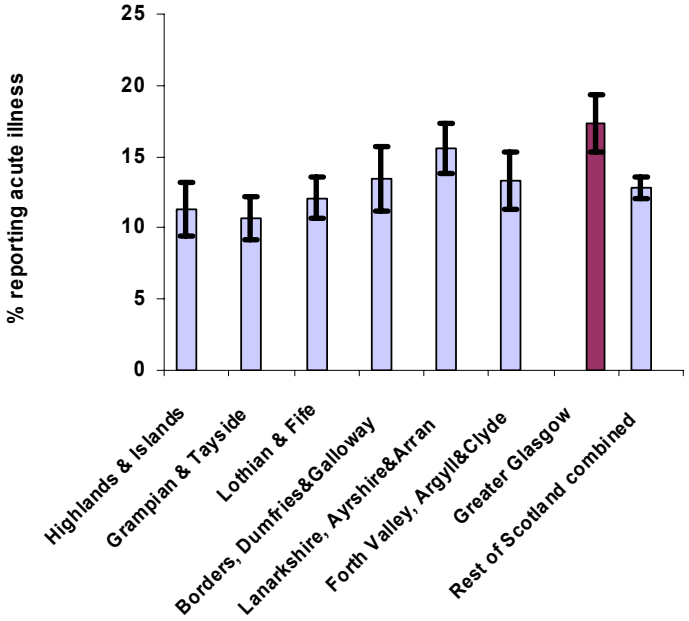
## 8.3 Acute sickness

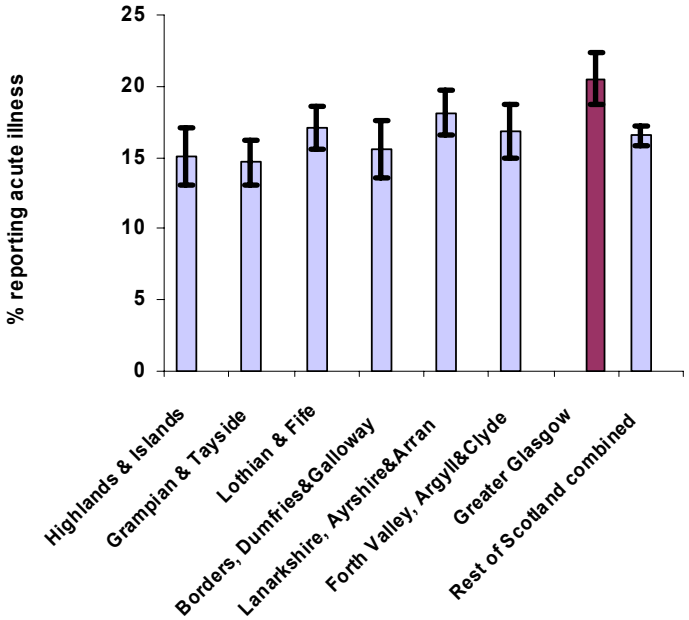
Respondents were classified as having experienced acute sickness if they had had to cut down on any of the things they usually did at home, at work or in their free time in the two weeks prior to the interview because of illness or injury.

### 8.3.1 Regional comparisons

The incidence of acute sickness in men was highest for Greater Glasgow (Figure 8.5a). This was significantly higher than Highland and Islands, Grampian and Tayside, and Lothian and Fife, and than the rest of the country combined. Among women the rate in Greater Glasgow region was higher than all others, significantly so compared with Highland and Islands, Grampian and Tayside, and Lothian and Fife, and Borders and Dumfries & Galloway, and than the rest of the country combined (Figure 8.5b)

*Figures 8.5a and b: Percentages with 95% confidence intervals with acute sickness by region for men (top) and women (bottom)*




8.3.2 Greater Glasgow vs the Rest of Scotland comparisons

As well as being higher in men and women overall, levels of reported acute illness in Greater Glasgow were significantly higher than that recorded elsewhere for several sub-groups (Table 8.5). For men, rates were higher in Greater Glasgow for those aged 55-64 years, those living in the most deprived area quintile, those in social class III, the economically inactive, and those with no qualifications. Among women, this was the case for the 55-64 years olds, those in social classes IV or V, the retired and those with no qualifications.

*Table 8.7: Percentages (with 95% confidence intervals) with acute sickness incidence for Greater Glasgow and the rest of Scotland by sex, age, Carstairs area deprivation, based on Scottish Health Survey 1995, 1998 and 2003 data*

| | | Men | | Women | |
|---|---|---|---|---|---|
| | | Greater Glasgow n= 1,609 (15%) | Rest of Scotland n= 9,461 (85%) | Greater Glasgow n=2,194 (16%) | Rest of Scotland n=11,853 (84%) |
| Age | 16-24 | 14 (9, 19) | 9 (7, 11) | 12 (7, 16) | 13 (11, 15) |
| | 25-34 | 14 (10, 18) | 13 (11, 14) | 15 (11, 18) | 14 (13, 16) |
| | 35-44 | 14 (10, 18) | 12 (10, 13) | 19 (15, 23) | 15 (14, 17) |
| | 45-54 | 20 (14, 25) | 13 (11, 14) | 24 (19, 29) | 19 (17, 21) |
| | 55-64 | 25 (20, 30) | 16 (14, 18) | 30 (25, 35) | 19 (17, 21) |
| | 65-74 | 24 (17, 30) | 16 (14, 19) | 27 (21, 32) | 20 (17, 22) |
| | 75 and over | 14 (3, 24) | 19 (14, 24) | 34 (23, 44) | 23 (18, 27) |
| Carstairs quintile | Least deprived | 8 (5, 11) | 11 (10, 12) | 15 (11, 19) | 14 (13, 16) |
| | 2 | 15 (7, 22) | 12 (11, 14) | 11 (6, 16) | 14 (13, 16) |
| | 3 | 15 (9, 21) | 13 (11, 14) | 21 (15, 27) | 17 (16, 19) |
| | 4 | 20 (14, 25) | 13 (12, 15) | 20 (15, 26) | 18 (16, 19) |
| | Most deprived | 22 (19, 25) | 16 (13, 18) | 24 (21, 27) | 20 (18, 22) |
| Social class | I | 19 (10, 28) | 14 (11, 18) | 12 (5, 19) | 13 (10, 16) |
| | II | 15 (11, 18) | 11 (10, 13) | 16 (13, 20) | 16 (14, 17) |
| | III | 18 (15, 21) | 13 (12, 15) | 20 (17, 22) | 17 (16, 18) |
| | IV | 18 (13, 23) | 13 (11, 14) | 28 (23, 34) | 17 (15, 19) |
| | V | 23 (14, 32) | 14 (10, 17) | 30 (24, 37) | 20 (16, 23) |
| | Unknown | 14 (7, 21) | 11 (7, 15) | 17 (10, 25) | 16 (12, 20) |
| Economic activity status | Employed | 12 (9, 14) | 10 (9, 10) | 14 (12, 17) | 13 (12, 14) |
| | Unemployed | 9 (4, 14) | 9 (6, 11) | 9 (2, 16) | 9 (6, 12) |
| | Retired | 22 (16, 27) | 17 (14, 19) | 31 (26, 36) | 22 (20, 24) |
| | Economically inactive | 33 (28, 38) | 25 (23, 28) | 26 (23, 29) | 21 (20, 23) |
| | Unknown | 5 (0, 15) | 18 (1, 34) | - | 15 (0, 29) |
| Education | No qualification | 22 (19, 26) | 15 (14, 16) | 27 (24, 30) | 19 (18, 21) |
| | Below degree level | 15 (12, 18) | 12 (11, 13) | 15 (13, 18) | 14 (13, 16) |
| | Degree level or above | 11 (7, 14) | 12 (10, 13) | 14 (10, 18) | 16 (14, 18) |
| | Unknown | 23 (0, 50) | 13 (2, 24) | 56 (25, 87) | 27 (10, 45) |
| Total | | 17 (15, 19) | 13 (12, 14) | 20 (19, 22) | 17 (16, 17) |

8.3.3 Role of socio-economic factors

Men in Greater Glasgow were 48% more likely to have suffered acute sickness during the two weeks prior to survey interview compared with those living elsewhere in Scotland; the equivalent figure for women was 31% (Table 8.8a). Socio-economic factors did not explain differences among men: those in Greater Glasgow remained 24% (CI: 3% to 49%) more likely to have been recently ill. Results among women became non-significant following socio-economic adjustment.

Similar results were obtained for West Central Scotland (Table 8.8b) and Glasgow City (Table 8.8c).

*Table 8.8a: Effect of Greater Glasgow residence compared with the rest of Scotland on incidence of acute sickness*

| | Men | | Women | |
|---|---|---|---|---|
| | OR | 95% CI | OR | 95% CI |
| Unadjusted | 1.48 | 1.26, 1.75 | 1.31 | 1.13, 1.52 |
| Age and survey year adjusted | 1.50 | 1.27, 1.77 | 1.32 | 1.14, 1.54 |
| Age, survey year and socio-economic adjusted | 1.24 | 1.03, 1.49 | 1.13 | 0.95, 1.34 |

*Table 8.8b: Effect of West Central Scotland residence compared with the rest of Scotland on incidence of acute sickness*

| | Men | | Women | |
|---|---|---|---|---|
| | OR | 95% CI | OR | 95% CI |
| Unadjusted | 1.42 | 1.25, 1.61 | 1.22 | 1.09, 1.35 |
| Age and survey year adjusted | 1.41 | 1.24, 1.60 | 1.21 | 1.09, 1.35 |
| Age, survey year and socio-economic adjusted | 1.18 | 1.03, 1.36 | 1.02 | 0.91, 1.14 |

*Table 8.8c: Effect of Glasgow City residence compared with the rest of Scotland on incidence of acute sickness*

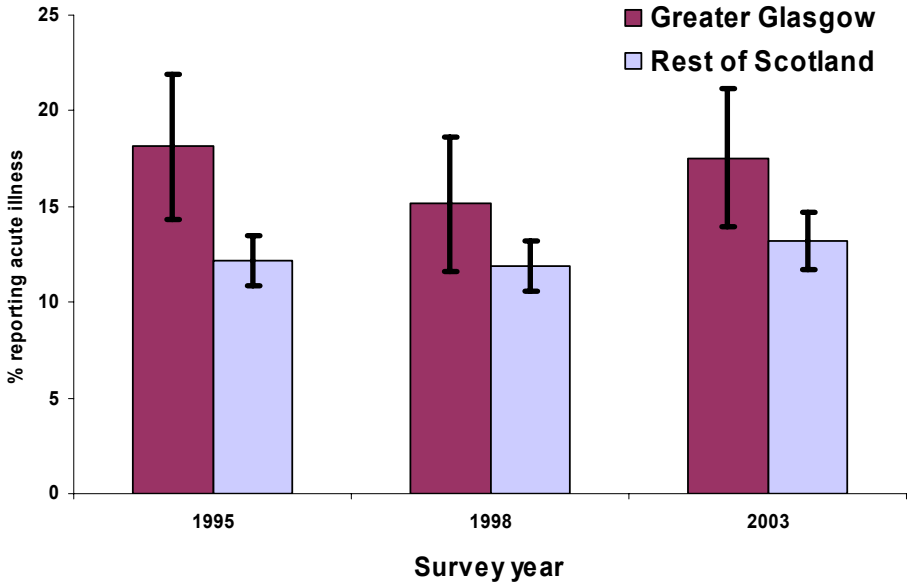
| | Men | | Women | |
|---|---|---|---|---|
| | OR | 95% CI | OR | 95% CI |
| Unadjusted | 1.65 | 1.37, 1.98 | 1.47 | 1.26, 1.73 |
| Age and survey year adjusted | 1.67 | 1.38, 2.00 | 1.49 | 1.27, 1.76 |
| Age, survey year and socio-economic adjusted | 1.29 | 1.02, 1.65 | 1.18 | 0.96, 1.45 |

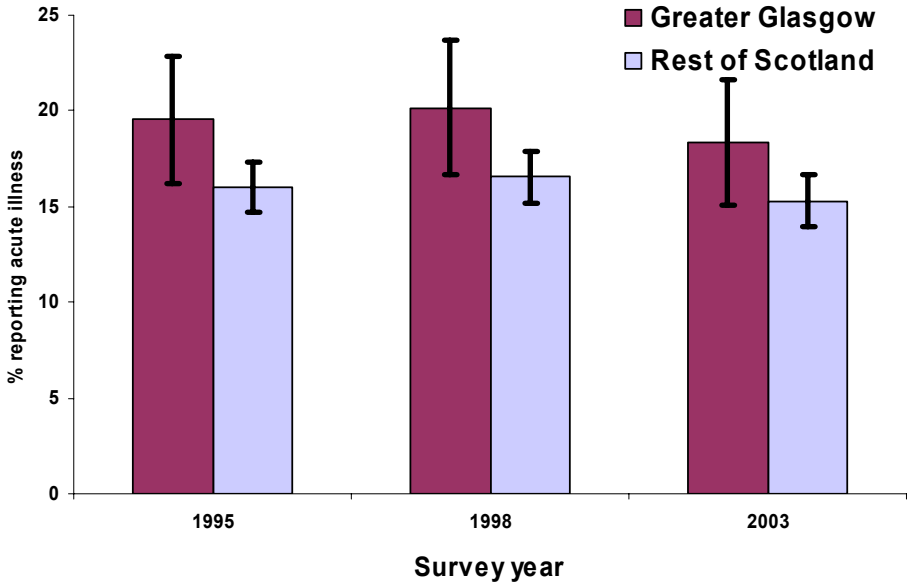
8.3.4 Trends in self-reported levels of acute sickness for Greater Glasgow and the Rest of Scotland over time

Among men, the level of acute sickness in Greater Glasgow relative to the rest of the country was significantly higher in 1995 but not in 1998 or 2003 (Figure 8.6a). However, this change in the Greater Glasgow differential was not significant ($p$=0.483 and 0.720).

In women, acute sickness prevalence fell slightly between 1998 and 2003 but differences between Greater Glasgow and the rest of Scotland remained constant over time ($p$=0.632 and 0.495).

*Figure 8.6a & b: Trends in percentages with acute sickness for Greater Glasgow and the rest of Scotland over time for ages 16-64 years only, men (top) and women (bottom)*




8.3.5 Comparisons of the most deprived and less deprived areas of Greater Glasgow

Within Greater Glasgow, the incidence of acute sickness was significantly higher in the most deprived areas [22% (95% CI: 19% to 25%) for men and 24% (95% CI: 21% to 27%) for women] compared with more affluent areas [13% (95% CI: 11% to 16%) for men and 17% (95% CI: 14% to 19%) for women]. For a detailed breakdown of comparisons by sex, age, Carstairs area deprivation, social class, education and economic activity, see Appendix A8.3.

CHAPTER 8 SUMMARY

Self- reported general health

- For both men and women, self-reporting of bad or very bad general health was significantly higher in Greater Glasgow than in the rest of Scotland combined.

- Men aged 25-34 years, those aged 45-64 years, those in the second most and most deprived area quintiles, those in social class IV, the economically inactive, and those with no or below degree level qualifications in Greater Glasgow had significantly higher levels of bad or very bad self-reported general health than those elsewhere. The same was true for women aged 35-74, those in the least and most deprived quintiles, those in social classes III, IV, V as well as those with unknown social class, the retired and economically inactive, and those with no or below degree level qualifications.

- Residents of Greater Glasgow, West Central Scotland and Glasgow City were at around double the risk of having bad or very bad general health compared with those in the rest of the country; to a large extent, this was explained by socio-economic status, with the exception of women in Glasgow City.

- Levels of self-reported bad or very bad general health decreased among men in Greater Glasgow between 1995 and 2003 but remained unchanged for those in the rest of the country. There was a decrease among women in Greater Glasgow between 1995 and 1998 only.

- Levels of self reported bad or very bad general health were significantly higher in the most deprived areas compared with less deprived areas in Greater Glasgow.

Long standing illness

- For women, levels of self-reported long standing illness were significantly higher in Greater Glasgow than in other parts of Scotland; however, this was not the case for men.

- At sub-group level, among men, those age 45-54 and those in social class V, and among women those in social class IV, long standing illness prevalence was higher in Greater Glasgow than elsewhere.

- Higher prevalence of long standing illness in Greater Glasgow and Glasgow City was explained by socio-economic factors. Elevated prevalence in the West of Scotland was accounted for by socio-economic factors in women but not men.

- In men, higher levels of long standing illness in Greater Glasgow (compared with the rest of Scotland) diminished after 1995, although the actual recorded rates changed little over time. There were significantly increasing differences over time between women in Greater Glasgow and those in the rest of the country.

- Within Greater Glasgow, long-standing illness was significantly higher in the most deprived areas compared with more affluent areas.

Acute sickness

- Levels of self-reported acute sickness were significantly higher in Greater Glasgow than in the rest of Scotland as a whole.

- For men, rates in Greater Glasgow were significantly higher than those recorded in the rest of the country for: those aged 55-64 years; those living in the most deprived area quintile; those in social class III; the economically inactive; and those with no qualifications. For women, rates were significantly higher among: those aged 55-64 years; those in social classes IV or V; the retired; and those with no qualifications.

- Higher levels of acute sickness in Greater Glasgow, West Central Scotland and Glasgow City relative to those living elsewhere were explained by socio-economic factors in women but not men.

- The elevated rates of acute sickness in Greater Glasgow compared with the rest of the country decreased (non-significantly) in men but remained constant in women over time.

- For both men and women, acute sickness levels were significantly higher in the most deprived areas compared with the other areas within Greater Glasgow.

# CHAPTER 9: PSYCHOLOGICAL HEALTH

This section concerns psychological health, an important aspect of wellbeing and general health which is associated with specific health outcomes such as coronary heart disease (66).

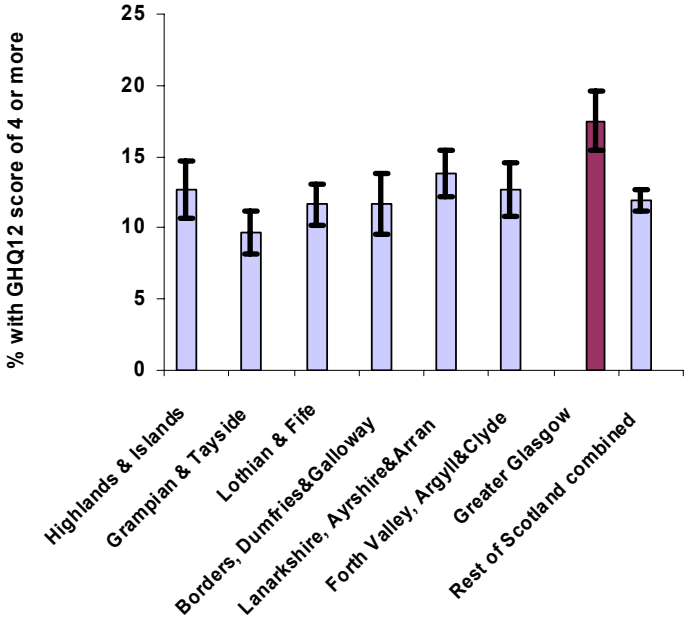
In the 1995, 1998 and 2003 Scottish Health Surveys psychosocial health was measured by the General Health Questionnaire (GHQ12) (67, 68). The GHQ12 is a widely used standard measure of mental distress and psychological ill-health, combining responses to questions on recent concentration abilities, sleeping patterns, self-esteem, stress, despair, depression, and confidence into a single overall score of between zero and twelve. A score of four or more (referred to as a 'high' GHQ12 score) has been used here to indicate the presence of a possible psychiatric disorder.

