

**Comparisons of Health-
Related Behaviours and
Health Measures between
Glasgow and the
Rest of Scotland**

KEY FINDINGS

- Men in the Greater Glasgow Health Board area have higher levels of mortality from all cancers and from lung cancer, from chronic liver disease, and from mental and behavioural disorders due to the use of drugs than men in the rest of Scotland, even after adjustment for area deprivation.
- Elevated rates of acute sickness and potential psychiatric morbidity in men in West Central Scotland, Greater Glasgow, and Glasgow City compared with the rest of Scotland are not explained by socio-economic circumstances. In addition, the higher rates of long standing illness in West Central Scotland remain after adjustment for socio-economic factors.
- Elevated rates of excessive alcohol consumption and binge drinking in the area may be contributing to excesses in male mortality and morbidity.
- There remains an excess of bad/very bad self-reported general health in Greater Glasgow and Glasgow City, and poor mental health in West Central Scotland, Greater Glasgow and Glasgow City compared with the rest of Scotland among women even once account of socio-economic circumstances has been taken.
- Poor diet, in terms of relatively low green vegetable consumption, in men in the Greater Glasgow and West Central Scotland areas and women in West Central Scotland is not accounted for by socio-economic factors.
- Higher levels of morbidity and unfavourable health-related lifestyle factors in Greater Glasgow relative to the rest of the country are clustered within certain subgroups of the population: individuals with no or basic qualifications; middle-aged men; women in the most deprived areas; women in low social classes; and economically inactive women.
- Within Greater Glasgow, mortality from all causes and from most of the specific causes is higher in the most deprived areas.
- High rates of excessive alcohol consumption and binge drinking in Greater Glasgow are found in deprived and non-deprived areas.
- For a number of health indicators, differences between West Central Scotland, Greater Glasgow, and Glasgow City and the rest of Scotland do not exist or are explained by socio-economic factors. These include cardiovascular disease (except women in Glasgow City), diabetes, obesity (levels are higher in the rest of Scotland among women), self-assessed general health (except women in Greater Glasgow and Glasgow City), many of the causes of death, smoking, physical activity, aspects of diet and alcohol consumption (among women in Greater Glasgow/West Central Scotland only for the latter).

A copy of the full report, including definitions of all measures, is available at www.gcph.co.uk/library/references.htm

INTRODUCTION

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 negative health-related behaviours such as alcohol consumption, smoking and bad diet compared with elsewhere in Scotland (6-8).

Poor health and negative health-related behaviours tend to be associated with low socio-economic status (9-16). Within Great Britain, health inequalities are more marked in Scotland than elsewhere (3) and within Scotland, the Glasgow City Council area has the greatest inequalities (17). The socio-economic composition of Glasgow differs to that of the rest of Scotland as a whole (18). Although it contains wards at both ends of the deprivation spectrum, the Glasgow area is the most economically disadvantaged. Whether differences in health and associated risk factors in Glasgow and the surrounding area can be explained by these socio-economic differences has not been addressed.

Whilst the Let Glasgow Flourish report (19) illuminated many aspects of health and health determinants in the West Central Scotland area, comparisons of the Glasgow/West Central Scotland area with the rest of Scotland remain to be performed. In this report comparisons are made at three geographical levels: "West Central Scotland" (regions covered by Ayrshire and Arran, Argyll and Clyde¹, Greater Glasgow, and Lanarkshire health boards), "Greater Glasgow" (the area covered by Greater Glasgow Health Board) and "Glasgow City" (the area covered by Glasgow City Council).

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

 AIMS AND PURPOSE

This report aims to provide comprehensive comparisons of adult risk factors, morbidity and mortality in the Glasgow/West Central Scotland area compared with elsewhere in Scotland, and to establish the extent to which differences can be explained by the unique socio-economic profile of the area. Health-related lifestyle factors considered are:

- Alcohol intake (excess weekly drinking and binge drinking)
- Current cigarette smoking
- Diet
- Physical activity
- Obesity.

Health measures examined are:

- Cardiovascular disease
- Diabetes
- Self-reported health measures
 - General health
 - Long standing illness and acute sickness
 - Psychological ill-health
 - Health-related quality of life.

Finally, comparisons are made between Greater Glasgow and the rest of Scotland in mortality from all-causes combined and specifically coronary heart disease, stroke, cancers (all, lung and breast), 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.