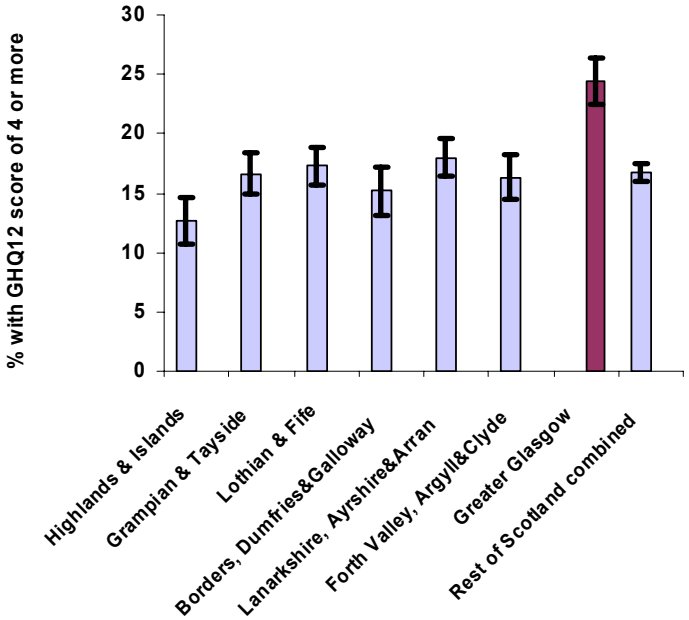
## 9.1 Regional comparisons

Of all the region groups, Greater Glasgow had the highest of proportion of men scoring a GHQ12 of four or more (Table 9.1a). This proportion was significantly higher than that of all the other regions except the Lanarkshire and Ayrshire & Arran group. It was also significantly higher than the figure for the rest of Scotland overall.

The proportion of women with a high GHQ12 score in Greater Glasgow was significantly higher than recorded for all the other region groups, as well as that of Scotland as a whole (Table 9.1b).

*Figures 9.1a and b: Percentages with 95% confidence intervals with high GHQ12 scores by region for men (top) and women (bottom)*



9.2 Greater Glasgow vs the Rest of Scotland comparisons

The proportion of the population in Greater Glasgow scoring GHQ12 of four or more was not only significantly higher than the rest of Scotland overall, but was also significantly higher in a number of sub-groups (Table 9.1). For men, this was the case for: those aged 45-54 years; those in the most deprived deprivation quintile; those in social classes III or IV; and those with no qualifications. Among women, this was the case for: 25-74 year olds; those living in areas in Carstairs quintile 3; or 5 (most deprived); those in social classes II, III, IV or V; and those with no or below degree level qualifications. The same was true for women in all of the economic activity sub-groups.

*Table 9.1: Percentages (with 95% confidence intervals) with high GHQ12 scores for Greater Glasgow and the rest of Scotland by sex, age, Carstairs area deprivation, social class, education and economic activity based on Scottish Health Survey 1995, 1998 and 2003 data*

| | | Men | | Women | |
|---|---|---|---|---|---|
| | | Greater Glasgow n= 1,553 (15%) | Rest of Scotland n= 9,154 (85%) | Greater Glasgow n=2,110 (15%) | Rest of Scotland n=11,544 (85%) |
| Age | 16-24 | 14 (9, 18) | 8 (6, 10) | 19 (13, 24) | 15 (13, 18) |
| | 25-34 | 15 (11, 19) | 11 (10, 13) | 29 (24, 33) | 17 (16, 19) |
| | 35-44 | 17 (13, 21) | 12 (11, 14) | 24 (20, 28) | 17 (16, 19) |
| | 45-54 | 21 (15, 26) | 13 (11, 15) | 29 (23, 34) | 19 (17, 20) |
| | 55-64 | 23 (17, 28) | 16 (14, 18) | 22 (18, 27) | 16 (14, 17) |
| | 65-74 | 16 (10, 22) | 11 (8, 13) | 21 (16, 27) | 13 (11, 15) |
| | 75 and over | 18 (6, 13) | 13 (9, 17) | 22 (12, 32) | 17 (13, 21) |
| Carstairs quintile | Least deprived | 11 (7, 15) | 11 (9, 12) | 19 (14, 23) | 16 (14, 18) |
| | 2 | 15 (7, 23) | 10 (9, 12) | 22 (15, 29) | 14 (13, 16) |
| | 3 | 15 (8, 21) | 12 (10, 13) | 25 (18, 31) | 16 (14, 17) |
| | 4 | 19 (13, 25) | 13 (11, 15) | 23 (17, 28) | 18 (16, 19) |
| | Most deprived | 21 (18, 24) | 16 (13, 18) | 27 (24, 30) | 21 (19, 23) |
| Social class | I | 8 (3, 14) | 10 (7, 13) | 22 (13, 31) | 11 (8, 14) |
| | II | 12 (8, 15) | 11 (9, 12) | 23 (18, 27) | 16 (14, 17) |
| | III | 19 (16, 22) | 12 (11, 13) | 22 (19, 25) | 17 (16, 18) |
| | IV | 21 (15, 28) | 11 (10, 13) | 30 (25, 36) | 19 (17, 21) |
| | V | 26 (17, 35) | 18 (15, 22) | 30 (23, 37) | 19 (16, 22) |
| | Unknown | 22 (13, 32) | 16 (11, 21) | 26 (17, 36) | 19 (15, 24) |
| Economic activity status | Employed | 11 (8, 13) | 8 (7, 9) | 18 (15, 21) | 13 (13, 14) |
| | Unemployed | 25 (17, 33) | 18 (15, 22) | 43 (30, 56) | 24 (19, 30) |
| | Retired | 16 (11, 21) | 11 (9, 13) | 25 (20, 30) | 16 (14, 17) |
| | Economically inactive | 31 (26, 36) | 28 (25, 30) | 31 (28, 35) | 22 (21, 24) |
| | Unknown | 53 (7, 99) | - | - | 8 (0, 20) |
| Education | No qualification | 24 (20, 27) | 15 (14, 16) | 29 (26, 32) | 18 (17, 20) |
| | Below degree level | 15 (12, 18) | 11 (10, 12) | 22 (19, 25) | 16 (15, 17) |
| | Degree level or above | 10 (6, 14) | 9 (7, 10) | 19 (15, 24) | 15 (13, 17) |
| | Unknown | 19 (0, 53) | 13 (0, 37) | 13 (0, 39) | 25 (0, 50) |
| Total | | 17 (15, 20) | 12 (11, 13) | 24 (22, 26) | 17 (16, 17) |

9.3 Role of socio-economic factors

Prior to any adjustment, men and women in Greater Glasgow were over 60% more likely to have a high GHQ12 score than those living in the rest of Scotland (Table 9.2a). Adjustment for socio-economic factors did not explain this excess, with individuals resident in Greater Glasgow remaining around 35% more likely to score highly. Results were less striking for West Central Scotland and stronger for Glasgow City, but overall conclusions were similar (Table 9.2b and Table 9.2c).

*Table 9.2a: Effect of Greater Glasgow residence compared with the rest of Scotland on having high GHQ12 score*

| | Men | | Women | |
|---|---|---|---|---|
| | OR | 95% CI | OR | 95% CI |
| Unadjusted | 1.61 | 1.36, 1.91 | 1.63 | 1.43, 1.85 |
| Age and survey year adjusted | 1.63 | 1.37, 1.93 | 1.63 | 1.43, 1.85 |
| Age, survey year and socio-economic adjusted | 1.35 | 1.10, 1.64 | 1.33 | 1.16, 1.52 |

*Table 9.2b: Effect of West Central Scotland residence compared with the rest of Scotland on having high GHQ12 score*

| | Men | | Women | |
|---|---|---|---|---|
| | OR | 95% CI | OR | 95% CI |
| Unadjusted | 1.47 | 1.29, 1.67 | 1.35 | 1.22, 1.50 |
| Age and survey year adjusted | 1.46 | 1.28, 1.66 | 1.35 | 1.22, 1.50 |
| Age, survey year and socio-economic adjusted | 1.23 | 1.07, 1.42 | 1.14 | 1.02, 1.27 |

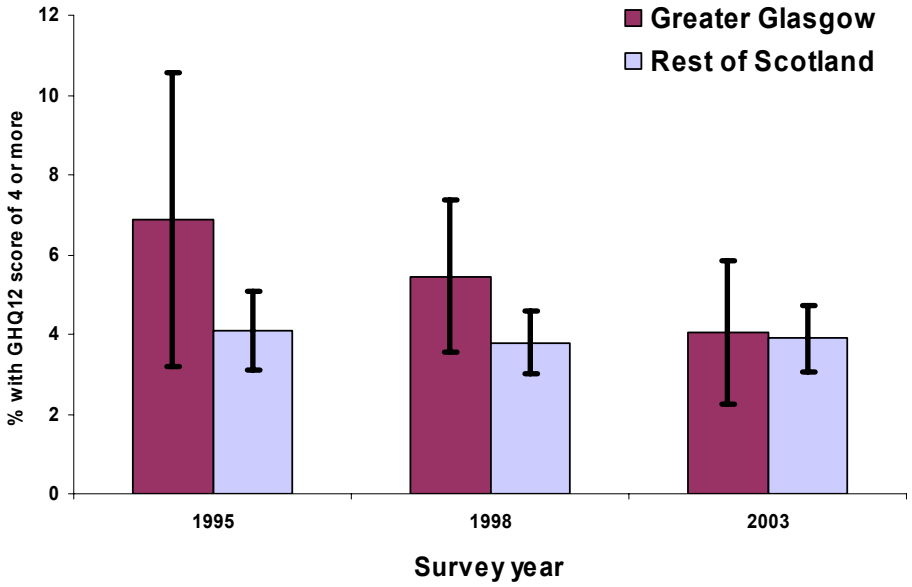
*Table 9.2c: Effect of Glasgow City residence compared with the rest of Scotland on having high GHQ12 score*

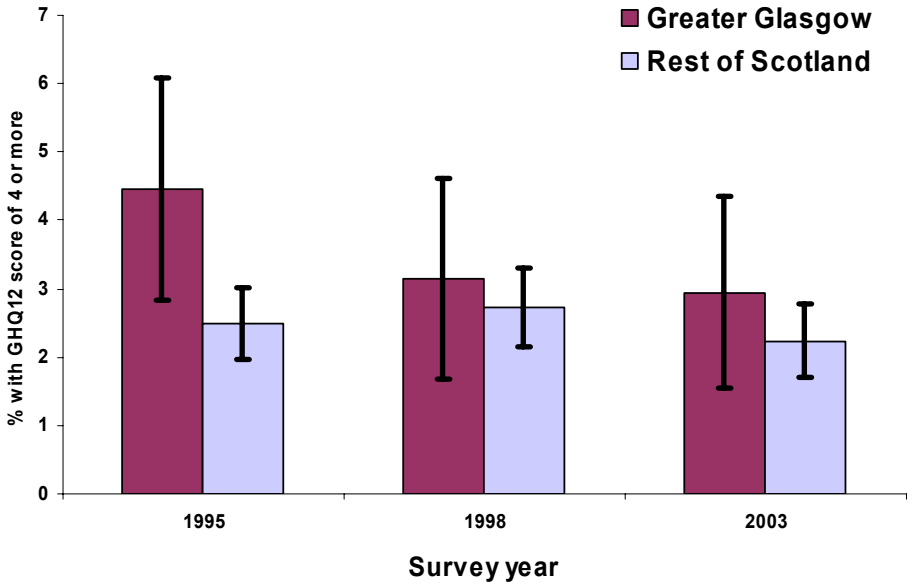
| | Men | | Women | |
|---|---|---|---|---|
| | OR | 95% CI | OR | 95% CI |
| Unadjusted | 1.86 | 1.55, 2.23 | 1.81 | 1.57, 2.09 |
| Age and survey year adjusted | 1.90 | 1.58, 2.27 | 1.82 | 1.58, 2.11 |
| Age, survey year and socio-economic adjusted | 1.54 | 1.20, 1.97 | 1.39 | 1.16, 1.65 |

9.4 Trends in percentages with high GHQ12 score for Greater Glasgow and the Rest of Scotland over time

Although differences were not significant for any of the individual survey years, the proportions of men and women scoring a GHQ12 of four or more were always higher in Greater Glasgow than in the rest of Scotland combined (Figure 9.2 a and b). There were consistent decreases over time for Greater Glasgow but the figures for the rest of the country were more static, although changes in the differences were not significant ($p$=0.335 and 0.970 for men and $p$=0.757 and 0.920 for women).

*Figure 9.2a & b: Trends in percentages with high GHQ12 score for Greater Glasgow and the rest of Scotland over time for ages 16-64 years only, men (top) and women (bottom)*



9.5 Comparisons of the most deprived and less deprived areas of Greater Glasgow

Proportions with high scoring GHQ12 were significantly higher for those living in the most deprived areas of Greater Glasgow [21% (95% CI: 18% to 24%) for men and 27% (95% CI: 24% to 30%) for women] compared with those living in less deprived areas in the region [14% (95% CI: 11% to 17%) for men and 21% (95% CI: 18% to 24%) for women]. For a detailed breakdown of comparisons by sex, age, Carstairs area deprivation, social class, education and economic activity, see Appendix A9.

CHAPTER 9 SUMMARY

- Significantly more Greater Glasgow respondents recorded a high GHQ12 score compared to respondents from elsewhere. This was the case for both men and women.

- Significantly higher levels were also recorded among several sub-groups of Greater Glasgow respondents. For men, these were: 45-54 year olds, those in the most deprived deprivation quintile, those in social classes III or IV, and those with no qualifications; for women they included: 25-74 year olds, those living in areas in Carstairs quintile 3, or the most deprived, those in social classes II, III, IV or V, and those with no or below degree level qualifications, and all of the economic activity groups.

- Socio-economic factors did not account for the higher rates recorded in Greater Glasgow, West Central Scotland or Glasgow City compared with elsewhere.

- Between 1995 and 2003, proportions for Greater Glasgow decreased whereas those for the rest of the country remained stable.

- There were higher proportions scoring high GHQ12 in the most deprived areas compared with less deprived areas in Greater Glasgow.

# CHAPTER 10: QUALITY OF LIFE

The next section looks at another aspect of wellbeing, health-related quality of life. This was introduced in the 2003 Scottish Health Survey and measured by the Medical Outcomes Study 12-Item Short Form (SF-12) (65). The SF-12 is a widely used self-reported measure of health-related quality of life, with both physical component and mental health component summary scale scores, obtained from aspects of physical functioning, activity limitations, bodily pain, general health, social functioning, and mental health (69). For each of these two components, Scottish Health Survey respondents were divided between those whose summary scale scores fell into the bottom quintile, (*i.e.* reflecting poor quality of life) and the rest.

## 10.1 Mental QOL component

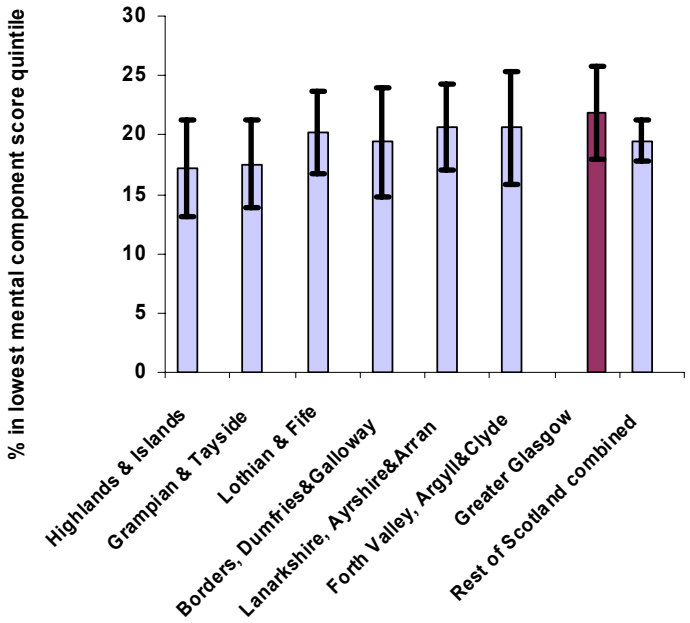
This section is concerned with the proportion of mental component summary scales in the lowest quintile. For ease of reporting, this will be referred to as poor mental quality of life (QOL).

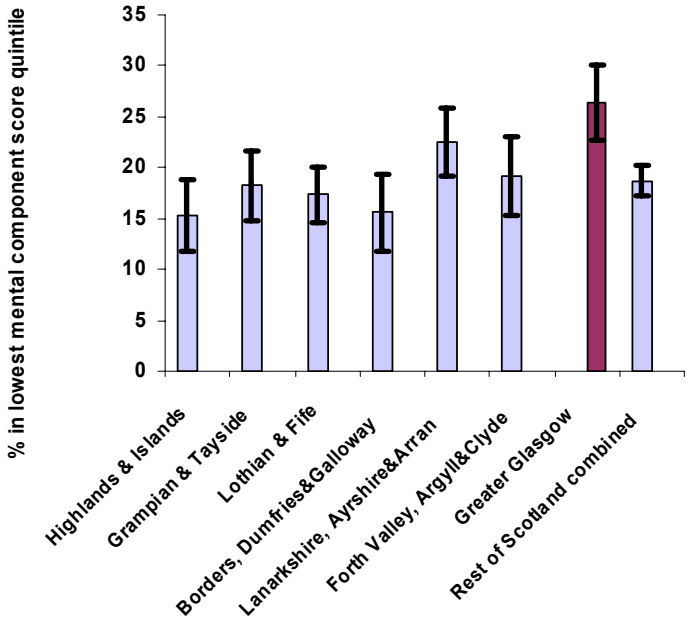
### 10.1.1 Regional comparisons

Among men, the proportion with a poor mental QOL component score was highest in Greater Glasgow, although differences were not significant (Figure 10.1a). The figure for Greater Glasgow was not significantly higher than that for the rest of Scotland overall.

For women, the figure for Greater Glasgow was again highest, significantly so compared with Highland and Islands, Grampian and Tayside, Lothian and Fife, and Borders and Dumfries & Galloway and with that for the rest of the country combined (Figure 10.1b).

*Figures 10.1a and b: Percentages with 95% confidence intervals with low mental QOL component scores by region for men (top) and women (bottom)*




10.1.2 Greater Glasgow vs the Rest of Scotland comparisons

Among men, the only sub-group with significantly different proportions of poor mental QOL for Greater Glasgow compared with the rest of the country was those for whom social class is unknown (Table 10.1). For women, rates were significantly higher in Greater Glasgow among those living in the third Carstairs quintile and those with no educational qualification attainment (Table 10.1).

*Table 10.1: Percentages (with 95% confidence intervals) with low mental QOL component scores for Greater Glasgow and the rest of Scotland by sex, age, Carstairs area deprivation, social class, education and economic activity based on Scottish Health Survey 2003 data*

| | | Men | | Women | |
|---|---|---|---|---|---|
| | | Greater Glasgow n=449 (15%) | Rest of Scotland n=2,543 (85%) | Greater Glasgow n=575 (15%) | Rest of Scotland n=3,215 (85%) |
| Age | 16-24 | 15 (4, 27) | 18 (10, 27) | 23 (11, 36) | 18 (11, 25) |
| | 25-34 | 23 (13, 32) | 18 (14, 23) | 30 (20, 39) | 17 (13, 20) |
| | 35-44 | 23 (15, 31) | 21 (17, 24) | 23 (15, 30) | 20 (17, 23) |
| | 45-54 | 19 (9, 28) | 20 (16, 24) | 32 (23, 41) | 20 (16, 23) |
| | 55-64 | 26 (16, 36) | 21 (17, 25) | 24 (15, 33) | 18 (14, 21) |
| | 65-74 | 21 (10, 31) | 16 (12, 21) | 25 (15, 35) | 16 (13, 20) |
| | 75 and over | 29 (12, 45) | 21 (15, 27) | 26 (15, 37) | 21 (16, 26) |
| Carstairs quintile | Least deprived | 15 (8, 22) | 17 (14, 21) | 10 (4, 16) | 14 (12, 17) |
| | 2 | 21 (7, 34) | 18 (14, 22) | 18 (6, 30) | 16 (13, 19) |
| | 3 | 13 (4, 23) | 18 (15, 22) | 37 (24, 50) | 17 (14, 20) |
| | 4 | 18 (8, 28) | 21 (17, 25) | 26 (16, 36) | 22 (19, 26) |
| | Most deprived | 30 (23, 36) | 26 (21, 32) | 33 (28, 39) | 26 (22, 31) |
| Social class | I | 23 (5, 41) | 18 (11, 25) | 28 (12, 43) | 12 (7, 17) |
| | II | 15 (8, 23) | 17 (13, 20) | 18 (11, 25) | 16 (13, 19) |
| | III | 23 (18, 29) | 21 (19, 24) | 28 (22, 33) | 20 (18, 22) |
| | IV | 20 (10, 31) | 18 (14, 22) | 27 (17, 37) | 20 (16, 24) |
| | V | 23 (8, 37) | 20 (14, 27) | 31 (19, 42) | 17 (12, 22) |
| | Unknown | 76 (46, 100) | 22 (8, 35) | 43 (17, 68) | 26 (13, 38) |
| Economic activity status | Employed | 15 (11, 20) | 15 (13, 17) | 19 (15, 24) | 14 (12, 16) |
| | Unemployed | 28 (9, 46) | 25 (15, 35) | 38 (14, 61) | 26 (15, 36) |
| | Retired | 23 (14, 31) | 18 (14, 21) | 27 (20, 34) | 20 (17, 23) |
| | Economically inactive | 44 (32, 56) | 54 (47, 61) | 38 (30, 46) | 28 (25, 32) |
| | Unknown | - | 38 (30, 46) | 71 (13, 100) | - |
| Education | No qualification | 28 (21, 35) | 25 (22, 28) | 34 (27, 40) | 22 (20, 25) |
| | Below degree level | 22 (15, 28) | 18 (15, 20) | 26 (20, 32) | 19 (16, 21) |
| | Degree level or above | 15 (9, 22) | 17 (13, 20) | 15 (9, 22) | 14 (11, 16) |
| | Unknown | - | - | 51 (0, 100) | 21 (0, 58) |
| Total | | 22 (18, 26) | 20 (18, 21) | 26 (23, 30) | 19 (17, 20) |

10.1.3 Role of socio-economic factors

Men in Greater Glasgow were no more likely to have poor mental QOL than those living elsewhere. Among women, those in Greater Glasgow were 62% (95% CI: 27% to 107%) more likely to have low mental QOL component scores than those living elsewhere (Table 10.2a). Results were unaffected by age and survey year adjustment. However, further adjustment by socio-economic circumstances rendered the ORs non-significant. Higher likelihood among men and women in West Central Scotland compared with the rest of Scotland was also explained by socio-economic factors (Table 10.2b). Glasgow City residence was more strongly associated with an elevated risk of poor mental QOL and remained significant after socio-economic adjustment in women (Table 10.2c).

*Table 10.2a: Effect of Greater Glasgow residence compared with the rest of Scotland on having low mental QOL component scores*

| | Men | | Women | |
|---|---|---|---|---|
| | OR | 95% CI | OR | 95% CI |
| Unadjusted | 1.18 | 0.88, 1.58 | 1.62 | 1.27, 2.07 |
| Age adjusted | 1.20 | 0.89, 1.61 | 1.63 | 1.27, 2.08 |
| Age and socio-economic adjusted | 0.81 | 0.57, 1.15 | 1.26 | 0.98, 1.62 |

*Table 10.2b: Effect of West Central Scotland residence compared with the rest of Scotland on having low mental QOL component scores*

| | Men | | Women | |
|---|---|---|---|---|
| | OR | 95% CI | OR | 95% CI |
| Unadjusted | 1.29 | 1.04, 1.60 | 1.54 | 1.27, 1.87 |
| Age adjusted | 1.31 | 1.05, 1.63 | 1.55 | 1.28, 1.88 |
| Age and socio-economic adjusted | 1.09 | 0.86, 1.38 | 1.16 | 0.96, 1.40 |

*Table 10.2c: Effect of Glasgow City residence compared with the rest of Scotland on having low mental QOL component scores*

| | Men | | Women | |
|---|---|---|---|---|
| | OR | 95% CI | OR | 95% CI |
| Unadjusted | 1.41 | 0.99, 2.01 | 2.18 | 1.70, 2.79 |
| Age adjusted | 1.45 | 1.02, 2.07 | 2.21 | 1.72, 2.84 |
| Age and socio-economic adjusted | 0.85 | 0.53, 1.37 | 1.66 | 1.21, 2.27 |

10.1.4 Comparisons of the most deprived and less deprived areas of Greater Glasgow

The proportion with poor mental QOL was significantly higher in the most deprived areas [30% (95% CI: 23% to 36%) for men and 33% (95% CI: 28% to 39%) for women] than in more affluent areas [16% (95% CI: 11% to 21%) for men and 20% (95% CI: 16% to 25%) for women] within Greater Glasgow. For a detailed breakdown of comparisons by sex, age, Carstairs area deprivation, social class, education and economic activity, see Appendix A10.1.

## 10.2 Physical functioning

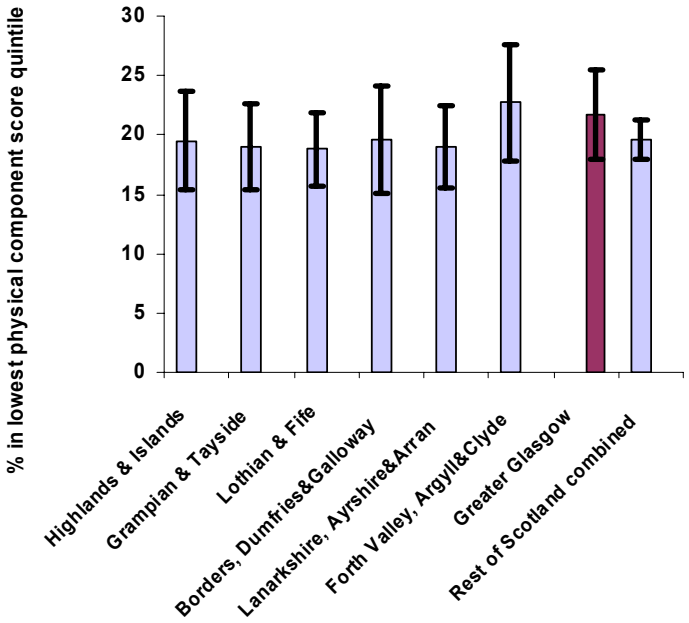
This section is concerned with the proportion of physical QOL component summary scales in the lowest quintile. For ease of reporting, this will be referred to as poor physical QOL.

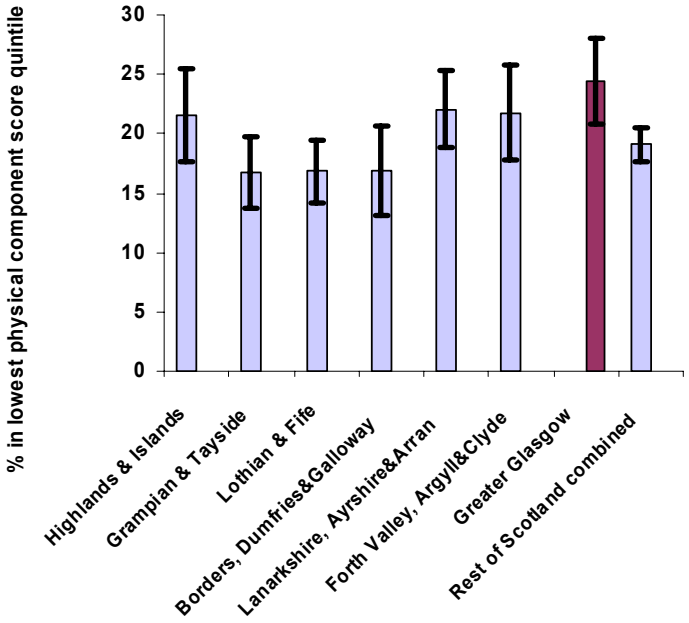
10.2.1 Regional comparisons

Among men, there were no significant differences between the proportion with poor physical QOL in Greater Glasgow and those in any of the other region groups (Figure 10.3a). In addition, the proportion in Greater Glasgow did not differ significantly from that for the rest of the country as a whole.

Among women, the proportion in Greater Glasgow was significantly higher than those for Grampian and Tayside, Lothian and Fife, and Borders and Dumfries & Galloway, as well as that for the rest of Scotland as a whole.

*Figures 10.3a and b: Percentages with 95% confidence intervals with low physical QOL component scores by region for men (top) and women (bottom)*




10.2.2 Greater Glasgow vs the Rest of Scotland comparisons

The proportion of men with poor physical QOL was higher in Greater Glasgow than in the rest of the country only for the sub-group with no educational qualifications (Table 10.3). Of the female sub-groups, those living in the second least deprived area quintile had significantly lower rates in Greater Glasgow whereas those in the most deprived area quintiles had significantly higher rates in Greater Glasgow compared to elsewhere (Table 10.3).

*Table 10.3: Percentages with low physical QOL component scores for Greater Glasgow and the rest of Scotland by sex, age, Carstairs area deprivation, social class, education and economic activity based on Scottish Health Survey 2003 data*

| | | Men | | Women | |
|---|---|---|---|---|---|
| | | Greater Glasgow n=449 (15%) | Rest of Scotland n=2,543 (85%) | Greater Glasgow n=575 (15%) | Rest of Scotland n=3,215 (85%) |
| Age | 16-24 | 9 (0, 18) | 4 (0, 9) | 14 (2, 26) | 5 (2, 8) |
| | 25-34 | 10 (3, 17) | 10 (6, 13) | 8 (3, 13) | 6 (4, 8) |
| | 35-44 | 12 (5, 18) | 10 (8, 13) | 15 (9, 22) | 10 (7, 12) |
| | 45-54 | 22 (12, 31) | 18 (15, 22) | 24 (16, 33) | 15 (12, 18) |
| | 55-64 | 37 (26, 48) | 25 (21, 29) | 29 (20, 39) | 24 (20, 27) |
| | 65-74 | 48 (35, 60) | 41 (36, 47) | 43 (31, 55) | 36 (31, 41) |
| | 75 and over | 48 (29, 67) | 49 (41, 56) | 56 (44, 69) | 55 (49, 61) |
| Carstairs quintile | Least deprived | 9 (4, 15) | 16 (13, 19) | 10 (4, 15) | 15 (12, 18) |
| | 2 | 15 (4, 26) | 18 (14, 21) | 5 (0, 12) | 17 (14, 20) |
| | 3 | 21 (10, 32) | 18 (14, 21) | 32 (20, 44) | 21 (18, 25) |
| | 4 | 16 (8, 25) | 22 (19, 26) | 23 (13, 32) | 22 (18, 25) |
| | Most deprived | 32 (25, 38) | 27 (21, 32) | 33 (28, 39) | 21 (17, 25) |
| Social class | I | 5 (0, 14) | 14 (8, 20) | 15 (3, 27) | 14 (9, 19) |
| | II | 14 (8, 20) | 16 (12, 19) | 14 (7, 20) | 16 (13, 19) |
| | III | 22 (17, 28) | 20 (18, 23) | 26 (20, 31) | 20 (18, 22) |
| | IV | 30 (18, 42) | 21 (17, 25) | 27 (17, 37) | 20 (17, 24) |
| | V | 36 (20, 52) | 27 (20, 34) | 38 (26, 50) | 24 (18, 30) |
| | Unknown | 42 (6, 77) | 20 (8, 31) | 34 (10, 59) | 26 (14, 37) |
| Economic activity status | Employed | 7 (4, 10) | 8 (7, 10) | 8 (5, 12) | 6 (5, 7) |
| | Unemployed | - | 13 (6, 19) | - | 8 (3, 14) |
| | Retired | 46 (37, 56) | 43 (39, 47) | 51 (42, 59) | 43 (40, 47) |
| | Economically inactive | 60 (48, 72) | 59 (52, 67) | 34 (27, 42) | 29 (25, 33) |
| | Unknown | - | - | - | - |
| Education | No qualification | 44 (37, 52) | 32 (29, 36) | 42 (36, 49) | 33 (30, 36) |
| | Below degree level | 14 (9, 19) | 17 (14, 19) | 17 (11, 22) | 11 (10, 13) |
| | Degree level or above | 5 (1, 9) | 10 (8, 13) | 9 (4, 13) | 12 (10, 14) |
| | Unknown | - | - | 51 (0, 100) | 69 (20, 100) |
| Total | | 22 (18, 25) | 20 (18, 21) | 24 (21, 28) | 19 (18, 21) |

10.2.3 Role of socio-economic factors

Men in Greater Glasgow were not significantly different in their risk of having low physical QOL scores from those in the rest of Scotland (Table 1.4a). Those in West Central Scotland (Table 1.4b) and Glasgow City (Table 1.4c) had increased risk but this was attenuated when account was taken of socio-economic factors. Women in Greater Glasgow were 41% (95% CI: 8% to 84%) more likely to have poor physical QOL than those living in the rest of Scotland (Table 10.4a). Differences in age and survey year did not explain the increased risk but results became non-significant after adjustment for socio-economic factors (OR 1.13, 95% CI: 0.81-1.59). Elevated rates of low physical QOL scores for West Central Scotland and Glasgow City (more pronounced) became non-significant on adjustment for socio-economic circumstances (Tables 10.4b and 10.4c, respectively).

*Table 10.4a: Effect of Greater Glasgow residence compared with the rest of Scotland on having low physical QOL component scores*

| | Men | | Women | |
|---|---|---|---|---|
| | OR | 95% CI | OR | 95% CI |
| Unadjusted | 1.15 | 0.88, 1.49 | 1.41 | 1.08, 1.84 |
| Age adjusted | 1.33 | 0.99, 1.78 | 1.53 | 1.14, 2.06 |
| Age and socio-economic adjusted | 0.77 | 0.56, 1.06 | 1.13 | 0.81, 1.59 |

*Table 10.4b: Effect of West Central Scotland residence compared with the rest of Scotland on having low physical QOL component scores*

| | Men | | Women | |
|---|---|---|---|---|
| | OR | 95% CI | OR | 95% CI |
| Unadjusted | 1.22 | 1.01, 1.48 | 1.50 | 1.24, 1.81 |
| Age adjusted | 1.29 | 1.04, 1.59 | 1.54 | 1.25, 1.88 |
| Age and socio-economic adjusted | 0.93 | 0.75, 1.15 | 1.14 | 0.92, 1.42 |

*Table 10.4c: Effect of Glasgow City residence compared with the rest of Scotland on having low physical QOL component scores*

| | Men | | Women | |
|---|---|---|---|---|
| | OR | 95% CI | OR | 95% CI |
| Unadjusted | 1.52 | 1.16, 2.01 | 1.64 | 1.26, 2.13 |
| Age adjusted | 1.86 | 1.37, 2.51 | 1.80 | 1.34, 2.43 |
| Age and socio-economic adjusted | 0.92 | 0.63, 1.34 | 1.13 | 0.76, 1.68 |

10.2.4 Comparisons of the most deprived and less deprived areas of Greater Glasgow

Within Greater Glasgow, the proportion with poor physical QOL was significantly higher in the most deprived areas [32% (95% CI: 25% to 38%) for men and 33% (95% CI: 28% to 39%) for women] compared with the other areas [14% (95% CI: 10% to 18%) for men and 17% (95% CI: 21% to 21%) for women]. For a detailed breakdown of comparisons by sex, age, Carstairs area deprivation, social class, education and economic activity, see Appendix A10.2.

CHAPTER 10 SUMMARY

Mental QOL component

- Among women, a significantly higher proportion of Greater Glasgow respondents had poor mental health QOL compared to respondents in the rest of the country. However, this was not the case for men.

- Compared to the rest of Scotland, the proportions of Greater Glasgow respondents with poor mental health QOL was, for women, significantly higher among those living in areas in the third Carstairs quintile of deprivation and those with no educational qualification attainment.

- Elevated rates of poor mental health QOL for women in Greater Glasgow and men and women in West Central Scotland ceased to be significant on adjustment by socio-economic circumstances. Results for women in Glasgow City remained significant after socio-economic adjustment.

- Within Greater Glasgow, proportions with poor mental health QOL were significantly higher in the most deprived areas compared with the less deprived areas.

Physical QOL component

- As for the mental health score, the proportion with poor physical QOL in Greater Glasgow was significantly higher than that for the rest of Scotland as a whole among women, but not men.

- For men with no educational qualifications and women living in the most deprived area quintiles, the proportion with poor physical QOL was higher in Greater Glasgow than in the rest of the country; for women living in the second least deprived areas, the proportion was lower in Greater Glasgow.

- Elevated proportions with poor physical QOL among women in Greater Glasgow, and among men and women in West Central Scotland and Glasgow City were explained by socio-economic circumstances.

- The proportion with poor physical QOL was significantly higher in the most deprived areas compared with more affluent areas in Greater Glasgow.

# CHAPTER 11: MORTALITY

As a whole, Scotland has higher mortality rates than the rest of the UK (2, 17). Mortality, like morbidity, is closely linked with socio-economic circumstances (9) and within Scotland there are geographical as well as social inequalities in mortality (5, 11, 17). There are especially large effects for certain causes, such as alcohol-related causes: Glasgow City had the highest alcohol-related death rate in the UK among both men and women in 1998-2004 (70).

Unlike all previous chapters in this report, which are based on Scottish Health Survey data, this chapter makes use of mortality data from the General Register Office for Scotland. Comparisons are made of mortality in the years 2000-2002 for the Greater Glasgow area and the rest of Scotland. The extent to which area deprivation accounts for any differences is examined. Mortality from all causes, as well as from specific causes was ascertained using the International Classification of Diseases (ICD) 10$^{th}$ classification scheme (71), as follows:

- coronary heart disease (CHD) (ICD10 I20-I25) ,
- stroke (I60-I69, G45),
- all cancers (C00-C97),
- lung (C33-C34) cancer,
- breast (C50) cancer,
- mental and behavioural disorders due to the use of alcohol (F10),
- chronic liver disease (K70, K73-K74),
- mental and behavioural disorders due to the use of drugs (F11-16, F18-F19), and
- suicide/self-harm (X60-84, Y10-Y34, Y87.0, Y87.2),

As well as mortality in adults of all ages, premature mortality - that is mortality in adults aged 16-64 years - was investigated.

11.1.1 Greater Glasgow vs the Rest of Scotland comparisons

*All adults*

Age-adjusted all cause mortality was significantly higher in Greater Glasgow than in the rest of Scotland among both males and females (Table 11.1). However, on adjustment for area deprivation, results were no longer significant. Similarly, the significantly higher rates of CHD mortality among women, stroke mortality in men, and all cancer and lung cancer mortality in women in Greater Glasgow were explained by area deprivation.

However, Greater Glasgow's significantly elevated male mortality from all cancers, lung cancer, chronic liver disease, and mental and behavioural disorders due to the use of drugs remained after adjustment by area deprivation. The largest risk ratios were for chronic liver disease and mental and behavioural disorders due to the use of drugs. On adjustment, mortality from CHD among men and mental and behavioural disorders due to the use of alcohol in both men and women became significantly lower in Greater Glasgow, although the effect was marginal.

Surprisingly, compared with those in the rest of Scotland, women in Greater Glasgow had significantly lower mortality from mental and behavioural disorders due to the uses of alcohol and drugs, and from suicide/self-harm. This difference was not explained by adjustment for area deprivation.

There was no significant difference in rates of death from suicide/self-harm among men, or breast cancer or chronic liver disease among women; and adjustment for area deprivation did not alter this.