APPROACH AND METHODS

Analyses are based on data on over 25,000 individuals from the Scottish Health Surveys which took place in 1995/1996, 1998/1999 and 2003/2004; and mortality data from the General Register Office for Scotland for 2000-2002, with population estimates based on data from the 2001 census.

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 prevalence across all regions; subgroup breakdowns by age and socio-economic factors 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 deprived and non-deprived areas within Greater Glasgow. Further to analyses for Greater Glasgow, comparisons were made between West Central Scotland, as well as Glasgow City, and the rest of Scotland.

Overall (aged 16 years upward) and premature mortality (age 16-64 years) comparisons were made between Greater Glasgow and the rest of Scotland, and between deprived and non-deprived areas within Greater Glasgow.

Statistical methods

The extent to which differences in health-related behaviours, health outcomes and mortality between Greater Glasgow and the rest of Scotland can be explained by the different socio-economic profiles can be examined by comparing unadjusted and adjusted results from logistic regression models. Socio-economic factors accounted for are: Carstairs area deprivation index (comprising four dimensions of census information: car ownership, household overcrowding, low social class, and male unemployment); social class of household chief income earner; economic activity; and educational qualification attainment. Formal tests of statistical interaction between Greater Glasgow residence and survey year are used to detect changes in any "Glasgow effects" over time.

The mortality data were considered in relation to mid-point population estimates (2001 census). As for the health survey based analyses, the impact of area deprivation as measured by the Carstairs index was assessed by comparison of Greater Glasgow residence estimates before and after adjustment for deprivation.

FINDINGS AND CONCLUSIONS

Once account was taken of socio-economic circumstances, there remained excesses of long standing illness, acute sickness and potential psychiatric morbidity among *men in West Central Scotland* compared with the rest of Scotland. Elevated rates of excessive alcohol consumption and binge drinking in the area may be causal factors.

Excess mortality from all cancers, from lung cancer, from chronic liver disease and from mental and behavioural disorders due to the use of drugs remained in *men in Greater Glasgow* even after adjustment for socio-economic factors (Figure 1). As for the whole of West Central Scotland, levels of acute sickness and potential psychiatric morbidity remained high in Greater Glasgow compared to the rest of Scotland, after adjustment for socio-economic factors (Figure 2). High levels of weekly alcohol consumption and binge drinking may be at the root of the problems (Figure 3). Poor diet, in terms of low green vegetable consumption, also remained in Greater Glasgow as well as West Central Scotland as a whole (although combined fruit and vegetable intake was higher in Greater Glasgow) once socio-economic factors were allowed for.

Men in Glasgow City also have relatively high levels of acute sickness, potential psychiatric morbidity and alcohol consumption compared with the rest of Scotland, even after socio-economic factors are taken into account.

Among *women in West Central Scotland* there were higher levels of potential psychiatric morbidity compared with the rest of Scotland following adjustment for socio-economic factors.

The excess *female mortality* in Greater Glasgow found for some causes was explained by socio-economic factors (Figure 4). However, there remained an excess of self-reported poor general health and potential psychiatric morbidity among women in Greater Glasgow compared with the rest of Scotland following adjustment for socio-economic effects (Figure 5).