*Table 11.1: Effect of Greater Glasgow residence compared with the rest of Scotland on all cause and cause specific mortality in men and women aged 16 years and over*

| | Men | | | Men | | Women | | | Women | |
|---|---|---|---|---|---|---|---|---|---|---|
| Mortality | | | Age adjusted | | Age and area deprivation adjusted | | | Age adjusted | | Age and area deprivation adjusted |
| | Number of deaths | RR | 95% CI | RR | 95% CI | Number of deaths | RR | 95% CI | RR | 95% CI |
| All cause | 80,671 | 1.27 | 1.24, 1.30 | 1.01 | 0.99, 1.04 | 89,319 | 1.13 | 1.11, 1.16 | 0.97 | 0.95, 1.00 |
| CHD | 18,668 | 1.14 | 1.10, 1.19 | 0.94 | 0.90, 0.99 | 16,807 | 1.11 | 1.06, 1.16 | 0.96 | 0.92, 1.01 |
| Stroke | 7,324 | 1.12 | 1.05, 1.20 | 1.00 | 0.93, 1.08 | 12,677 | 1.00 | 0.94, 1.07 | 0.95 | 0.89, 1.01 |
| All cancers | 22,797 | 1.20 | 1.16, 1.24 | 1.06 | 1.02, 1.10 | 22,014 | 1.12 | 1.08, 1.16 | 1.00 | 0.96, 1.04 |
| Lung cancer | 6,771 | 1.42 | 1.34, 1.51 | 1.12 | 1.05, 1.21 | 5,060 | 1.39 | 1.29, 1.49 | 1.08 | 1.00, 1.17 |
| Breast cancer | - | - | - | - | - | 3,335 | 0.93 | 0.84, 1.02 | 0.93 | 0.84, 1.03 |
| Mental and behavioural disorders - Alcohol | 718 | 0.92 | 0.83, 1.02 | 0.87 | 0.78, 0.98 | 276 | 0.85 | 0.76, 0.94 | 0.88 | 0.79, 0.99 |
| Chronic liver disease | 2,064 | 2.33 | 2.10, 2.59 | 1.30 | 1.15, 1.47 | 1,049 | 1.00 | 0.91, 1.10 | 0.95 | 0.85, 1.06 |
| Mental and behavioural disorders - Drugs | 640 | 2.84 | 2.37, 3.40 | 1.24 | 1.00, 1.54 | 120 | 0.83 | 0.75, 0.92 | 0.88 | 0.78, 0.99 |
| Suicide/self-harm | 1,903 | 0.99 | 0.91, 1.08 | 0.90 | 0.78, 1.03 | 647 | 0.86 | 0.77, 0.95 | 0.88 | 0.79, 0.99 |

*Adults aged 16-64 years*
Generally, results for premature mortality were similar to those for mortality in all adults, but tended to be more pronounced (Table 11.2).

Significantly higher rates of premature mortality from all causes, CHD, stroke, all cancers and lung cancer in both sexes, suicide/self-harm in men and chronic liver disease in women were explained by area deprivation.

However, Greater Glasgow's significantly higher male premature mortality rates from chronic liver disease and mental and behavioural disorders due to the use of drugs remained after adjustment. The significantly lower premature death rates from mental and behavioural disorders due to the use of alcohol among men, from mental and behavioural disorders due to the use of drugs among women and from suicide/self-harm among women became non-significant after adjustment for deprivation. Premature deaths from breast cancer were not significantly higher in Greater Glasgow compared with the rest of Scotland.

*Table 11.2: Effect of Greater Glasgow residence compared with the rest of Scotland on all cause and cause specific mortality in men and women aged 16-64 years*

| | Men | | | Men | | Women | | | Women | |
|---|---|---|---|---|---|---|---|---|---|---|
| Mortality | | | Age adjusted | | Age and area deprivation adjusted | | | Age adjusted | | Age and area deprivation adjusted |
| | Number of deaths | RR | 95% CI | RR | 95% CI | Number of deaths | RR | 95% CI | RR | 95% CI |
| All cause | 21,309 | 1.50 | 1.43, 1.57 | 1.01 | 0.97, 1.06 | 12,577 | 1.31 | 1.25, 1.38 | 0.99 | 0.94, 1.05 |
| CHD | 4,227 | 1.38 | 1.27, 1.50 | 0.98 | 0.89, 1.07 | 1,350 | 1.50 | 1.30, 1.74 | 0.97 | 0.82, 1.15 |
| Stroke | 855 | 1.41 | 1.19, 1.67 | 1.10 | 0.90, 1.34 | 764 | 1.41 | 1.18, 1.68 | 1.19 | 0.97, 1.46 |
| All cancers | 5,961 | 1.23 | 1.14, 1.32 | 0.98 | 0.90, 1.06 | 5,364 | 1.12 | 1.04, 1.20 | 0.96 | 0.88, 1.04 |
| Lung cancer | 1,705 | 1.52 | 1.33, 1.72 | 1.01 | 0.87, 1.16 | 1,147 | 1.35 | 1.17, 1.56 | 1.00 | 0.83, 1.19 |
| Breast cancer | - | - | - | - | - | 1,266 | 0.82 | 0.74, 0.90 | 0.90 | 0.75, 1.08 |
| Mental and behavioural disorders - Alcohol | 578 | 0.93 | 0.81, 1.06 | 0.86 | 0.75, 0.99 | 222 | 0.87 | 0.77, 0.99 | 0.91 | 0.79, 1.04 |
| Chronic liver disease | 1,531 | 2.50 | 2.21, 2.83 | 1.31 | 1.14, 1.51 | 732 | 1.81 | 1.52, 2.14 | 0.95 | 0.84, 1.09 |
| Mental and behavioural disorders - Drugs | 640 | 2.84 | 2.37, 3.40 | 1.25 | 1.00, 1.54 | 120 | 0.86 | 0.76, 0.98 | 0.92 | 0.80, 1.05 |
| Suicide/self-harm | 1,705 | 1.24 | 1.09, 1.40 | 0.88 | 0.76, 1.02 | 537 | 0.88 | 0.78, 0.99 | 0.90 | 0.78, 1.03 |

11.1.4 Comparisons of the most deprived and less deprived areas of Greater Glasgow

*All adults*

Within Greater Glasgow, men and women living in the 20% most deprived areas had significantly higher all-cause mortality than those living in other areas (Table 11.3). Results were similar for deaths from CHD, stroke, all cancers, lung cancer and suicide/self-harm. Mortality from chronic liver disease, and mental and behavioural disorders due to the use of drugs was significantly higher in deprived areas among men only. Deaths from breast cancer (women only), and from mental and behavioural disorders due to the use of alcohol were not significantly different between areas within Greater Glasgow for either men or women.

*Table 11.3: Age-adjusted effect of living in deprived areas compared with non-deprived areas in Greater Glasgow on mortality in men and women aged 16 years and over*

| Mortality | Men | | Women | |
|---|---|---|---|---|
| | RR | 95% CI | RR | 95% CI |
| All cause | 1.70 | 1.63, 1.78 | 1.40 | 1.34, 1.47 |
| CHD | 1.64 | 1.52, 1.77 | 1.31 | 1.21, 1.42 |
| Stroke | 1.26 | 1.12, 1.42 | 1.18 | 1.07, 1.31 |
| All cancers | 1.43 | 1.34, 1.53 | 1.29 | 1.21, 1.38 |
| Lung cancer | 1.82 | 1.63, 2.04 | 1.70 | 1.50, 1.93 |
| Breast cancer | - | - | 0.98 | 0.83, 1.16 |
| Mental and behavioural disorders - Alcohol | 1.06 | 0.92, 1.22 | 0.83 | 0.69, 1.00 |
| Chronic liver disease | 3.05 | 2.52, 3.69 | 1.11 | 0.97, 1.28 |
| Mental and behavioural disorders - Drugs | 4.29 | 3.06, 6.00 | 0.84 | 0.70, 1.02 |
| Suicide and self-harm | 1.70 | 1.63, 1.78 | 1.40 | 1.34, 1.47 |

*Adults aged 16-64 years*

Comparisons of premature mortality rates between the most deprived and less deprived areas in Greater Glasgow showed a similar pattern to those for mortality in adults of all ages combined, but with stronger effects (Table 11.4). Exceptions were premature female mortality from strokes, which showed no statistically significant difference by area deprivation; and from chronic liver disease, which was significantly higher for women within the most deprived areas.

*Table 11.4: Effect of living in the most deprived areas compared with less deprived areas in Greater Glasgow on mortality in men and women aged 16-64 years*

| Mortality | Men | | Women | |
|---|---|---|---|---|
| | RR | 95% CI | RR | 95% CI |
| All cause | 2.47 | 2.28, 2.67 | 1.86 | 1.71, 2.02 |
| CHD | 2.29 | 1.97, 2.65 | 2.67 | 2.03, 3.49 |
| Stroke | 1.82 | 1.32, 2.51 | 0.96 | 0.82, 1.14 |
| All cancers | 1.90 | 1.68, 2.16 | 1.41 | 1.24, 1.60 |
| Lung cancer | 2.57 | 2.04, 3.24 | 1.88 | 1.44, 2.46 |
| Breast cancer | - | - | 0.91 | 0.67, 1.22 |
| Mental and behavioural disorders - Alcohol | 1.11 | 0.93, 1.32 | 0.92 | 0.54, 1.57 |
| Chronic liver disease | 3.23 | 2.59, 4.03 | 1.20 | 1.00, 1.43 |
| Mental and behavioural disorders - Drugs | 4.29 | 3.06, 6.00 | 0.93 | 0.77, 1.11 |
| Suicide and self-harm | 2.47 | 2.28, 2.67 | 1.86 | 1.71, 2.02 |

CHAPTER 11 SUMMARY

*All adults*

- In men, significantly higher rates of all-cause, and stroke mortality in Greater Glasgow compared with the rest of the country were accounted for by area deprivation. Significantly elevated rates of mortality from all cancers, lung cancer, chronic liver disease and mental and behavioural disorders due to the use of drugs remained after adjustment for area deprivation - the Greater Glasgow excess being greatest for the latter two. Deaths rates from suicide/self-harm were not significantly different in Greater Glasgow than the rest of Scotland. Mortality from CHD, and mental and behavioural disorders due to the use of alcohol became marginally lower in Greater Glasgow on adjustment.

- Among women, the higher rates of all-cause, CHD, and cancer mortality in Greater Glasgow were explained by area deprivation. Significantly lower mortality rates from mental and behavioural disorders due to the uses of alcohol and drugs, and from suicide/self-harm, were seen in Greater Glasgow, than in the rest of Scotland and this was not altered on adjustment by area deprivation. Death rates from breast cancer, and chronic liver disease were not significantly different in Greater Glasgow than in the rest of Scotland.

- Men and women living in the most deprived communities had significantly higher rates of all-cause, CHD, stroke, all cancers, lung cancer, and suicide/self-harm mortality than those living in other areas within Greater Glasgow; however, mortality from breast cancer, and from mental and behavioural disorders due to the use of alcohol were not significantly different between area types within Greater Glasgow. Deaths from chronic liver disease, and mental and behavioural disorders due to the use of drugs were significantly higher in the most deprived areas among men.

*Adults aged 16-64 years*

- Among men, results for premature mortality in Greater Glasgow compared with the rest of Scotland were generally similar to those for all adult mortality, but more pronounced. The exceptions were for premature mortality from all cancers and lung cancer (for which the differences became non-significant on adjustment for area deprivation), and premature suicide and self harm mortality (which for this age group was significantly higher in Greater Glasgow prior to area deprivation adjustment).

- As for mortality in all adults, significantly higher rates of premature female mortality in Greater Glasgow from all causes, CHD, stroke, all cancers, lung cancer, and chronic liver disease were explained by area deprivation. Significantly lower rates for mental and behavioural disorders due to the use of drugs and suicide/self-harm were accounted for by deprivation adjustment. Deaths from breast cancer, and from mental and behavioural disorders due to the use of alcohol were not significantly higher in Greater Glasgow than in the rest of Scotland.

- Findings for premature mortality between the most deprived and less deprived areas in Greater Glasgow were stronger than, but in line with, those for all adult mortality. In addition, in women, differences between areas in premature deaths from strokes were non-significant and from chronic liver disease were significant.

# DISCUSSION

Generally, although the Glasgow area has an unfavourable health profile compared with the rest of Scotland, differences in socio-economic circumstances – in terms of area deprivation, individual social class, educational qualification attainment and employment status – account for some of the "Glasgow effect" on health-related behaviours and health outcomes. Findings vary by sex as well as across the various Glasgow geographies: Greater Glasgow, West Central Scotland and Glasgow City. Although there were some exceptions, effects (that is, differences not explained by socio-economic factors) were generally strongest for Glasgow City, with West Central Scotland having the most moderate effects and Greater Glasgow intermediate between the two.

Main Findings

A summary of the main findings has been tabulated in Appendix B1. While a number of dimensions of health are no different in the West Central Scotland/Glasgow area than elsewhere in Scotland – such as obesity, diabetes, certain causes of death, aspects of diet and alcohol consumption (women only) – many health indicators are elevated in the region. Although a substantial proportion of these differences – such as cardiovascular disease, self-assessed health, most causes of death, smoking and physical activity – can be accounted for by the distinct socio-economic profile of the area, there are aspects of health which transcend the socio-economic explanation and seem to truly represent a "Glasgow effect". The following is a summary of unfavourable mortality, morbidity and lifestyle findings on West Central Scotland, Greater Glasgow and Glasgow City which persisted even after adjustment by socio-economic factors:

Once account was taken of socio-economic circumstances, there remained excesses of long standing illness, acute sickness and high scoring GHQ12 – associated with psychiatric morbidity – among men in West Central Scotland compared with the rest of Scotland. Persistently elevated rates of excessive alcohol consumption and binge drinking in the area may be causing such excesses in morbidity.

Excess mortality from all cancers, and from lung cancer, as well as overall and premature mortality from chronic liver disease, and from mental and behavioural disorders due to the use of drugs persisted in men in Greater Glasgow even after adjustment for socio-economic factors. As for the whole of West Central Scotland, acute sickness and high scoring GHQ12 (but not long standing illness) remained in Greater Glasgow, with high levels of daily and weekly alcohol consumption possibly at the root of the problems. Poor diet, in terms of low green vegetable consumption, also persisted in Greater Glasgow as well as West Central Scotland as a whole.

As for the Greater Glasgow area, enduring acute sickness and high scoring GHQ12 among men in Glasgow City, could be explained by their consistently high alcohol consumption.

Among women in West Central Scotland and Greater Glasgow there remained an excess of high GHQ12 scores compared with the rest of Scotland following adjustment for socio-economic effects. Persistently low green vegetable intake in West Central Scotland was also found.

Women in Glasgow City were identified as having comparatively higher rates of poor self-reported general health and mental aspects of quality of life as well as high scoring GHQ12, all of which remained after account of socio-economic factors.

Higher levels of negative health-related behaviours and health outcomes in Greater Glasgow relative to the rest of the country were found to be clustered within certain sub-groups of the population. This was the case for individuals with no qualifications; 45-64 year old men; women in the most deprived areas; women in social classes IV and V; retired or economically inactive women and women with below degree level qualifications.

Differences in health-related-behaviours and outcomes between adults living in deprived area compared with non-deprived areas within Greater Glasgow tend to be larger than difference between Glasgow and rest of Scotland. With the exceptions of alcohol consumption (both excess and binge drinking) in adults generally, and obesity and CHD alone among women, behaviours and outcomes were significantly less favourable in deprived areas. All-cause mortality was higher in deprived areas, and this was the case for the majority of the specific causes. Exceptions were mortality from mental and behavioural disorders due to the use of alcohol, and mortality from mental and behavioural disorders due to the use of drugs, breast cancer and chronic liver disease among women. Patterns were similar for premature mortality (see Appendix B2 for summary).

Caution should be exercised when interpreting trends over time analyses – in most cases, the survey-specific numbers are too small to make any reliable inference.

Limitations

Most of the Scottish Health Survey data come from self-completed questionnaires and, therefore, involve self-reported measures without objective or external validation. The reliability of some measures, especially alcohol consumption, and diet, is questionable as respondents are known to provide answers that convey more favourable alcohol intake and nutritional profiles than objective data suggest. For instance, it was found here that in 2003 the percentage of men exceeding recommended weekly alcohol limits was lower than in 1998, both in Greater Glasgow and elsewhere. It is known, however, that, rates of alcohol-related harm have risen over this period (26) and it is thus unlikely that these self-reported consumption levels are a genuine reflection of the true situation. Nevertheless, the survey data remain useful for carrying out comparisons across population groups within similar periods of time.

Differences in non-response rates by social class and area deprivation could potentially bias the results. There is evidence that under-reporting of alcohol intake does vary by social class (72), so particular care should be taken when interpreting data on excess weekly consumption and binge drinking. Data on response rates by social class and area deprivation were not readily available so this could not be directly assessed, but given the similarity of response rates in Glasgow compared to those overall, there was not reason to believe this phenomenon was occurring to any great extent.

Since the bulk of extreme deprivation in Scotland is within Greater Glasgow, it was important to be mindful of the adjustment in the formal statistical modelling analyses: as residence in the Glasgow area is highly correlated with living in a deprived area, working with Carstairs index of area deprivation in a small number of categories could have lead to inadvertent adjusting for "Glasgow" and lead to spurious non-significant results after adjustment. Using Carstairs on a continuous scale, as was done in the formal analyses here, preserves the range of the distribution, and should have resolved this potential problem.

The socio-economic instruments used are not necessary entirely representative of the aspects of material and social wealth which are being attempted to be measured, and as such, are potentially flawed; use of area deprivation, individual social class, educational qualification attainment and employment status does not necessarily capture the full picture. Residual confounding of the effects of Glasgow residence (where they remain after adjustment) cannot be ruled out.

Employment status was included as a component of socio-economic status in; its role should be considered with care. Since it is likely that individuals are out of the active workforce due to health conditions, it was conceivable that adjusting for economic activity may have been inappropriate for the health outcomes – the potential danger would be "over-adjusting" (73). To be sure, analyses were re-run excluding adjustment for economic activity. With the single exception of a change in the results for cardiovascular disease among men (the significantly lower rates found on adjustment for economic activity became non-significant when this was removed from the model), conclusions remained the same.

Strengths

The Scottish Health Surveys, carried out during 1995/1996, 1998/1999 and 2003/2004, are based on representative samples of the population with relatively high response rates. They form an effective basis for consistent comparisons of different population groups and over time. The combining here of all these available data has enabled comparisons with increased power to detect differences where they exist.

The statistical methodology used was rigorous, encompassing weighting and multilevel modelling, with formal interaction tests used to detect changes in any differences over time; it is thus accurate and reliable. With the extra effort involved in obtaining codings for postcode sector area data consistent across all three surveys, the accounting for data hierarchy is as accurate as possible.

Conclusions

So, to conclude, socio-economic differences explain many of the unfavourable aspects of health and related lifestyles (where they exist) in adults living in the West Central Scotland/Glasgow area. However, once account was taken of socio-economic circumstances, there remained excesses of long standing illness, acute sickness and high scoring GHQ12 – associated with psychiatric morbidity – among men in the West Central Scotland/Glasgow area compared with the rest of Scotland. Persistently elevated rates of excessive alcohol consumption and binge drinking among men in the area may be causing such excesses in morbidity. Excess male mortality from all cancers, lung cancer, as well as overall and premature mortality from chronic liver disease, and from mental and behavioural disorders due to the use of drugs persisted in men in Greater Glasgow even after adjustment for socio-economic factors. Poor diet, in terms of low green vegetable consumption, persisted in men and women. Among women in the West Central Scotland/Glasgow there remained an excess of poor self-reported general health and mental aspects of quality of life as well as high scoring GHQ12 following adjustment for socio-economic effects.

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# GLOSSARY

The following is a guide to the technical terms used in this report. Definitions are based on those in 'A dictionary of epidemiology' by James M Last (74).

Confidence interval
The compute interval with a (conventionally and) 95% probability that the true value of an item (for instance, a proportion, as in this report) is contained within the interval.

Continuous values
Data representing a measure with a potentially infinite number of possible values along a continuum, such as Carstairs index of area deprivation. Other examples include height and weight.

Explanatory variable
A characteristic (potentially) associated with the outcome of interest. In this report the main explanatory variables of interest relate to residence in the Glasgow area.

Health-related behaviour
Aspects of lifestyle associated with health and development of disease. For example, in this report, data on behaviours such as smoking, alcohol consumption, diet and physical activity are considered.

Independence
Observations within a sample are independent if there is no hierarchy, or clustering, within different groups.

Intraclass correlation
In a hierarchical situation, where observations are clustered within groups, the within-group correlation of values is known as intraclass correlation.