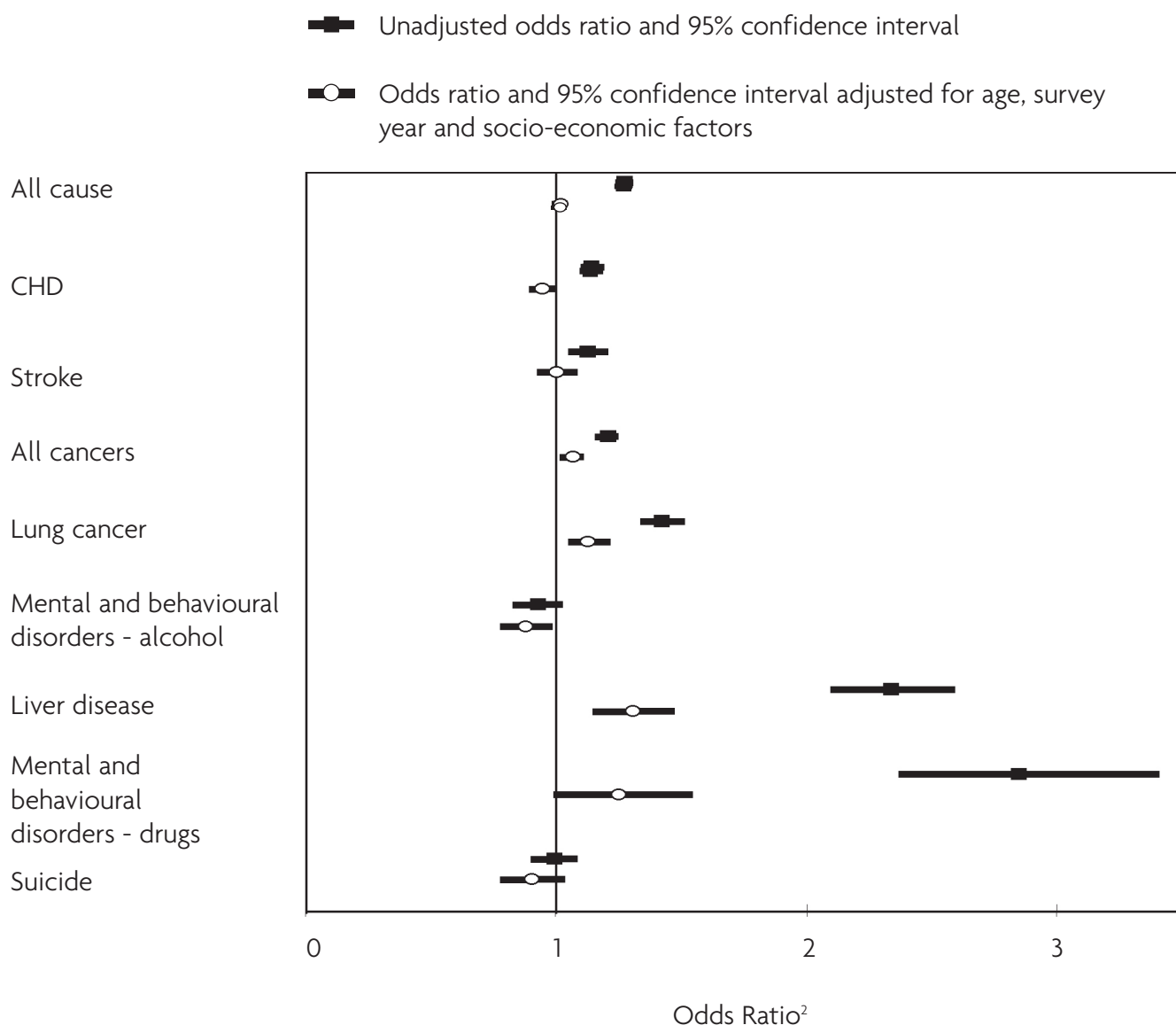
Compared with women in the rest of Scotland, *women in Glasgow City* were identified as having higher rates of self-reported poor general health and mental aspects of quality of life, as well as potential psychiatric morbidity, all of which remained after taking account of socio-economic factors.

Addition of salt to food at the table was high in women in West Central Scotland, Greater Glasgow (Figure 6) and Glasgow City relative to the rest of Scotland. High binge drinking levels in Glasgow City and low green vegetable intake in West Central Scotland were also found among women.

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 subgroups of the population. These subgroups are: 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 health measures between adults living in the most deprived areas compared with other areas within Greater Glasgow tended to be larger than differences between Glasgow and the rest of Scotland. With the exceptions of alcohol consumption (excess and binge drinking), meat consumption and physical activity in both sexes, diabetes among men, and green vegetable consumption, obesity and coronary heart disease among women, behaviours and outcomes were significantly less favourable in the most deprived areas. All-cause mortality was also 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 for both men and women. Additional exceptions for women were mortality from breast cancer, from chronic liver disease and from mental and behavioural disorders due to the use of drugs. Patterns were similar for premature mortality.

Figure 1: Comparison of male mortality in Greater Glasgow and the rest of Scotland, before and after controlling for effects of age, survey year, Carstairs area deprivation score, occupation based social class, educational qualification attainment and economic status



² Odds ratio: an expression of probability in terms of the ratio of the odds of a health-related behaviour/health measure for people living in Greater Glasgow compared with the odds for those living elsewhere in Scotland. An Odds Ratio of 1 indicates that the event is equally likely in both groups. An Odds Ratio greater than 1 indicates (in these Figures) that the event is more likely in the Greater Glasgow population than elsewhere in Scotland. An Odds Ratio less than 1 indicates that the converse is true. The confidence intervals show the range within which the true Odds Ratio will sit, with a probability of 95%.

Figure 2: Comparison of health measures in men in Greater Glasgow and the rest of Scotland, before and after controlling for effects of age, survey year, Carstairs area deprivation score, occupation based social class, educational qualification attainment and economic status

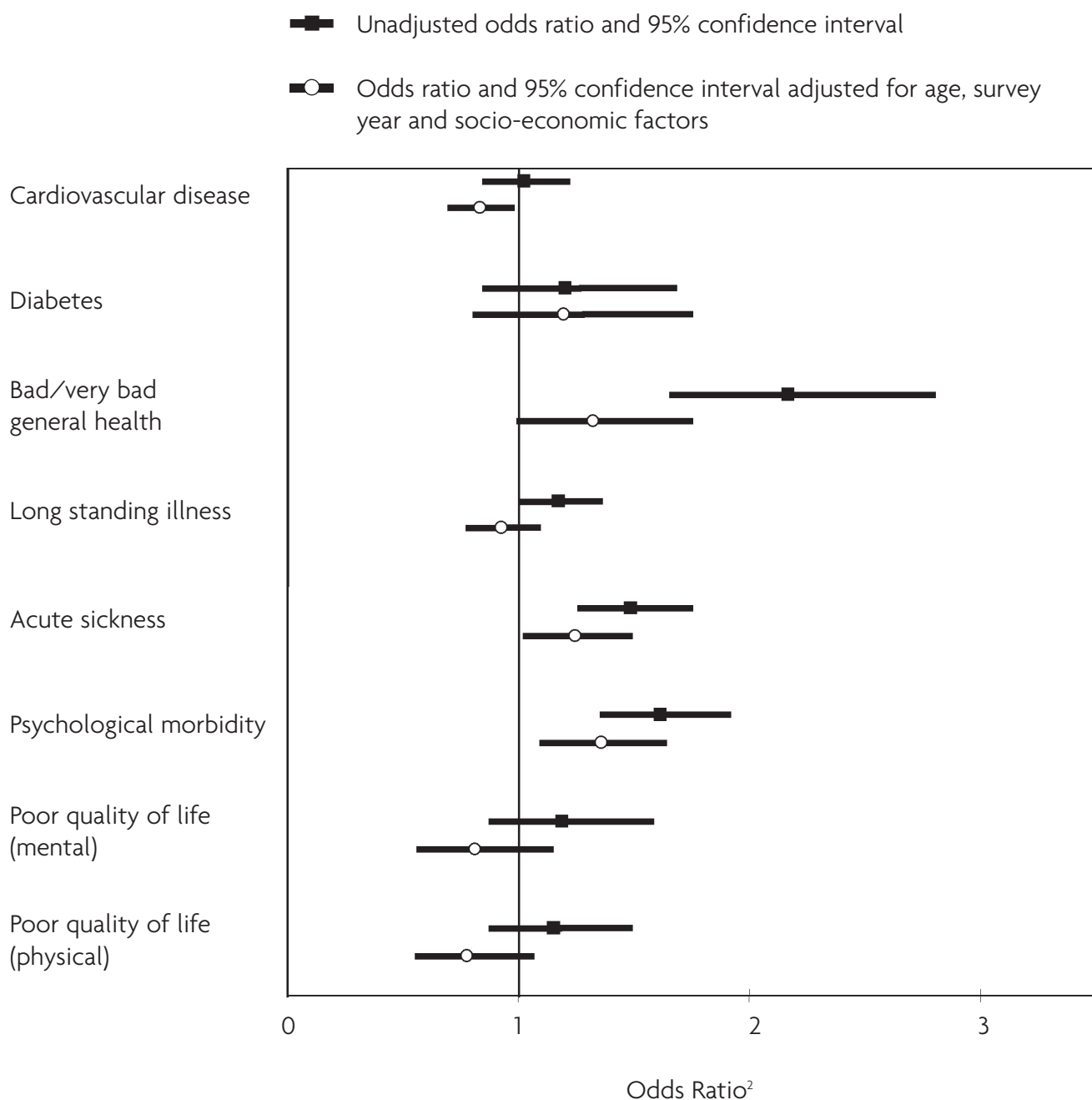


Figure 3: Comparison of health-related behaviours in men in Greater Glasgow and in the rest of Scotland, before and after controlling for effects of age, survey year, Carstairs area deprivation score, occupation based social class, educational qualification attainment and economic status