Logistic regression
A statistical technique which models an individual's probability of a particular outcome (here, this would be a health-related behaviour or health outcome) in terms of a possible explanatory variable (for instance, in this case, living in Greater Glasgow) and expresses this probability as an odds ratio.

Multilevel analyses
Statistical methods that account for the clustering, or hierarchy, inherent in the structure of many data: for instance, the grouping of individuals within postcode sectors in survey data.

Multivariable analysis
Statistical analysis with more than one explanatory variable is termed multivariable analysis (also referred to as multivariate analysis). As in this report, secondary explanatory variables may be included merely for the purposes of accounting for them in relation to the relationship between the outcome and the main explanatory outcome of interest.

Negative binomial regression
A statistical technique used to analyze the number of occurrences of an event of interest (deaths in this report) in relation to explanatory variable/s (in this case Greater Glasgow residence). Negative binomial regression is used as an alternative to Poisson regression with less strict conditions.

Odds ratio
An expression of probability obtained from the fitting of a logistic regression model; literally the ratio of two odds. In this report, for example, the ratio of the odds of having cardiovascular disease for people living in Greater Glasgow compared with the odds of having cardiovascular disease for people living in elsewhere in Scotland is obtained. An odds ratio of 1 indicates that the event is equally likely in both groups; an odds ratio greater than 1 indicates that the event is more likely in the Greater Glasgow population than elsewhere in Scotland; and an odds ratio less than 1 indicates that the converse is true.

Outcome variable
The aspect of interest, in this case a health-related behaviour or health outcome.

Poisson regression
A statistical technique used to analyze the number of occurrences of an event of interest in relation to explanatory variable/s. Negative binomial regression is used as an alternative to Poisson regression with less strict conditions.

Power
The power of a study is its ability to demonstrate an association between an outcome (health-related behaviour or health outcome in this report) and an explanatory factor (Greater Glasgow residence, for example).

Relative risk
The ratio of the risks of disease or death among two groups given by negative binomial/Poisson regression models. In this report relative risks give the risk of mortality among individuals living in Greater Glasgow relative to that of those living in the rest of Scotland.

Statistical interaction
Statistical interaction occurs when effects of a factor (for instance, Greater Glasgow, as in this report) differ according the level of another factor (for instance survey year).

Univariable regression
Statistical analysis with inclusion of just one explanatory variable in the model, is termed univariable analysis (also referred to as univariate analysis).

Weighting
The statistical procedure which adjusts data to account for non-response in a survey, corresponding to the characteristics (such as age, sex, and geographical area) associated with response/non-response. This attempts to achieve unbiased results by differentially weighting respondents on a combination of probabilities in relation to those characteristics.

# APPENDICES

*Appendix A1.1: Percentages (with 95% confidence intervals) exceeding recommended weekly alcohol limits for most deprived quintile areas and the rest of Greater Glasgow by sex, age, Carstairs area deprivation, social class, education and economic activity based on Scottish Health Survey 1995, 1998 and 2003 data*

| | | Men | | Women | |
|---|---|---|---|---|---|
| | | Most deprived areas n=813 (51%) | Rest of Greater Glasgow n=783 (49%) | Most deprived areas n=1,170 (54%) | Rest of Greater Glasgow n=1,003 (46%) |
| Age | 16-24 | 49 (38, 60) | 37 (27, 47) | 20 (12, 27) | 19 (11, 28) |
| | 25-34 | 43 (34, 52) | 36 (28, 44) | 21 (16, 27) | 22 (16, 28) |
| | 35-44 | 33 (24, 41) | 33 (26, 40) | 15 (10, 19) | 16 (11, 21) |
| | 45-54 | 34 (25, 42) | 30 (22, 39) | 10 (5, 15) | 17 (11, 22) |
| | 55-64 | 30 (23, 37) | 32 (23, 41) | 5 (2, 8) | 12 (7, 17) |
| | 65-74 | 24 (15, 33) | 29 (19, 40) | 2 (0, 4) | 4 (0, 7) |
| | 75 and over | 22 (3, 40) | 14 (0, 28) | 2 (0, 6) | - |
| Carstairs quintile | Least deprived | - | 33 (27, 39) | - | 17 (13, 21) |
| | 2 | - | 34 (24, 43) | - | 18 (12, 25) |
| | 3 | - | 33 (25, 41) | - | 16 (10, 21) |
| | 4 | - | 33 (26, 40) | - | 13 (8, 18) |
| | Most deprived | 36 (33, 40) | - | 13 (11, 15) | - |
| Social class | I | 36 (15, 57) | 30 (19, 40) | 6 (0, 14) | 22 (12, 31) |
| | II | 34 (24, 43) | 31 (25, 37) | 15 (9, 21) | 18 (13, 22) |
| | III | 35 (30, 40) | 36 (30, 42) | 13 (10, 16) | 14 (11, 18) |
| | IV | 39 (30, 48) | 37 (25, 49) | 13 (9, 18) | 15 (7, 24) |
| | V | 37 (25, 49) | 35 (17, 53) | 8 (4, 12) | 10 (2, 19) |
| | Unknown | 44 (29, 59) | 16 (2, 29) | 19 (8, 30) | 11 (3, 20) |
| Economic activity status | Employed | 39 (33, 45) | 36 (32, 41) | 16 (12, 19) | 19 (15, 22) |
| | Unemployed | 41 (30, 51) | 23 (11, 35) | 13 (1, 24) | 35 (14, 56) |
| | Retired | 25 (17, 33) | 30 (21, 38) | 4 (1, 6) | 6 (2, 9) |
| | Economically inactive | 34 (27, 40) | 26 (17, 35) | 14 (10, 18) | 12 (8, 16) |
| | Unknown | 76 (34,100) | - | 76 (26,100) | - |
| Education | No qualification | 35 (30, 39) | 32 (25, 38) | 9 (7, 11) | 10 (7, 14) |
| | Below degree level | 40 (33, 47) | 38 (32, 44) | 17 (13, 21) | 17 (13, 20) |
| | Degree level or above | 33 (20, 46) | 28 (22, 34) | 26 (16, 36) | 22 (17, 28) |
| | Unknown | 28 (0, 75) | - | - | - |
| Total | | 36 (33, 40) | 33 (29, 37) | 13 (11, 15) | 16 (13, 18) |

*Appendix A1.2: Percentages (with 95% confidence intervals) binge drinking for most deprived quintile areas and the rest of Greater Glasgow by sex, age, Carstairs area deprivation, social class, education and economic activity based on Scottish Health Survey 1998 and 2003 data*

| | | Men | | Women | |
|---|---|---|---|---|---|
| | | Most deprived areas n=564 (51%) | Rest of Greater Glasgow n=536 (49%) | Most deprived areas n=776 (53%) | Rest of Greater Glasgow n=679 (47%) |
| Age | 16-24 | 34 (22, 46) | 43 (30, 56) | 30 (20, 41) | 28 (16, 38) |
| | 25-34 | 51 (40, 61) | 47 (36, 58) | 21 (14, 28) | 26 (18, 35) |
| | 35-44 | 42 (31, 52) | 36 (27, 45) | 20 (14, 27) | 18 (12, 25) |
| | 45-54 | 41 (29, 52) | 25 (15, 34) | 20 (12, 28) | 17 (10, 24) |
| | 55-64 | 31 (22, 41) | 23 (13, 33) | 7 (2, 13) | 13 (5, 21) |
| | 65-74 | 18 (10, 26) | 16 (8, 25) | 4 (1, 8) | 3 (0, 7) |
| | 75 and over | 11 (0, 25) | 14 (0, 28) | - | - |
| Carstairs quintile | Least deprived | - | 31 (24, 37) | - | 17 (12, 22) |
| | 2 | - | 36 (25, 47) | - | 15 (8, 22) |
| | 3 | - | 33 (23, 43) | - | 24 (15, 33) |
| | 4 | - | 36 (28, 45) | - | 17 (11, 23) |
| | Most deprived | 37 (32, 41) | - | 17 (14, 20) | - |
| Social class | I | 55 (30, 79) | 39 (24, 54) | 25 (1, 50) | 16 (5, 26) |
| | II | 35 (24, 46) | 41 (32, 49) | 27 (18, 36) | 19 (13, 25) |
| | III | 37 (31, 44) | 29 (22, 35) | 12 (8, 16) | 20 (15, 25) |
| | IV | 39 (28, 49) | 29 (16, 42) | 19 (12, 25) | 11 (2, 20) |
| | V | 38 (24, 52) | 31 (12, 50) | 14 (7, 22) | 16 (5, 28) |
| | Unknown | 22 (7, 37) | 16 (0, 31) | 23 (9, 38) | 2 (0, 7) |
| Economic activity status | Employed | 45 (38, 52) | 37 (31, 43) | 22 (16, 27) | 21 (16, 25) |
| | Unemployed | 42 (29, 56) | 40 (22, 58) | 28 (11, 46) | 52 (29, 76) |
| | Retired | 20 (13, 28) | 19 (11, 26) | 4 (1, 7) | 4 (1, 7) |
| | Economically inactive | 31 (23, 39) | 28 (16, 41) | 18 (13, 23) | 17 (10, 24) |
| | Unknown | 38 (0, 82) | - | 46 (0, 100) | - |
| Education | No qualification | 34 (29, 40) | 30 (22, 38) | 14 (11, 18) | 11 (6, 16) |
| | Below degree level | 42 (34, 50) | 36 (29, 44) | 18 (12, 23) | 20 (15, 24) |
| | Degree level or above | 32 (17, 47) | 32 (24, 39) | 32 (18, 45) | 23 (16, 30) |
| | Unknown | 15 (0, 43) | - | - | - |
| Total | | 37 (32, 41) | 33 (29, 38) | 17 (14, 20) | 18 (15, 21) |

*Appendix A2: Percentages (with 95% confidence intervals) currently smoking for most deprived quintile areas and the rest of Greater Glasgow by sex, age, Carstairs area deprivation, social class, education and economic activity based on Scottish Health Survey 1995, 1998 and 2003 data*

| | | Men | | Women | |
|---|---|---|---|---|---|
| | | Most deprived areas n= (%) | Rest of Greater Glasgow n= (%) | Most deprived areas n= (%) | Rest of Greater Glasgow n= (%) |
| Age | 16-24 | 45 (34, 55) | 27 (17, 36) | 38 (29, 46) | 21 (13, 30) |
| | 25-34 | 55 (46, 64) | 34 (26, 42) | 46 (39, 53) | 35 (28, 42) |
| | 35-44 | 46 (37, 54) | 21 (15, 27) | 47 (40, 54) | 27 (21, 33) |
| | 45-54 | 55 (46, 64) | 24 (16, 32) | 67 (59, 74) | 28 (21, 35) |
| | 55-64 | 51 (43, 59) | 22 (14, 29) | 50 (42, 57) | 28 (20, 35) |
| | 65-74 | 29 (19, 38) | 20 (11, 29) | 40 (31, 49) | 24 (15, 32) |
| | 75 and over | 30 (10, 50) | 4 (0, 13) | 30 (16, 43) | 12 (1, 22) |
| Carstairs quintile | Least deprived | - | 20 (15, 24) | - | 18 (14, 22) |
| | 2 | - | 33 (23, 43) | - | 19 (12, 25) |
| | 3 | - | 23 (16, 30) | - | 38 (31, 45) |
| | 4 | - | 32 (25, 39) | - | 40 (33, 46) |
| | Most deprived | 48 (44, 52) | - | 47 (44, 50) | - |
| Social class | I | 31 (11, 50) | 12 (5, 20) | 10 (0, 23) | 13 (5, 21) |
| | II | 44 (34, 54) | 21 (16, 27) | 32 (25, 40) | 25 (20, 30) |
| | III | 45 (40, 51) | 30 (24, 35) | 46 (41, 50) | 29 (24, 34) |
| | IV | 62 (53, 71) | 32 (21, 44) | 60 (53, 67) | 40 (29, 50) |
| | V | 53 (41, 65) | 22 (7, 38) | 55 (47, 63) | 31 (18, 44) |
| | Unknown | 46 (31, 60) | 32 (14, 49) | 48 (36, 60) | 35 (21, 49) |
| Economic activity status | Employed | 43 (37, 49) | 22 (19, 26) | 42 (36, 47) | 26 (22, 30) |
| | Unemployed | 59 (48, 70) | 46 (30, 62) | 62 (45, 79) | 43 (22, 64) |
| | Retired | 29 (21, 37) | 18 (11, 25) | 37 (30, 43) | 22 (15, 29) |
| | Economically inactive | 58 (51, 65) | 35 (25, 44) | 54 (49, 59) | 31 (25, 37) |
| | Unknown | 41 (0, 89) | - | - | - |
| Education | No qualification | 53 (48, 58) | 35 (28, 41) | 54 (50, 58) | 36 (30, 41) |
| | Below degree level | 46 (39, 53) | 25 (20, 30) | 41 (35, 46) | 27 (23, 32) |
| | Degree level or above | 22 (11, 33) | 17 (12, 22) | 24 (14, 33) | 15 (11, 20) |
| | Unknown | 72 (25, 100) | - | - | - |
| Total | | 48 (44, 52) | 25 (22, 29) | 47 (44, 50) | 27 (24, 30) |

*Appendix A3.1: Percentages (with 95% confidence intervals) usually adding salt to food at the table for most deprived quintile areas and the rest of Greater Glasgow by sex, age, Carstairs area deprivation, social class, education and economic activity based on Scottish Health Survey 1995, 1998 and 2003 data*

| | | Men | | Women | |
|---|---|---|---|---|---|
| | | Most deprived areas n= (%) | Rest of Greater Glasgow n= (%) | Most deprived areas n= (%) | Rest of Greater Glasgow n= (%) |
| Age | 16-24 | 48 (38, 59) | 45 (34, 56) | 42 (33, 51) | 31 (21, 41) |
| | 25-34 | 56 (47, 65) | 47 (39, 56) | 48 (42, 55) | 39 (32, 46) |
| | 35-44 | 56 (48, 65) | 35 (28, 43) | 48 (41, 55) | 49 (43, 56) |
| | 45-54 | 65 (56, 73) | 44 (35, 53) | 55 (47, 63) | 38 (30, 46) |
| | 55-64 | 63 (55, 71) | 67 (58, 76) | 54 (47, 62) | 47 (38, 55) |
| | 65-74 | 54 (43, 65) | 53 (41, 65) | 43 (34, 52) | 36 (26, 46) |
| | 75 and over | 51 (29, 73) | 36 (16, 55) | 30 (16, 43) | 34 (19, 50) |
| Carstairs quintile | Least deprived | - | 43 (37, 49) | - | 34 (29, 40) |
| | 2 | - | 47 (37, 57) | - | 40 (32, 49) |
| | 3 | - | 43 (34, 51) | - | 41 (34, 49) |
| | 4 | - | 55 (48, 62) | - | 51 (45, 58) |
| | Most deprived | 57 (53, 61) | - | 48 (45, 51) | - |
| Social class | I | 29 (9, 48) | 40 (29, 52) | 41 (19, 62) | 34 (23, 45) |
| | II | 45 (36, 55) | 39 (32, 45) | 32 (25, 40) | 39 (33, 45) |
| | III | 60 (55, 66) | 55 (49, 62) | 49 (44, 54) | 43 (37, 48) |
| | IV | 64 (55, 73) | 51 (38, 63) | 50 (43, 58) | 42 (31, 52) |
| | V | 64 (52, 76) | 49 (30, 67) | 58 (50, 66) | 48 (34, 62) |
| | Unknown | 49 (34, 63) | 28 (12, 45) | 47 (35, 60) | 43 (27, 59) |
| Economic activity status | Employed | 56 (50, 62) | 43 (38, 48) | 48 (42, 53) | 40 (36, 45) |
| | Unemployed | 70 (60, 80) | 49 (33, 66) | 42 (25, 59) | 56 (35, 78) |
| | Retired | 53 (44, 63) | 53 (43, 63) | 40 (33, 47) | 36 (27, 44) |
| | Economically inactive | 55 (48, 62) | 56 (46, 66) | 52 (47, 56) | 42 (36, 49) |
| | Unknown | 41 (0, 89) | - | 12 (0, 38) | 44 (0, 100) |
| Education | No qualification | 66 (62, 71) | 65 (58, 71) | 54 (50, 59) | 50 (44, 56) |
| | Below degree level | 51 (44, 58) | 45 (38, 51) | 43 (38, 49) | 41 (35, 46) |
| | Degree level or above | 21 (11, 31) | 32 (26, 38) | 21 (12, 31) | 28 (22, 34) |
| | Unknown | 58 (9, 100) | - | 32 (0, 73) | - |
| Total | | 57 (53, 61) | 46, (42, 50) | 48 (45, 51) | 41 (38, 44) |

*Appendix A3.2: Percentages (with 95% confidence intervals) consuming meat twice a week or more for most deprived quintile areas and the rest of Greater Glasgow by sex, age, Carstairs area deprivation, social class, education and economic activity based on Scottish Health Survey 1995, 1998 and 2003 data*

| | | Men | | Women | |
|---|---|---|---|---|---|
| | | Most deprived areas n= (%) | Rest of Greater Glasgow n= (%) | Most deprived areas n= (%) | Rest of Greater Glasgow n= (%) |
| Age | 16-24 | 60 (48, 73) | 57 (44, 69) | 34 (25, 44) | 40 (26, 54) |
| | 25-34 | 55 (44, 66) | 58 (48, 68) | 51 (42, 59) | 40 (32, 49) |
| | 35-44 | 48 (37, 59) | 56 (47, 65) | 38 (30, 47) | 56 (48, 64) |
| | 45-54 | 66 (55, 78) | 69 (59, 80) | 62 (53, 72) | 63 (54, 72) |
| | 55-64 | 66 (56, 75) | 71 (61, 81) | 66 (58, 75) | 63 (54, 73) |
| | 65-74 | 67 (53, 81) | 84 (71, 97) | 45 (31, 59) | 63 (49, 78) |
| | 75 and over | 80 (62, 98) | 82 (66, 98) | 51 (36, 66) | 57 (40, 73) |
| Carstairs quintile | Least deprived | - | 61 (54, 69) | - | 53 (46, 59) |
| | 2 | - | 76 (65, 88) | - | 55 (44, 65) |
| | 3 | - | 62 (53, 72) | - | 53 (44, 62) |
| | 4 | - | 60 (52, 69) | - | 55 (47, 63) |
| | Most deprived | 60 (55, 65) | - | 49 (45, 53) | - |
| Social class | I | 66 (43, 89) | 61 (46, 76) | 33 (10, 57) | 48 (34, 61) |
| | II | 63 (51, 75) | 63 (55, 72) | 54 (43, 64) | 53 (45, 60) |
| | III | 59 (53, 66) | 66 (59, 73) | 53 (47, 58) | 51 (45, 57) |
| | IV | 55 (43, 68) | 57 (44, 71) | 45 (36, 54) | 62 (50, 74) |
| | V | 49 (33, 64) | 65 (46, 84) | 47 (37, 57) | 69 (55, 83) |
| | Unknown | 73 (58, 88) | 47 (25, 69) | 35 (20, 50) | 62 (44, 79) |
| Economic activity status | Employed | 59 (51, 66) | 60 (55, 66) | 50 (43, 56) | 50 (44, 55) |
| | Unemployed | 52 (37, 66) | 57 (38, 76) | 29 (11, 46) | 52 (26, 78) |
| | Retired | 68 (56, 79) | 87 (79, 96) | 49 (39, 58) | 61 (51, 72) |
| | Economically inactive | 62 (54, 69) | 64 (52, 76) | 51 (45, 56) | 59 (51, 66) |
| | Unknown | - | - | - | 50 (44, 55) |
| Education | No qualification | 60 (54, 67) | 70 (63, 78) | 52 (47, 57) | 64 (58, 71) |
| | Below degree level | 61 (53, 69) | 62 (55, 69) | 48 (41, 55) | 49 (43, 55) |
| | Degree level or above | 53 (38, 68) | 57 (49, 65) | 32 (19, 45) | 48 (40, 55) |
| | Unknown | - | - | 21 (0, 59) | - |
| Total | | 60 (55, 65) | 63 (59, 67) | 49 (45, 53) | 54 (50, 58) |

*Appendix A3.3: Percentages (with 95% confidence intervals) consuming meat products twice a week or more for most deprived quintile areas and the rest of Greater Glasgow by sex, age, Carstairs area deprivation, social class, education and economic activity based on Scottish Health Survey 1995, 1998 and 2003 data*

| | | Men | | Women | |
|---|---|---|---|---|---|
| | | Most deprived areas n= (%) | Rest of Greater Glasgow n= (%) | Most deprived areas n= (%) | Rest of Greater Glasgow n= (%) |
| Age | 16-24 | 72 (60, 83) | 54 (42, 67) | 35 (26, 45) | 30 (16, 44) |
| | 25-34 | 60 (49, 71) | 35 (25, 44) | 37 (28, 45) | 20 (12, 27) |
| | 35-44 | 57 (46, 67) | 30 (22, 39) | 32 (24, 40) | 17 (11, 24) |
| | 45-54 | 37 (26, 48) | 31 (21, 41) | 33 (24, 43) | 13 (6, 19) |
| | 55-64 | 54 (44, 64) | 37 (27, 47) | 29 (20, 37) | 14 (8, 21) |
| | 65-74 | 48 (33, 62) | 29 (13, 45) | 32 (19, 46) | 17 (5, 28) |
| | 75 and over | 28 (7, 49) | 32 (25, 38) | 23 (10, 35) | 12 (1, 22) |
| Carstairs quintile | Least deprived | - | 32 (25, 38) | - | 14 (9, 19) |
| | 2 | - | 56 (43, 69) | - | 25 (16, 35) |
| | 3 | - | 31 (22, 40) | - | 16 (10, 23) |
| | 4 | - | 40 (32, 49) | - | 21 (14, 27) |
| | Most deprived | 55 (50, 60) | - | 33 (29, 36) | - |
| Social class | I | 33 (9, 57) | 27 (13, 42) | 5 (0, 15) | 5 (0, 13) |
| | II | 40 (28, 52) | 26 (18, 34) | 19 (10, 27) | 15 (9, 21) |
| | III | 54 (48, 61) | 40 (34, 47) | 30 (25, 35) | 17 (12, 22) |
| | IV | 69 (57, 81) | 59 (46, 73) | 47 (38, 56) | 26 (14, 37) |
| | V | 65 (51, 79) | 37 (16, 57) | 45 (34, 55) | 31 (17, 46) |
| | Unknown | 65 (48, 82) | 30 (9, 51) | 31 (18, 45) | 32 (13, 51) |
| Economic activity status | Employed | 54 (47, 62) | 34 (29, 39) | 32 (26, 38) | 15 (11, 19) |
| | Unemployed | 61 (47, 75) | 50 (31, 70) | 40 (20, 60) | 22 (0, 44) |
| | Retired | 41 (29, 53) | 31 (19, 43) | 27 (19, 36) | 12 (5, 19) |
| | Economically inactive | 58 (50, 66) | 45 (33, 57) | 34 (29, 40) | 24 (17, 31) |
| | Unknown | - | - | - | 15 (11, 19) |
| Education | No qualification | 62 (56, 68) | 41 (33, 49) | 37 (32, 42) | 24 (18, 30) |
| | Below degree level | 52 (43, 60) | 41 (34, 48) | 28 (23, 34) | 18 (13, 24) |
| | Degree level or above | 31 (17, 45) | 25 (18, 33) | 19 (8, 31) | 8 (4, 13) |
| | Unknown | - | | 49 (0, 98) | - |
| Total | | 55 (50, 60) | 37 (32, 41) | 33 (29, 36) | 18 (14, 21) |

*Appendix A3.4: Percentages (with 95% confidence intervals) consuming non-diet soft drinks once a day or more for most deprived quintile areas and the rest of Greater Glasgow by sex, age, Carstairs area deprivation, social class, education and economic activity based on Scottish Health Survey 1995, 1998 and 2003 data*

| | | Men | | Women | |
|---|---|---|---|---|---|
| | | Most deprived areas n= (%) | Rest of Greater Glasgow n= (%) | Most deprived areas n= (%) | Rest of Greater Glasgow n= (%) |
| Age | 16-24 | 72 (62, 81) | 53 (42, 63) | 49 (40, 58) | 38 (27, 49) |
| | 25-34 | 44 (35, 52) | 38 (29, 46) | 40 (33, 46) | 21 (15, 27) |
| | 35-44 | 30 (23, 38) | 17 (11, 23) | 26 (19, 32) | 16 (11, 21) |
| | 45-54 | 30 (22, 39) | 19 (11, 27) | 26 (19, 34) | 12 (7, 18) |
| | 55-64 | 24 (18, 31) | 20 (12, 27) | 22 (15, 28) | 10 (6, 15) |
| | 65-74 | 17 (9, 25) | 16 (7, 25) | 26 (18, 33) | 10 (4, 16) |
| | 75 and over | 22 (3, 41) | 10 (0, 23) | 12 (2, 22) | 8 (0, 17) |
| Carstairs quintile | Least deprived | - | 23 (17, 29) | - | 12 (8, 16) |
| | 2 | - | 32 (22, 42) | - | 28 (20, 36) |
| | 3 | - | 27 (19, 35) | - | 22 (16, 29) |
| | 4 | - | 35 (28, 42) | - | 18 (13, 23) |
| | Most deprived | 38 (35, 42) | - | 32 (29, 35) | - |
| Social class | I | 27 (8, 47) | 21 (11, 32) | - | 10 (3, 16) |
| | II | 36 (26, 45) | 25 (19, 32) | 24 (17, 32) | 15 (10, 19) |
| | III | 38 (32, 43) | 31 (25, 36) | 34 (30, 39) | 19 (15, 24) |
| | IV | 38 (29, 47) | 36 (24, 48) | 31 (25, 38) | 21 (12, 30) |
| | V | 25 (15, 36) | 30 (13, 48) | 27 (20, 35) | 26 (13, 39) |
| | Unknown | 62 (48, 76) | 23 (7, 40) | 43 (31, 55) | 30 (15, 46) |
| Economic activity status | Employed | 36 (31, 42) | 28 (23, 32) | 28 (23, 33) | 15 (12, 18) |
| | Unemployed | 50 (40, 61) | 31 (17, 45) | 54 (37, 70) | 21 (4, 38) |
| | Retired | 22 (14, 29) | 14 (8, 21) | 21 (15, 27) | 10 (5, 15) |
| | Economically inactive | 41 (34, 48) | 36 (25, 46) | 36 (32, 41) | 26 (20, 32) |
| | Unknown | - | - | 52 (0, 100) | - |
| Education | No qualification | 40 (35, 45) | 26 (20, 32) | 33 (29, 36) | 19 (15, 24) |
| | Below degree level | 40 (33, 46) | 38 (31, 44) | 34 (29, 40) | 21 (17, 25) |
| | Degree level or above | 23 (11, 35) | 15 (10, 20) | 7 (1, 13) | 10 (5, 15) |
| | Unknown | 56 (6, 100) | - | 16 (0, 46) | - |
| Total | | 38 (35, 42) | 28 (24, 32) | 32 (29, 35) | 18 (15, 21) |

*Appendix A3.5: Percentages (with 95% confidence intervals) consuming five or more portions of fruit and vegetables per day for most deprived quintile areas and the rest of Greater Glasgow by sex, age, Carstairs area deprivation, social class, education and economic activity based on Scottish Health Survey 1995, 1998 and 2003 data*

| | | Men | | Women | |
|---|---|---|---|---|---|
| | | Most deprived areas n= (%) | Rest of Greater Glasgow n= (%) | Most deprived areas n= (%) | Rest of Greater Glasgow n= (%) |
| Age | 16-24 | 13 (2, 23) | 19 (6, 32) | 16 (5, 27) | 13 (1, 25) |
| | 25-34 | 26 (12, 40) | 28 (15, 41) | 22 (10, 34) | 28 (16, 40) |
| | 35-44 | 20 (8, 31) | 27 (17, 38) | 14 (6, 23) | 27 (16, 37) |
| | 45-54 | 3 (0, 10) | 41 (26, 55) | 22 (11, 34) | 31 (19, 42) |
| | 55-64 | 9 (1, 18) | 31 (18, 44) | 12 (3, 20) | 36 (23, 48) |
| | 65-74 | 4 (0, 11) | 19 (5, 33) | 8 (0, 15) | 29 (15, 43) |
| | 75 and over | 5 (0, 14) | 31 (12, 51) | 13 (3, 23) | 8 (0, 18) |
| Carstairs quintile | Least deprived | - | 35 (27, 44) | - | 29 (21, 36) |
| | 2 | - | 30 (16, 44) | - | 23 (12, 34) |
| | 3 | - | 20 (9, 31) | - | 27 (16, 38) |
| | 4 | - | 21 (12, 30) | - | 22 (14, 31) |
| | Most deprived | 13 (9, 17) | - | 15 (11, 19) | - |
| Social class | I | 40 (9, 70) | 21 (0, 42) | 53 (18, 88) | 42 (23, 61) |
| | II | 24 (10, 38) | 39 (27, 50) | 36 (22, 51) | 27 (18, 37) |
| | III | 10 (5, 16) | 25 (18, 33) | 13 (8, 18) | 23 (17, 30) |
| | IV | 11 (0, 21) | 27 (13, 40) | 8 (2, 14) | 36 (20, 52) |
| | V | 4 (0, 11) | 24 (5, 43) | 7 (0, 14) | 18 (5, 31) |
| | Unknown | 9 (0, 25) | 16 (0, 35) | 11 (0, 26) | 12 (0, 27) |
| Economic activity status | Employed | 17 (10, 24) | 28 (22, 35) | 20 (12, 27) | 29 (22, 35) |
| | Unemployed | 9 (0, 26) | 20 (1, 38) | 6 (0, 19) | 51 (21, 81) |
| | Retired | 6 (0, 11) | 29 (18, 40) | 13 (6, 19) | 20 (11, 28) |
| | Economically inactive | 14 (5, 22) | 28 (12, 43) | 13 (7, 19) | 21 (12, 30) |
| | Unknown | - | - | - | 29 (22, 35) |
| Education | No qualification | 3 (0, 6) | 17 (9, 25) | 10 (6, 14) | 17 (10, 25) |
| | Below degree level | 21 (12, 30) | 25 (17, 33) | 16 (9, 23) | 24 (17, 32) |
| | Degree level or above | 31 (14, 47) | 40 (30, 50) | 45 (28, 62) | 35 (26, 44) |
| | Unknown | - | - | - | - |
| Total | | 13 (9, 17) | 28 (23, 33) | 15 (11, 19) | 26 (21, 30) |

*Appendix A3.6: Percentages (with 95% confidence intervals) consuming at least five portions of green vegetables per week for most deprived quintile areas and the rest of Greater Glasgow by sex, age, Carstairs area deprivation, social class, education and economic activity based on Scottish Health Survey 1995, 1998 and 2003 data*

| | | Men | | Women | |
|---|---|---|---|---|---|
| | | Most deprived areas n= (%) | Rest of Greater Glasgow n= (%) | Most deprived areas n= (%) | Rest of Greater Glasgow n= (%) |
| Age | 16-24 | 15 (5, 24) | 33 (19, 47) | 36 (26, 46) | 39 (25, 52) |
| | 25-34 | 20 (12, 28) | 30 (20, 39) | 30 (23, 37) | 33 (25, 42) |
| | 35-44 | 30 (20, 40) | 33 (24, 43) | 33 (25, 41) | 36 (29, 44) |
| | 45-54 | 28 (19, 38) | 43 (32, 55) | 43 (34, 53) | 58 (48, 68) |
| | 55-64 | 40 (30, 49) | 41 (28, 54) | 43 (34, 51) | 52 (41, 63) |
| | 65-74 | 25 (11, 40) | 54 (38, 70) | 39 (26, 51) | 44 (30, 58) |
| | 75 and over | - | - | - | - |
| Carstairs quintile | Least deprived | - | 43 (35, 51) | - | 49 (42, 56) |
| | 2 | - | 30 (18, 42) | - | 29 (19, 39) |
| | 3 | - | 32 (22, 42) | - | 39 (30, 48) |
| | 4 | - | 34 (25, 43) | - | 44 (36, 52) |
| | Most deprived | 26 (22, 30) | - | 36 (33, 40) | - |
| Social class | I | 46 (17, 75) | 48 (35, 62) | 60 (34, 86) | 51 (37, 65) |
| | II | 23 (12, 33) | 35 (28, 43) | 43 (33, 53) | 44 (37, 51) |
| | III | 32 (25, 38) | 33 (25, 41) | 37 (31, 43) | 42 (35, 48) |
| | IV | 21 (13, 30) | 30 (13, 47) | 31 (23, 40) | 38 (24, 51) |
| | V | 19 (8, 31) | 40 (6, 75) | 29 (20, 39) | 35 (10, 59) |
| | Unknown | 15 (2, 28) | 59 (35, 83) | 40 (27, 54) | 36 (18, 54) |
| Economic activity status | Employed | 30 (24, 37) | 38 (32, 43) | 37 (31, 43) | 43 (37, 48) |
| | Unemployed | 21 (13, 30) | 32 (13, 50) | 42 (21, 64) | 42 (12, 72) |
| | Retired | 25 (12, 38) | 46 (31, 61) | 34 (24, 45) | 45 (32, 59) |
| | Economically inactive | 23 (16, 30) | 29 (18, 40) | 36 (31, 42) | 42 (34, 50) |
| | Unknown | - | - | 21 (0, 66) | 44 (0, 100) |
| Education | No qualification | 27 (22, 33) | 35 (27, 44) | 34 (29, 39) | 40 (33, 47) |
| | Below degree level | 26 (19, 33) | 34 (27, 42) | 38 (32, 45) | 40 (34, 46) |
| | Degree level or above | 22 (7, 37) | 41 (32, 50) | 48 (31, 64) | 55 (45, 65) |
| | Unknown | - | - | 47 (0, 100) | 54 (0, 100) |
| Total | | 26 (22, 30) | 37 (32, 41) | 36 (33, 40) | 43 (39, 47) |

*Appendix A4: Percentages (with 95% confidence intervals) meeting physical activity recommendations for most deprived quintile areas and the rest of Greater Glasgow by sex, age, Carstairs area deprivation, social class, education and economic activity based on Scottish Health Survey 1998 and 2003 data*

| | | Men | | Women | |
|---|---|---|---|---|---|
| | | Most deprived areas n= (%) | Rest of Greater Glasgow n= (%) | Most deprived areas n= (%) | Rest of Greater Glasgow n= (%) |
| Age | 16-24 | 53 (40, 66) | 61 (49, 74) | 33 (22, 44) | 33 (20, 45) |
| | 25-34 | 51 (41, 62) | 48 (37, 59) | 35 (27, 43) | 34 (25, 43) |
| | 35-44 | 42 (32, 52) | 39 (30, 48) | 29 (21, 37) | 33 (25, 41) |
| | 45-54 | 24 (14, 33) | 33 (23, 43) | 24 (15, 32) | 37 (28, 46) |
| | 55-64 | 18 (10, 25) | 23 (14, 33) | 12 (6, 17) | 26 (17, 35) |
| | 65-74 | 12 (5, 19) | 19 (9, 29) | 6 (1, 10) | 14 (7, 21) |
| | 75 and over | 10 (0, 23) | 18 (2, 34) | 2 (0, 7) | 6 (0, 13) |
| Carstairs quintile | Least deprived | - | 41 (34, 48) | - | 30 (24, 36) |
| | 2 | - | 26 (16, 35) | - | 33 (23, 43) |
| | 3 | - | 42 (31, 54) | - | 33 (23, 42) |
| | 4 | - | 41 (33, 50) | - | 25 (18, 31) |
| | Most deprived | 35 (31, 40) | - | 23 (20, 26) | - |
| Social class | I | 55 (30, 80) | 34 (19, 48) | 51 (24, 78) | 31 (19, 44) |
| | II | 33 (23, 44) | 36 (28, 44) | 34 (24, 44) | 32 (25, 39) |
| | III | 34 (28, 40) | 43 (35, 50) | 23 (18, 28) | 29 (24, 35) |
| | IV | 36 (26, 47) | 39 (25, 53) | 19 (13, 26) | 23 (11, 34) |
| | V | 18 (7, 29) | 40 (20, 59) | 17 (9, 24) | 33 (19, 47) |
| | Unknown | 51 (33, 70) | 41 (20, 62) | 19 (6, 31) | 20 (4, 36) |
| Economic activity status | Employed | 49 (42, 56) | 45 (39, 50) | 36 (29, 42) | 37 (32, 43) |
| | Unemployed | 42 (29, 56) | 32 (15, 49) | 45 (26, 65) | 19 (1, 36) |
| | Retired | 14 (7, 20) | 19 (12, 27) | 7 (4, 11) | 12 (7, 18) |
| | Economically inactive | 23 (15, 31) | 35 (22, 49) | 18 (13, 22) | 26 (18, 33) |
| | Unknown | 15 (0, 44) | 73 (17, 100) | 77 (43, 100) | |
| Education | No qualification | 22 (17, 27) | 24 (17, 32) | 15 (11, 18) | 17 (11, 22) |
| | Below degree level | 49 (41, 57) | 49 (42, 57) | 31 (25, 38) | 36 (30, 42) |
| | Degree level or above | 58 (43, 73) | 36 (29, 44) | 44 (30, 58) | 34 (27, 42) |
| | Unknown | 17 (0, 48) | - | 44 (0, 100) | - |
| Total | | 35 (31, 40) | 39 (34, 43) | 23 (20, 26) | 30 (26, 33) |

*Appendix A5: Percentages (with 95% confidence intervals) obese for most deprived quintile areas and the rest of Greater Glasgow by sex, age, Carstairs area deprivation, social class, education and economic activity based on Scottish Health Survey 1995, 1998 and 2003 data*

| | | Men | | Women | |
|---|---|---|---|---|---|
| | | Most deprived areas n= (%) | Rest of Greater Glasgow n= (%) | Most deprived areas n= (%) | Rest of Greater Glasgow n= (%) |
| Age | 16-24 | 9 (1, 17) | 6 (1, 11) | 8 (4, 13) | 8 (2, 14) |
| | 25-34 | 14 (8, 20) | 12 (6, 17) | 19 (13, 24) | 10 (5, 15) |
| | 35-44 | 20 (13, 27) | 22 (15, 29) | 24 (17, 31) | 17 (12, 23) |
| | 45-54 | 29 (20, 38) | 31 (22, 40) | 26 (19, 33) | 16 (10, 22) |
| | 55-64 | 21 (14, 28) | 18 (10, 26) | 32 (25, 39) | 24 (16, 32) |
| | 65-74 | 37 (25, 49) | 22 (11, 34) | 36 (26, 47) | 31 (20, 42) |
| | 75 and over | 30 (6, 54) | 29 (5, 52) | 13 (1, 26) | 33 (13, 53) |
| Carstairs quintile | Least deprived | - | 18 (13, 23) | - | 13 (9, 17) |
| | 2 | - | 20 (11, 28) | - | 14 (8, 21) |
| | 3 | - | 19 (12, 26) | - | 23 (17, 30) |
| | 4 | - | 17 (11, 23) | - | 19 (14, 25) |
| | Most deprived | 20 (17, 23) | - | 22 (19, 25) | - |
| Social class | I | 12 (0, 26) | 4 (0, 9) | 21 (2, 39) | 19 (9, 28) |
| | II | 18 (11, 25) | 17 (12, 23) | 17 (11, 24) | 12 (8, 16) |
| | III | 23 (18, 28) | 22 (17, 27) | 21 (17, 25) | 20 (16, 25) |
| | IV | 17 (9, 25) | 21 (11, 32) | 25 (19, 32) | 17 (9, 25) |
| | V | 32 (20, 45) | 19 (4, 35) | 33 (25, 42) | 27 (13, 41) |
| | Unknown | 6 (0, 16) | 17 (3, 32) | 16 (7, 25) | 8 (0, 17) |
| Economic activity status | Employed | 21 (16, 26) | 20 (16, 24) | 19 (15, 24) | 15 (11, 18) |
| | Unemployed | 9 (4, 15) | 13 (3, 22) | 10 (1, 19) | 6 (0, 18) |
| | Retired | 29 (20, 39) | 21 (12, 30) | 27 (20, 35) | 35 (25, 45) |
| | Economically inactive | 20 (14, 26) | 13 (6, 19) | 25 (20, 29) | 16 (11, 21) |
| | Unknown | 22 (0, 63) | - | - | - |
| Education | No qualification | 22 (18, 27) | 24 (17, 30) | 29 (25, 33) | 21 (16, 26) |
| | Below degree level | 20 (14, 25) | 16 (11, 20) | 14 (11, 18) | 14 (11, 18) |
| | Degree level or above | 8 (2, 15) | 17 (11, 23) | 16 (7, 25) | 16 (10, 21) |
| | Unknown | - | - | 22 (0, 61) | - |
| Total | | 20 (17, 23) | 18 (15, 21) | 22 (19, 25) | 1 7(14, 19) |