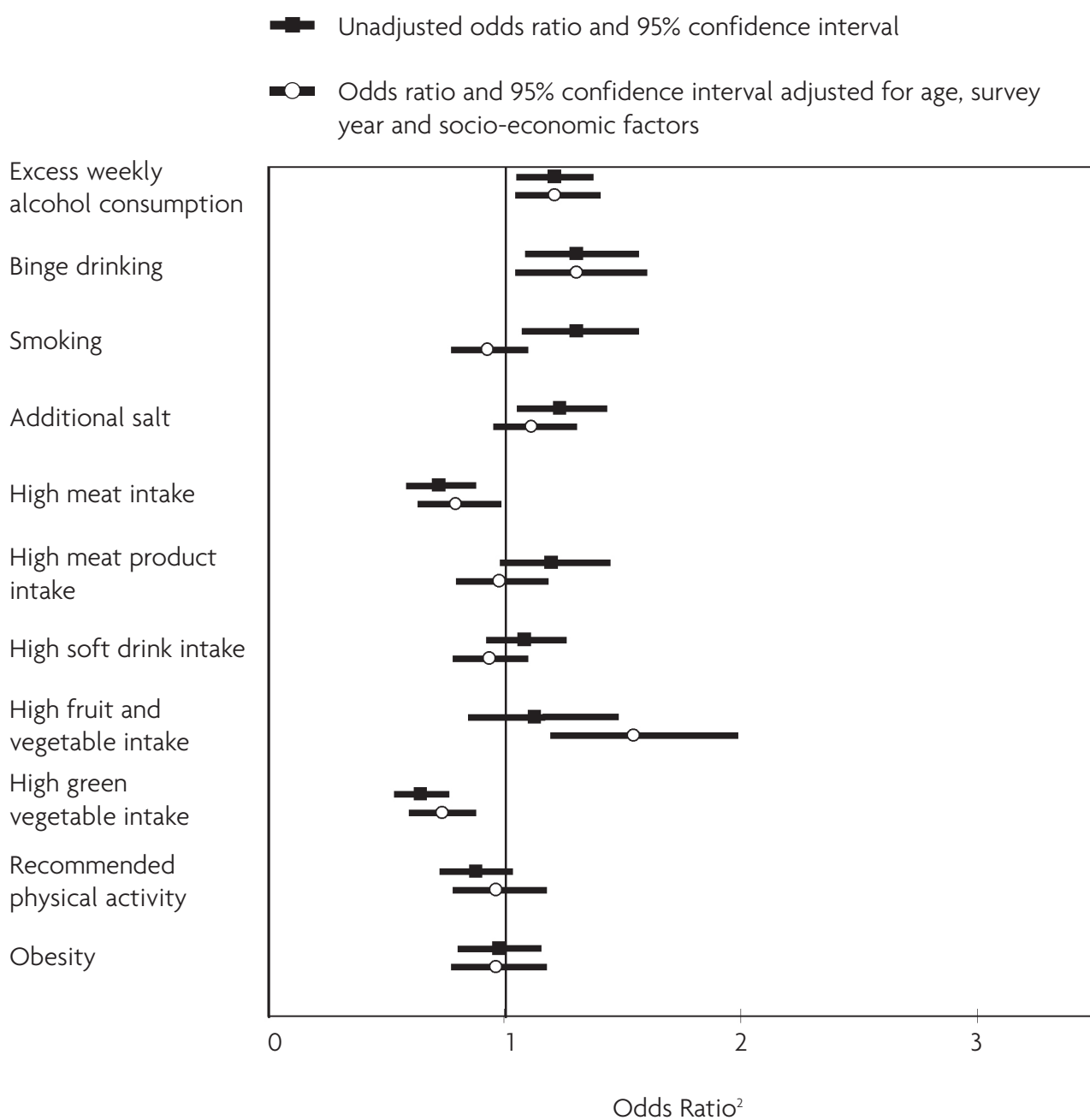


Figure 4: Comparison of female mortality in Greater Glasgow and the rest of Scotland before and after controlling for effects of age, survey year, Carstairs area deprivation score, occupation based social class, educational qualification attainment and economic status