*Appendix A6: Percentages (with 95% confidence intervals) with a doctor-diagnosed cardiovascular condition for most deprived quintile areas and the rest of Greater Glasgow by sex, age, Carstairs area deprivation, social class, education and economic activity based on Scottish Health Survey 1995, 1998 and 2003 data*

| | | Men | | Women | |
|---|---|---|---|---|---|
| | | Most deprived areas n= (%) | Rest of Greater Glasgow n= (%) | Most deprived areas n= (%) | Rest of Greater Glasgow n= (%) |
| Age | 16-24 | 1 (0, 3) | 1 (0, 2) | 5 (1, 9) | 4 (0, 7) |
| | 25-34 | 5 (0, 9) | 2 (0, 4) | 7 (3, 10) | 3 (1, 5) |
| | 35-44 | 9 (4, 14) | 3 (1, 5) | 9 (5, 14) | 7 (4, 10) |
| | 45-54 | 17 (10, 24) | 9 (4, 14) | 17 (11, 23) | 10 (5, 14) |
| | 55-64 | 32 (24, 39) | 19 (12, 26) | 24 (18, 31) | 25 (17, 32) |
| | 65-74 | 35 (25, 45) | 36 (24, 47) | 38 (29, 47) | 20 (12, 28) |
| | 75 and over | 54 (32, 76) | 49 (28, 70) | 45 (30, 59) | 37 (21, 53) |
| Carstairs quintile | Least deprived | | 9 (6, 12) | | 8 (6, 11) |
| | 2 | - | 8 (3, 12) | - | 8 (4, 13) |
| | 3 | - | 8 (4, 12) | - | 13 (8, 18) |
| | 4 | - | 9 (5, 12) | - | 13 (9, 17) |
| | Most deprived | 15 (12, 17) | - | 15 (13, 18) | - |
| Social class | I | 13 (0, 26) | 5 (1, 9) | 9 (0, 20) | 5 (1, 10) |
| | II | 9 (4, 14) | 9 (5, 12) | 16 (10, 23) | 10 (7, 13) |
| | III | 16 (12, 20) | 8 (5, 11) | 14 (10, 17) | 12 (9, 15) |
| | IV | 20 (13, 27) | 10 (4, 16) | 14 (9, 19) | 13 (6, 21) |
| | V | 19 (10, 29) | 26 (10, 42) | 24 (17, 31) | 12 (2, 23) |
| | Unknown | 3 (0, 6) | 7 (0, 14) | 14 (6, 21) | 8 (0, 16) |
| Economic activity status | Employed | 7 (4, 10) | 5 (3, 6) | 8 (5, 11) | 5 (4, 7) |
| | Unemployed | 2 (0, 6) | - | 10 (0, 19) | 15 (0, 31) |
| | Retired | 36 (27, 44) | 35 (26, 44) | 40 (33, 47) | 25 (17, 32) |
| | Economically inactive | 24 (18, 29) | 12 (6, 18) | 13 (10, 17) | 15 (10, 19) |
| | Unknown | 6 (0, 19) | - | 12 (0, 36) | - |
| Education | No qualification | 21 (17, 24) | 18 (13, 23) | 20 (17, 23) | 17 (13, 21) |
| | Below degree level | 7 (4, 10) | 5 (2, 7) | 10 (6, 13) | 8 (5, 10) |
| | Degree level or above | 8 (2, 15) | 5 (3, 8) | 12 (5, 20) | 6 (3, 9) |
| | Unknown | 20 (0, 46) | | 20 (0, 47) | 69 (29, 100) |
| Total | | 15 (12, 17) | 9 (7, 11) | 15 (13, 18) | 11 (9, 12) |

*Appendix A7: Percentages (with 95% confidence intervals) with doctor-diagnosed diabetes for most deprived quintile areas and the rest of Greater Glasgow by sex, age, Carstairs area deprivation, social class, education and economic activity based on Scottish Health Survey 1995, 1998 and 2003 data*

| | | Men | | Women | |
|---|---|---|---|---|---|
| | | Most deprived areas n= (%) | Rest of Greater Glasgow n= (%) | Most deprived areas n= (%) | Rest of Greater Glasgow n= (%) |
| Age | 16-24 | - | - | 0.4 (0.0, 1.2) | - |
| | 25-34 | 1.1 (0.0, 2.6) | 1.5 (0.0, 3.5) | 0.5 (0.0, 1.6) | 0.1 (0.0, 0.2) |
| | 35-44 | - | 1.3 (0.0, 2.9) | 2.6 (0.3, 5.0) | 0.6 (0.0, 1.6) |
| | 45-54 | 3.3 (0.4, 6.3) | 4.0 (0.0, 8.0) | 1.5 (0.0, 3.1) | 0.5 (0.0, 1.5) |
| | 55-64 | 8.5 (3.8, 13.1) | 5.1 (1.5, 8.7) | 4.3 (1.9, 6.8) | 2.5 (0.1, 4.8) |
| | 65-74 | 14.0 (6.0, 21.9) | 8.2 (1.3, 15.2) | 10.2 (4.8, 15.5) | 6.4 (1.2, 11.6) |
| | 75 and over | 15.3 (0.0, 31.3) | 8.1 (0.0, 18.9) | 15.5 (5.0, 26.1) | 11.2 (0.8, 21.6) |
| Carstairs quintile | Least deprived | | 2.4 (0.8, 3.9) | | 0.9 (0.0, 1.7) |
| | 2 | - | 0.4 (0.0, 1.1) | - | 1.4 (0.0, 3.1) |
| | 3 | - | 3.8 (0.2, 7.5) | - | 1.9 (0.0, 3.7) |
| | 4 | - | 3.6 (1.0, 6.1) | - | 2.0 (0.4, 3.6) |
| | Most deprived | 3.5 (2.3, 4.8) | - | 3.1 (2.1, 4.1) | - |
| Social class | I | 2.3 (0.0, 6.8) | - | - | 0.7 (0.0, 2.1) |
| | II | 2.9 (0.3, 5.5) | 1.1 (0.0, 2.4) | 2.5 (0.2, 4.8) | 0.4 (0.0, 0.9) |
| | III | 4.9 (2.7, 7.0) | 3.4 (1.2, 5.6) | 3.2 (1.7, 4.7) | 1.9 (0.7, 3.1) |
| | IV | 3.2 (0.5, 5.8) | 6.3 (1.1, 11.5) | 3.2 (1.0, 5.5) | 2.0 (0.0, 4.8) |
| | V | 1.2 (0.0, 3.5) | 9.5 (0.0, 21.9) | 3.6 (0.9, 6.3) | 3.3 (0.0, 8.0) |
| | Unknown | 0.7 (0.0, 2.2) | 2.0 (0.0, 6.0) | 3.4 (0.0, 6.8) | 2.8 (0.0, 8.2) |
| Economic activity status | Employed | 0.8 (0.0, 1.8) | 1.5 (0.3, 2.6) | 0.8 (0.0, 1.6) | - |
| | Unemployed | 0.6 (0.0, 1.7) | 0.4 (0.0, 1.3) | - | 0.5 (0.0, 1.0) |
| | Retired | 12.1 (5.7, 18.5) | 7.8 (2.5, 13.2) | 9.8 (5.6, 13.9) | - |
| | Economically inactive | 5.5 (2.7, 8.2) | 5.6 (1.3, 9.8) | 3.0 (1.6, 4.5) | 7.8 (3.4, 12.2) |
| | Unknown | 6.3 (0.0, 18.8) | - | - | 0.9 (0.0, 2.0) |
| Education | No qualification | 4.6 (2.8, 6.5) | 5.2 (1.9, 8.6) | 4.7 (3.1, 6.3) | 2.9 (1.2, 4.6) |
| | Below degree level | 2.2 (0.5, 4.0) | 2.0 (0.5, 3.4) | 0.9 (0.1, 1.7) | 0.2 (0.0, 0.5) |
| | Degree level or above | 1.8 (0.0, 4.2) | 1.4 (0.1, 2.7) | 2.8 (0.0, 6.8) | 1.3 (0.0, 2.5) |
| | Unknown | 5.3 (0.0, 15.7) | - | - | 29.0 (0.0, 74.5) |
| Total | | 3.5 (2.3, 4.8) | 2.7 (1.5, 3.9) | 3.1 (2.1, 4.1) | 1.4 (0.7, 2.1) |

*Appendix A8.1: Percentages (with 95% confidence intervals) self reporting bad or very bad general health for most deprived quintile areas and the rest of Greater Glasgow by sex, age, Carstairs area deprivation, social class, education and economic activity based on Scottish Health Survey 1995, 1998 and 2003 data*

| | | Men | | Women | |
|---|---|---|---|---|---|
| | | Most deprived areas n= (%) | Rest of Greater Glasgow n= (%) | Most deprived areas n= (%) | Rest of Greater Glasgow n= (%) |
| Age | 16-24 | 4 (0, 8) | 2 (0, 4) | 5 (1, 8) | - |
| | 25-34 | 9 (4, 14) | 3 (0, 5) | 5 (2, 7) | 1 (0, 3) |
| | 35-44 | 11 (6, 16) | 2 (0, 5) | 11 (7, 15) | 7 (3, 10) |
| | 45-54 | 24 (17, 32) | 6 (2, 11) | 23 (17, 30) | 4 (1, 7) |
| | 55-64 | 30 (22, 37) | 16 (9, 23) | 25 (18, 31) | 7 (3, 11) |
| | 65-74 | 21 (12, 30) | 11 (3, 19) | 29 (21, 38) | 6 (1, 10) |
| | 75 and over | 34 (14, 55) | 13 (0, 27) | 18 (7, 29) | 14 (3, 25) |
| Carstairs quintile | Least deprived | - | 3 (1, 5) | - | 0 (0, 1) |
| | 2 | - | 1 (0, 2) | - | 4 (1, 6) |
| | 3 | - | 6 (2, 9) | - | 8 (4, 12) |
| | 4 | - | 12 (8, 17) | - | 8 (4, 12) |
| | Most deprived | 16 (13, 18) | - | 15 (12, 17) | - |
| Social class | I | 14 (0, 30) | 1 (0, 4) | 4 (0, 13) | 1 (0, 2) |
| | II | 7 (2, 11) | 4 (2, 6) | 10 (5, 15) | 2 (0, 3) |
| | III | 15 (12, 19) | 7 (4, 11) | 12 (9, 15) | 6 (3, 8) |
| | IV | 22 (15, 30) | 6 (1, 11) | 20 (15, 26) | 7 (2, 13) |
| | V | 29 (18, 40) | 9 (0, 21) | 20 (13, 26) | 13 (3, 23) |
| | Unknown | 10 (3, 18) | 10 (0, 19) | 18 (9, 27) | 5 (0, 11) |
| Economic activity status | Employed | 4 (2, 7) | 1 (0, 2) | 2 (0, 3) | 1 (0, 1) |
| | Unemployed | 5 (0, 9) | 3 (0, 8) | 10 (0, 24) | - |
| | Retired | 23 (15, 30) | 11 (5, 18) | 27 (20, 33) | 10 (5, 14) |
| | Economically inactive | 34 (28, 41) | 23 (15, 31) | 22 (18, 26) | 10 (6, 14) |
| | Unknown | 20 (0, 47) | - | - | - |
| Education | No qualification | 23 (19, 27) | 14 (9, 19) | 21 (17, 24) | 10 (6, 14) |
| | Below degree level | 7 (4, 10) | 3 (1, 5) | 7 (4, 10) | 2 (1, 4) |
| | Degree level or above | 4 (0, 8) | 1 (0, 2) | 4 (0, 7) | 0 (0, 1) |
| | Unknown | 22 (0, 52) | - | 51 (11, 91) | 16 (0, 46) |
| Total | | 16 (13, 18) | 6 (4, 7) | 15 (12, 17) | 4 (3, 6) |

*Appendix A8.2: Percentages (with 95% confidence intervals) with self-reported long standing illness for most deprived quintile areas and the rest of Greater Glasgow by sex, age, Carstairs area deprivation, social class, education and economic activity based on Scottish Health Survey 1995, 1998 and 2003 data*

| | | Men | | Women | |
|---|---|---|---|---|---|
| | | Most deprived areas n= (%) | Rest of Greater Glasgow n= (%) | Most deprived areas n= (%) | Rest of Greater Glasgow n= (%) |
| Age | 16-24 | 20 (12, 28) | 16 (8, 24) | 24 (16, 31) | 18 (9, 28) |
| | 25-34 | 36 (28, 44) | 26 (19, 34) | 35 (28, 41) | 28 (22, 35) |
| | 35-44 | 47 (38, 55) | 25 (18, 32) | 44 (37, 51) | 28 (22, 34) |
| | 45-54 | 62 (53, 72) | 41 (32, 50) | 65 (57, 73) | 39 (32, 47) |
| | 55-64 | 70 (63, 77) | 50 (41, 60) | 70 (63, 77) | 47 (39, 56) |
| | 65-74 | 73 (63, 83) | 55 (43, 67) | 74 (66, 82) | 51 (40, 61) |
| | 75 and over | 59 (38, 81) | 72 (53, 91) | 69 (55, 82) | 80 (67, 93) |
| Carstairs quintile | Least deprived | - | 29 (23, 34) | - | 29 (24, 34) |
| | 2 | - | 40 (30, 50) | - | 34 (27, 42) |
| | 3 | - | 33 (25, 42) | - | 41 (34, 49) |
| | 4 | - | 36 (29, 43) | - | 40 (33, 46) |
| | Most deprived | 48 (45, 52) | - | 49 (46, 52) | - |
| Social class | I | 52 (30, 73) | 34 (23, 46) | 37 (16, 58) | 27 (17, 38) |
| | II | 42 (32, 51) | 28 (22, 33) | 44 (36, 52) | 30 (25, 36) |
| | III | 50 (45, 56) | 35 (29, 40) | 46 (41, 51) | 39 (34, 44) |
| | IV | 46 (37, 55) | 33 (21, 46) | 57 (50, 64) | 40 (30, 51) |
| | V | 65 (54, 77) | 52 (33, 71) | 61 (53, 70) | 44 (30, 58) |
| | Unknown | 39 (25, 53) | 41 (23, 60) | 42 (30, 54) | 25 (11, 39) |
| Economic activity status | Employed | 34 (28, 39) | 25 (21, 29) | 31 (26, 36) | 28 (24, 32) |
| | Unemployed | 34 (24, 43) | 24 (12, 36) | 30 (15, 45) | 35 (14, 55) |
| | Retired | 71 (63, 80) | 60 (51, 70) | 75 (70, 81) | 59 (51, 68) |
| | Economically inactive | 68 (62, 75) | 53 (43, 63) | 58 (53, 63) | 39 (33, 45) |
| | Unknown | 25 (0, 59) | - | 12 (0, 36) | 44 (0, 100) |
| Education | No qualification | 58 (53, 63) | 48 (41, 55) | 59 (55, 63) | 48 (42, 54) |
| | Below degree level | 35 (28, 41) | 28 (23, 34) | 36 (31, 41) | 29 (24, 33) |
| | Degree level or above | 43 (30, 56) | 26 (20, 32) | 43 (31, 55) | 28 (22, 34) |
| | Unknown | 51 (14, 88) | - | 73 (30, 100) | 55 (9, 100) |
| Total | | 48 (45, 52) | 33 (29, 36) | 49 (46, 52) | 35 (32, 38) |

*Appendix A8.3: Percentages (with 95% confidence intervals) with self-reported acute sickness for most deprived quintile areas and the rest of Greater Glasgow by sex, age, Carstairs area deprivation, social class, education and economic activity based on Scottish Health Survey 1995, 1998 and 2003 data*

| | | Men | | Women | |
|---|---|---|---|---|---|
| | | Most deprived areas n= (%) | Rest of Greater Glasgow n= (%) | Most deprived areas n= (%) | Rest of Greater Glasgow n= (%) |
| Age | 16-24 | 18 (9, 26) | 11 (4, 17) | 13 (7, 19) | 9 (2, 16) |
| | 25-34 | 17 (11, 23) | 12 (6, 17) | 17 (12, 22) | 12 (7, 17) |
| | 35-44 | 15 (10, 21) | 13 (8, 18) | 21 (15, 26) | 18 (12, 23) |
| | 45-54 | 28 (19, 36) | 12 (6, 19) | 32 (24, 40) | 18 (11, 24) |
| | 55-64 | 31 (23, 38) | 18 (11, 25) | 35 (27, 42) | 24 (17, 32) |
| | 65-74 | 26 (17, 35) | 20 (11, 30) | 34 (25, 42) | 17 (10, 25) |
| | 75 and over | 19 (2, 36) | 9 (0, 20) | 33 (19, 47) | 34 (19, 50) |
| Carstairs quintile | Least deprived | - | 8 (5, 11) | - | 15 (11, 19) |
| | 2 | - | 15 (7, 22) | - | 11 (6, 16) |
| | 3 | - | 15 (9, 21) | - | 21 (15, 27) |
| | 4 | - | 20 (14, 25) | - | 20 (15, 26) |
| | Most deprived | 22 (19, 25) | - | 24 (21, 27) | - |
| Social class | I | 29 (7, 50) | 15 (7, 24) | 7 (0, 17) | 13 (4, 22) |
| | II | 21 (13, 29) | 12 (8, 16) | 18 (11, 24) | 16 (11, 20) |
| | III | 22 (18, 27) | 14 (9, 18) | 22 (18, 25) | 17 (13, 21) |
| | IV | 21 (14, 28) | 12 (4, 19) | 31 (25, 38) | 22 (13, 31) |
| | V | 24 (14, 35) | 20 (5, 35) | 34 (26, 41) | 21 (9, 33) |
| | Unknown | 14 (5, 23) | 14 (3, 25) | 20 (10, 30) | 12 (3, 21) |
| Economic activity status | Employed | 16 (11, 20) | 9 (6, 12) | 14 (10, 18) | 14 (11, 18) |
| | Unemployed | 10 (4, 15) | 8 (0, 16) | 13 (3, 23) | 4 (0, 11) |
| | Retired | 22 (15, 29) | 21 (13, 29) | 37 (30, 44) | 21 (14, 28) |
| | Economically inactive | 36 (29, 42) | 28 (19, 37) | 29 (25, 33) | 21 (16, 26) |
| | Unknown | 7 (0, 22) | - | - | - |
| Education | No qualification | 23 (19, 27) | 21 (16, 27) | 29 (25, 32) | 25 (20, 30) |
| | Below degree level | 20 (15, 25) | 11 (7, 15) | 17 (13, 21) | 13 (10, 17) |
| | Degree level or above | 19 (8, 29) | 9 (5, 12) | 21 (11, 32) | 12 (8, 16) |
| | Unknown | 30 (0, 62) | - | 65 (24, 100) | 40 (0, 85) |
| Total | | 22 (19, 25) | 13 (11, 16) | 24 (21, 27) | 17 (14, 19) |