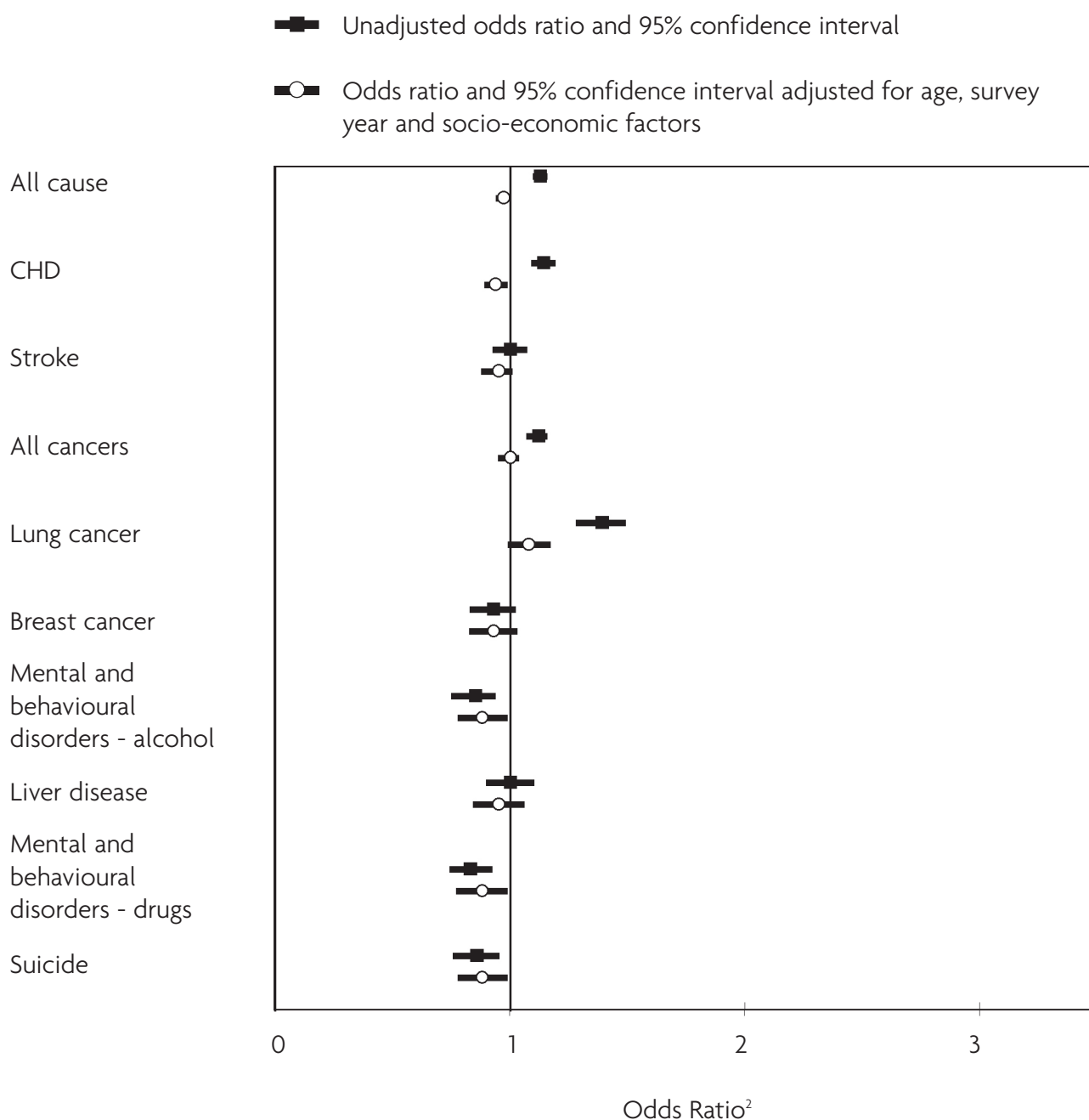


Figure 5: Comparison of health measures in women in Greater Glasgow and the rest of Scotland, before and after controlling for effects of age, survey year, Carstairs area deprivation score, occupation based social class, educational qualification attainment and economic status