*Appendix A9: Percentages (with 95% confidence intervals) with high GHQ12 score for most deprived quintile areas and the rest of Greater Glasgow by sex, age, Carstairs area deprivation, social class, education and economic activity based on Scottish Health Survey 1995, 1998 and 2003 data*

| | | Men | | Women | |
|---|---|---|---|---|---|
| | | Most deprived areas n= (%) | Rest of Greater Glasgow n= (%) | Most deprived areas n= (%) | Rest of Greater Glasgow n= (%) |
| Age | 16-24 | 18 (10, 25) | 10 (4, 15) | 21 (13, 28) | 16 (8, 25) |
| | 25-34 | 15 (9, 20) | 15 (9, 22) | 30 (24, 36) | 27 (20, 34) |
| | 35-44 | 23 (15, 30) | 12 (7, 17) | 27 (21, 33) | 22 (16, 27) |
| | 45-54 | 25 (18, 33) | 17 (9, 24) | 34 (26, 41) | 24 (17, 32) |
| | 55-64 | 26 (19, 33) | 19 (10, 29) | 26 (19, 32) | 18 (11, 25) |
| | 65-74 | 20 (12, 29) | 12 (4, 19) | 31 (22, 40) | 10 (4, 16) |
| | 75 and over | 15 (0, 31) | 22 (3, 41) | 21 (8, 34) | 23 (8, 39) |
| Carstairs quintile | Least deprived | - | 11 (7, 15) | - | 19 (14, 23) |
| | 2 | - | 15 (7, 23) | - | 22 (15, 29) |
| | 3 | - | 15 (8, 21) | - | 25 (18, 31) |
| | 4 | - | 19 (13, 25) | - | 23 (17, 28) |
| | Most deprived | 21 (18, 24) | - | 27 (24, 30) | - |
| Social class | I | 15 (1, 29) | 6 (1, 11) | 17 (1, 32) | 23 (13, 34) |
| | II | 15 (8, 21) | 11 (6, 15) | 24 (17, 31) | 22 (17, 27) |
| | III | 20 (15, 24) | 19 (14, 23) | 25 (21, 29) | 19 (15, 23) |
| | IV | 24 (16, 31) | 17 (5, 29) | 32 (25, 39) | 27 (17, 37) |
| | V | 31 (20, 43) | 14 (0, 28) | 29 (22, 37) | 32 (18, 46) |
| | Unknown | 25 (12, 38) | 18 (5, 31) | 33 (21, 46) | 13 (3, 23) |
| Economic activity status | Employed | 11 (7, 14) | 11 (8, 14) | 14 (11, 18) | 20 (17, 24) |
| | Unemployed | 25 (16, 34) | 26 (11, 41) | 36 (19, 52) | 56 (34, 77) |
| | Retired | 20 (12, 27) | 13 (6, 19) | 31 (24, 38) | 16 (10, 22) |
| | Economically inactive | 33 (27, 40) | 26 (17, 35) | 37 (32, 42) | 23 (17, 28) |
| | Unknown | 76 (34, 100) | - | - | - |
| Education | No qualification | 26 (21, 30) | 20 (14, 25) | 31 (27, 35) | 24 (19, 29) |
| | Below degree level | 15 (11, 20) | 15 (10, 19) | 23 (18, 27) | 21 (17, 26) |
| | Degree level or above | 12 (4, 21) | 9 (5, 13) | 25 (13, 36) | 18 (12, 23) |
| | Unknown | 28 (0, 75) | - | 17 (0, 48) | - |
| Total | | 21 (18, 24) | 14 (11, 17) | 27 (24, 30) | 21 (18, 24) |

*Appendix A10.1: Percentages (with 95% confidence intervals) with low mental component scores for most deprived quintile areas and the rest of Greater Glasgow by sex, age, Carstairs area deprivation, social class, education and economic activity based on Scottish Health Survey 2003 data*

| | | Men | | Women | |
|---|---|---|---|---|---|
| | | Most deprived areas n= (%) | Rest of Greater Glasgow n= (%) | Most deprived areas n= (%) | Rest of Greater Glasgow n= (%) |
| Age | 16-24 | 25 (3, 46) | 9 (0, 21) | 28 (11, 45) | 17 (0, 35) |
| | 25-34 | 33 (16, 50) | 14 (4, 25) | 33 (18, 48) | 27 (15, 39) |
| | 35-44 | 29 (16, 43) | 18 (9, 28) | 28 (17, 40) | 17 (7, 26) |
| | 45-54 | 37 (19, 56) | 8 (0, 16) | 47 (32, 62) | 22 (11, 34) |
| | 55-64 | 28 (13, 43) | 24 (11, 37) | 34 (19, 49) | 17 (6, 28) |
| | 65-74 | 24 (10, 39) | 17 (2, 32) | 38 (22, 55) | 11 (1, 22) |
| | 75 and over | 27 (1, 54) | 30 (7, 52) | 26 (11, 42) | 26 (10, 41) |
| Carstairs quintile | Least deprived | - | 15 (8, 22) | - | 10 (4, 16) |
| | 2 | - | 21 (7, 34) | - | 18 (6, 30) |
| | 3 | - | 13 (4, 23) | - | 37 (24, 50) |
| | 4 | - | 18 (8, 28) | - | 26 (16, 36) |
| | Most deprived | 30 (23, 36) | - | 33 (28, 39) | - |
| Social class | I | 55 (18, 92) | 6 (0, 16) | 26 (0, 58) | 28 (10, 46) |
| | II | 13 (2, 24) | 16 (7, 26) | 20 (6, 33) | 17 (9, 25) |
| | III | 31 (22, 41) | 17 (10, 24) | 32 (24, 41) | 24 (16, 31) |
| | IV | 25 (9, 42) | 15 (1, 29) | 34 (21, 47) | 14 (1, 28) |
| | V | 35 (12, 59) | 10 (0, 22) | 40 (25, 56) | 17 (3, 31) |
| | Unknown | 79 (40, 100) | 73 (28, 100) | 70 (40, 99) | - |
| Economic activity status | Employed | 20 (11, 29) | 13 (8, 18) | 18 (11, 25) | 20 (14, 27) |
| | Unemployed | 32 (5, 58) | 23 (0, 48) | 28 (0, 61) | 44 (12, 77) |
| | Retired | 24 (12, 36) | 21 (10, 33) | 34 (24, 45) | 19 (10, 28) |
| | Economically inactive | 50 (36, 65) | 26 (7, 45) | 52 (41, 62) | 19 (9, 30) |
| | Unknown | - | 13 (8, 18) | 18 (11, 25) | 20 (14, 27) |
| Education | No qualification | 31 (22, 40) | 22 (12, 32) | 40 (32, 48) | 23 (13, 32) |
| | Below degree level | 28 (17, 39) | 17 (9, 25) | 30 (20, 39) | 23 (15, 31) |
| | Degree level or above | 29 (12, 47) | 11 (4, 18) | 14 (2, 26) | 16 (8, 23) |
| | Unknown | - | - | 51 (0, 100) | - |
| Total | | 30 (23, 36) | 16 (11, 21) | 33 (28, 39) | 20 (16, 25) |

*Appendix A10.2: Percentages (with 95% confidence intervals) with low physical component scores for most deprived quintile areas and the rest of Greater Glasgow by sex, age, Carstairs area deprivation, social class, education and economic activity based on Scottish Health Survey 2003 data*

| | | Men | | Women | |
|---|---|---|---|---|---|
| | | Most deprived areas n= (%) | Rest of Greater Glasgow n= (%) | Most deprived areas n= (%) | Rest of Greater Glasgow n= (%) |
| Age | 16-24 | 5 (0, 15) | 12 (0, 24) | 19 (2, 37) | 7 (0, 19) |
| | 25-34 | 20 (6, 34) | 2 (0, 5) | 7 (0, 15) | 9 (1, 16) |
| | 35-44 | 17 (5, 29) | 7 (0, 14) | 23 (12, 34) | 8 (0, 15) |
| | 45-54 | 44 (25, 63) | 8 (0, 17) | 50 (35, 66) | 7 (0, 14) |
| | 55-64 | 51 (33, 68) | 27 (14, 40) | 39 (23, 55) | 22 (11, 34) |
| | 65-74 | 55 (38, 72) | 40 (21, 58) | 64 (48, 80) | 21 (7, 35) |
| | 75 and over | 55 (25, 84) | 43 (19, 67) | 50 (32, 67) | 63 (45, 80) |
| Carstairs quintile | Least deprived | - | 9 (4, 15) | - | 10 (4, 15) |
| | 2 | - | 15 (4, 26) | - | 5 (0, 12) |
| | 3 | - | 21 (10, 32) | - | 32 (20, 44) |
| | 4 | - | 16 (8, 25) | - | 23 (13, 32) |
| | Most deprived | 32 (25, 38) | - | 33 (28, 39) | - |
| Social class | I | 13 (0, 38) | - | 25 (0, 56) | 12 (0, 25) |
| | II | 14 (3, 25) | 14 (6, 22) | 8 (0, 16) | 16 (8, 25) |
| | III | 33 (24, 42) | 14 (8, 20) | 37 (28, 46) | 16 (10, 22) |
| | IV | 40 (21, 58) | 19 (6, 33) | 32 (19, 44) | 19 (4, 33) |
| | V | 45 (20, 70) | 26 (6, 46) | 45 (29, 61) | 27 (11, 44) |
| | Unknown | 79 (40, 100) | - | 55 (23, 88) | - |
| Economic activity status | Employed | 10 (4, 17) | 5 (2, 8) | 12 (5, 19) | 6 (2, 9) |
| | Unemployed | - | - | - | - |
| | Retired | 50 (35, 64) | 43 (30, 57) | 57 (46, 69) | 44 (32, 56) |
| | Economically inactive | 65 (51, 78) | 48 (25, 72) | 43 (32, 53) | 22 (11, 33) |
| | Unknown | - | - | - | - |
| Education | No qualification | 50 (40, 60) | 35 (24, 47) | 46 (38, 54) | 36 (26, 46) |
| | Below degree level | 18 (9, 27) | 12 (5, 18) | 22 (14, 31) | 12 (6, 18) |
| | Degree level or above | 7 (0, 16) | 5 (1, 9) | 14 (2, 25) | 7 (2, 12) |
| | Unknown | - | - | 51 (0, 100) | - |
| Total | | 32 (25, 38) | 14 (10, 18) | 33 (28, 39) | 17 (12, 21) |

*Appendix B1: Summary of the effects of adjusting for socio-economic factors* on levels of health-related behaviours, health measures and mortality in Greater Glasgow, West Central Scotland and Glasgow City compared with the rest of Scotland*

*a) Men*

| | Greater Glasgow | | West Central Scotland | | Glasgow City | |
|---|---|---|---|---|---|---|
| | Before adjustment | After adjustment | Before adjustment | After adjustment | Before adjustment | After adjustment |
| Excess drinking | + | + | + | + | + | + |
| Binge drinking | + | + | + | + | + | + |
| Smoking | + | n/s | + | n/s | + | n/s |
| High salt consumption | + | n/s | + | n/s | + | n/s |
| High meat consumption | - | - | n/s | n/s | - | - |
| High meat product consumption | n/s | n/s | + | n/s | + | n/s |
| High non-diet soft drinks consumption | n/s | n/s | + | n/s | n/s | n/s |
| Adequate fruit and vegetable consumption | n/s | + | n/s | n/s | n/s | n/s |
| Adequate green vegetable consumption | - | - | - | - | - | n/s |
| Adequate physical activity | n/s | n/s | - | n/s | n/s | n/s |
| Obesity | n/s | n/s | n/s | n/s | n/s | n/s |
| Cardiovascular condition | n/s | - | + | n/s | n/s | n/s |
| Coronary heart disease | | | | | | |
| Stroke | | | | | | |
| Diabetes | n/s | n/s | n/s | n/s | n/s | n/s |
| Self-reported poor general health | + | n/s | + | n/s | + | n/s |
| Long standing illness | + | n/s | + | + | + | n/s |
| Acute sickness | + | + | + | + | + | + |
| Psychological morbidity | + | + | + | + | + | + |
| Low quality of life (mental functioning) | n/s | n/s | + | n/s | n/s | n/s |
| Low quality of life (physical functioning) | n/s | n/s | + | n/s | + | n/s |
| All-cause mortality | + | n/s | / | / | / | / |
| Coronary heart disease mortality | + | n/s | / | / | / | / |
| Stroke mortality | + | n/s | / | / | / | / |
| All cancer mortality | + | + | / | / | / | / |
| Lung cancer mortality | + | + | / | / | / | / |
| Mortality from mental and behavioural disorders due to the use of alcohol | n/s | - | / | / | / | / |

| | | | | | | |
|---|---|---|---|---|---|---|
| Chronic liver disease mortality | + | + | / | / | / | / |
| Mortality from mental and behavioural disorders due to the use of drugs | + | + | / | / | / | / |
| Suicide/self-harm mortality | n/s | n/s | / | / | / | / |
| Premature all-cause mortality | + | n/s | / | / | / | / |
| Premature coronary heart disease mortality | + | n/s | / | / | / | / |
| Premature stroke mortality | + | n/s | / | / | / | / |
| Premature all cancer mortality | + | n/s | / | / | / | / |
| Premature lung cancer mortality | + | n/s | / | / | / | / |
| Premature mortality from mental and behavioural disorders due to the use of alcohol | n/s | - | / | / | / | / |
| Premature chronic liver disease mortality | + | + | / | / | / | / |
| Premature mortality from mental and behavioural disorders due to the use of drugs | + | n/s | / | / | / | / |
| Premature suicide/self-harm mortality | + | n/s | / | / | / | / |

Key: **+** significantly higher than the rest of Scotland
**-** significantly lower than the rest of Scotland
**n/s** not signifcantly different to the rest of Scotland
\ not applicable

* Carstairs index of area deprivation, social class, educational qualification attainment, economic activity status

*b) Women*

| | Greater Glasgow | | West Central Scotland | | Glasgow City | |
|---|---|---|---|---|---|---|
| | Before adjustment | After adjustment | Before adjustment | After adjustment | Before adjustment | After adjustment |
| Excess drinking | n/s | n/s | n/s | n/s | n/s | + |
| Binge drinking | n/s | n/s | n/s | n/s | n/s | + |
| Smoking | + | n/s | + | - | + | n/s |
| High salt consumption | + | + | + | + | + | + |
| High meat consumption | - | n/s | n/s | n/s | - | n/s |
| High meat product consumption | n/s | n/s | + | n/s | n/s | n/s |
| High non-diet soft drinks consumption | + | n/s | + | n/s | + | n/s |
| Adequate fruit and vegetable consumption | n/s | n/s | - | n/s | n/s | n/s |
| Adequate green vegetable consumption | - | n/s | - | - | - | n/s |
| Adequate physical activity | n/s | n/s | - | n/s | - | n/s |
| Obesity | n/s | - | n/s | - | n/s | - |
| Cardiovascular condition | + | n/s | + | n/s | + | n/s |
| Coronary heart disease | | | | | | |
| Stroke | | | | | | |
| Diabetes | n/s | n/s | + | n/s | n/s | n/s |
| Self-reported poor general health | + | + | + | n/s | + | + |
| Long standing illness | + | n/s | + | n/s | + | n/s |
| Acute sickness | + | n/s | + | n/s | + | n/s |
| Psychological morbidity | + | + | + | + | + | + |
| Low quality of life (mental functioning) | + | n/s | + | n/s | + | + |
| Low quality of life (physical functioning) | + | n/s | + | n/s | + | n/s |
| All-cause mortality | + | n/s | / | / | / | / |
| Coronary heart disease mortality | + | n/s | / | / | / | / |
| Stroke mortality | n/s | n/s | / | / | / | / |
| All cancer mortality | + | n/s | / | / | / | / |
| Lung cancer mortality | + | n/s | / | / | / | / |
| Breast cancer mortality | n/s | n/s | / | / | / | / |
| Mortality from mental and behavioural disorders due to the use of alcohol | - | - | / | / | / | / |
| Chronic liver disease mortality | n/s | n/s | / | / | / | / |

| | | | | | | |
|---|---|---|---|---|---|---|
| Mortality from mental and behavioural disorders due to the use of drugs | - | - | / | / | / | / |
| Suicide/self-harm mortality | - | - | / | / | / | / |
| Premature all-cause mortality | + | n/s | / | / | / | / |
| Premature coronary heart disease mortality | + | n/s | / | / | / | / |
| Premature stroke mortality | + | n/s | / | / | / | / |
| Premature all cancer mortality | + | n/s | / | / | / | / |
| Premature lung cancer mortality | + | n/s | / | / | / | / |
| Premature breast cancer mortality | - | n/s | / | / | / | / |
| Premature mortality from mental and behavioural disorders due to the use of alcohol | - | n/s | / | / | / | / |
| Premature chronic liver disease mortality | + | n/s | / | / | / | / |
| Premature mortality from mental and behavioural disorders due to the use of drugs | - | n/s | / | / | / | / |
| Premature suicide/self-harm mortality | - | n/s | / | / | / | / |

Key: **+** significantly higher than the rest of Scotland
**-** significantly lower than the rest of Scotland
**n/s** not signifcantly different to the rest of Scotland
\ not applicable

* Carstairs index of area deprivation, social class, educational qualification attainment, economic activity status

*Appendix B2: Summary of the effects of adjusting for socio-economic factors* on levels of health-related behaviours, health measures and mortality in deprived vs non-deprived areas in Greater Glasgow*

| | Men | Women |
|---|---|---|
| Excess drinking | NO DIFFERENCE | NO DIFFERENCE |
| Binge drinking | NO DIFFERENCE | NO DIFFERENCE |
| Smoking | HIGHER | HIGHER |
| Salt | HIGHER | HIGHER |
| Meat | NO DIFFERENCE | NO DIFFERENCE |
| Meat products | HIGHER | HIGHER |
| Non-diet soft drinks | HIGHER | HIGHER |
| Fruit and vegetables | LOWER | LOWER |
| Green vegetables | LOWER | NO DIFFERENCE |
| Physical activity | NO DIFFERENCE | NO DIFFERENCE |
| Obesity | NO DIFFERENCE | HIGHER |
| Cardiovascular condition | HIGHER | HIGHER |
| CHD alone | NO DIFFERENCE | HIGHER |
| Stroke alone | HIGHER | HIGHER |
| Diabetes | NO DIFFERENCE | HIGHER |
| Self- reported general health | HIGHER | HIGHER |
| Long standing illness | HIGHER | HIGHER |
| Acute sickness | HIGHER | HIGHER |
| GHQ12 | HIGHER | HIGHER |
| Mental component QOL | HIGHER | HIGHER |
| Physical functioning QOL | HIGHER | HIGHER |
| | | |
| All cause mortality | HIGHER | HIGHER |
| CHD mortality | HIGHER | HIGHER |
| Stroke mortality | HIGHER | HIGHER |
| All cancers mortality | HIGHER | HIGHER |
| Lung cancer mortality | HIGHER | HIGHER |
| Breast cancer mortality | NA | NO DIFFERENCE |
| Mental and behavioural disorders - Alcohol mortality | NO DIFFERENCE | NO DIFFERENCE |
| Chronic liver disease | HIGHER | NO DIFFERENCE |
| Mental and behavioural disorders - Drugs mortality | HIGHER | NO DIFFERENCE |
| Suicide/self-harm mortality | HIGHER | HIGHER |
| | | |
| Premature all cause mortality | HIGHER | HIGHER |
| Premature CHD mortality | HIGHER | HIGHER |
| Premature stroke mortality | HIGHER | NO DIFFERENCE |
| Premature all cancers mortality | HIGHER | HIGHER |
| Premature lung cancer mortality | HIGHER | HIGHER |
| Premature breast cancer mortality | NA | NO DIFFERENCE |
| Premature mental and behavioural disorders - Alcohol mortality | NO DIFFERENCE | NO DIFFERENCE |
| Premature chronic liver disease | HIGHER | NO DIFFERENCE |
| Premature mental and behavioural disorders - Drugs mortality | HIGHER | NO DIFFERENCE |
| Premature suicide/self-harm mortality | HIGHER | HIGHER |

* Carstairs index of area deprivation, social class, educational qualification attainment, economic activity status