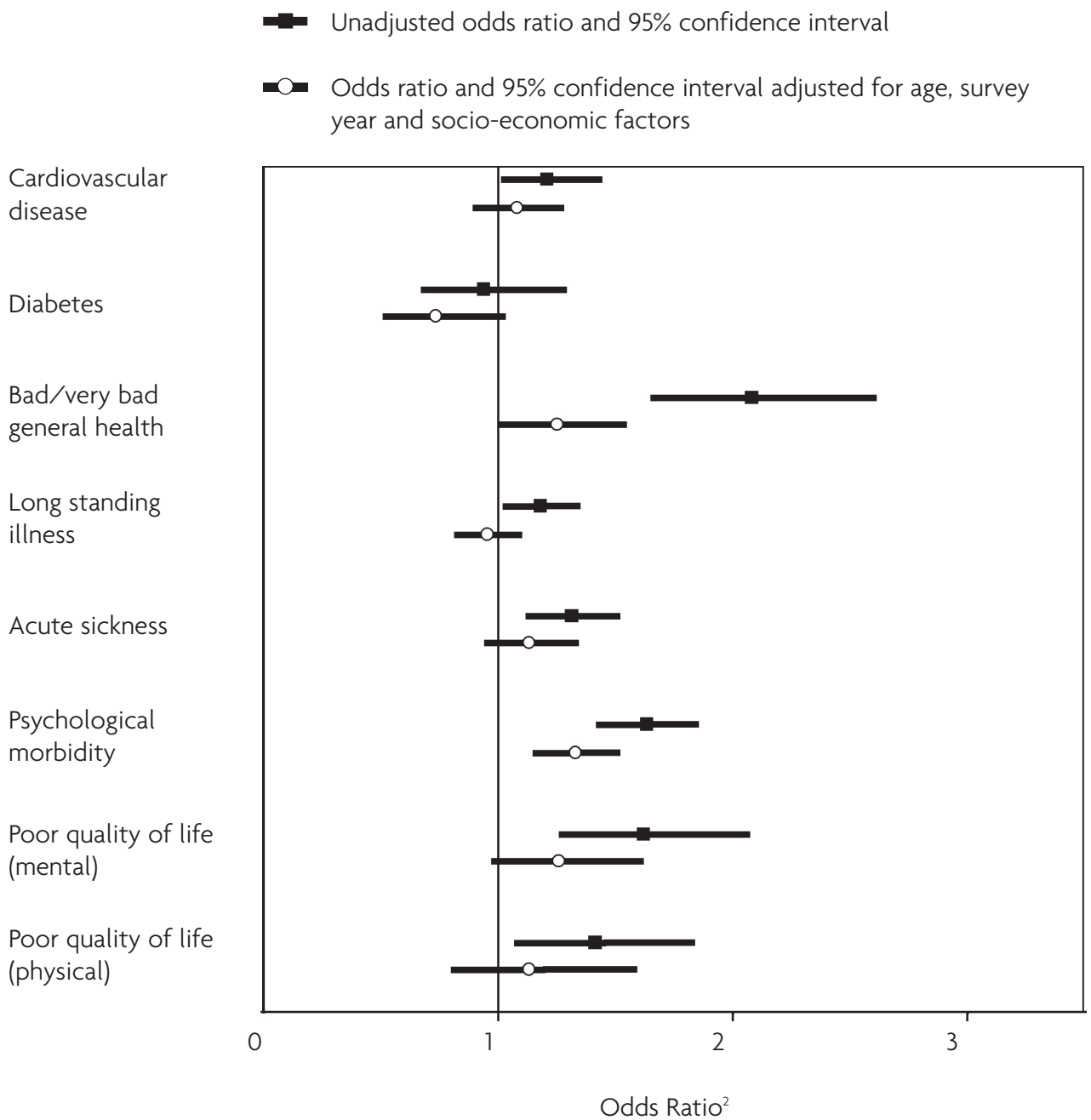
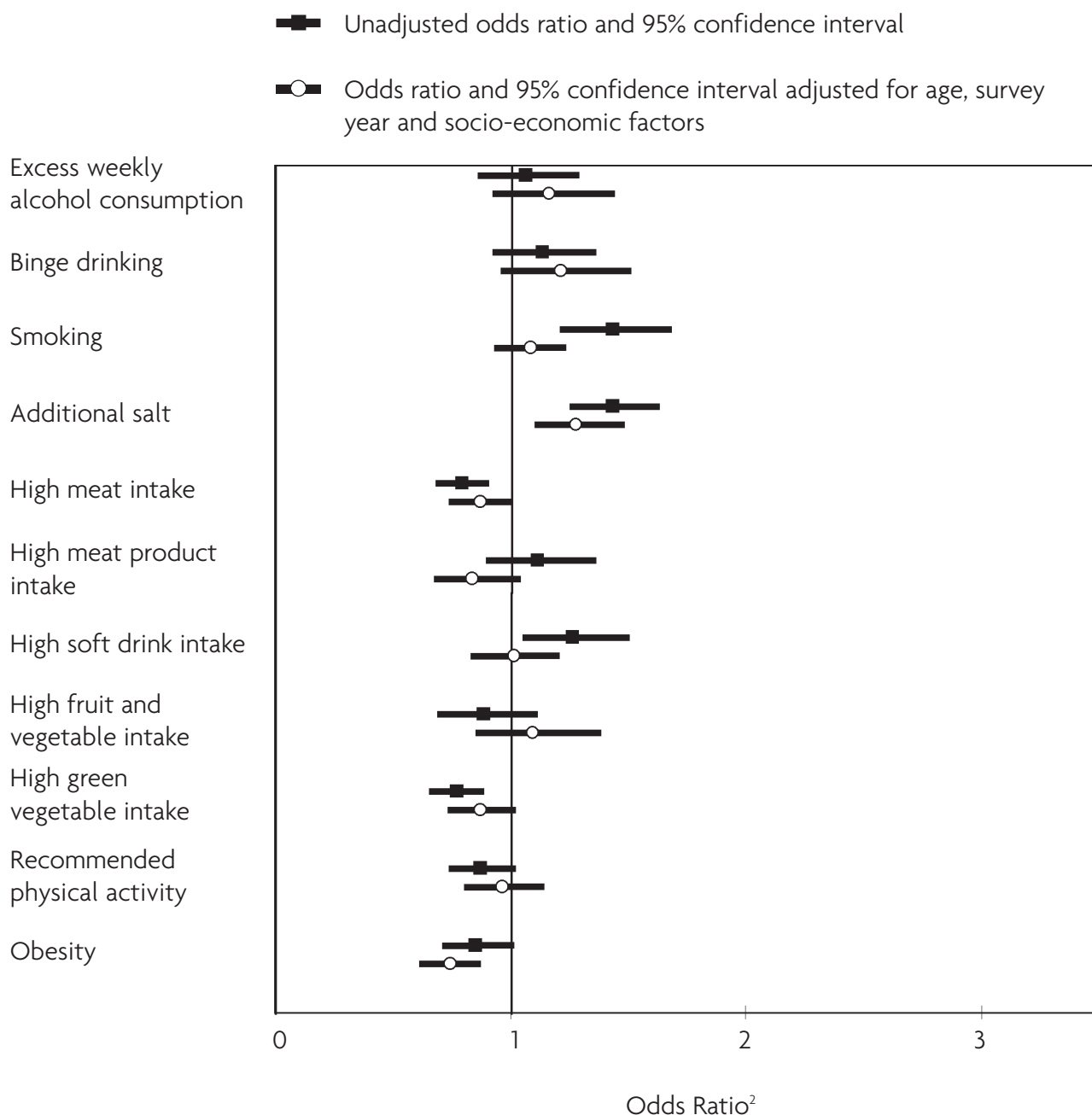


Figure 6: Comparison of health-related behaviours in women in Greater Glasgow and the rest of Scotland, before and after controlling for effects of age, survey year, Carstairs area deprivation score, occupation based social class, educational qualification attainment and economic status



 **RECOMMENDATIONS**

People and communities in Glasgow and West Central Scotland have some of the poorest health in the UK. Concerted action across the range of health issues is required to turn those statistics around. This report has shown that, in many ways, the health deficit experienced in the Glasgow area is a consequence of the socio-economic characteristics of the place and its people. However, there are some additional effects seen in this part of the country that merit specific attention, as follows:

- high rates of male mortality from cancer, mental and behavioural disorders due to the use of drugs, and from chronic liver disease (particularly in the under 65s)
- excess alcohol consumption, high levels of long standing illness, acute sickness and potential psychiatric morbidity among men
- elevated rates of self-rated bad and very bad general health, and poor mental health among women
- the need to encourage a higher intake of vegetable produce in both men and women

The need for particular attention to be paid to individuals of both sexes with no or basic qualifications; middle-aged men; and women in the most deprived areas, in low social classes, and who are economically inactive.

REFERENCES

1. Mitchell R, Fowkes G, Blane D, Bartley M. High rates of ischaemic heart disease in Scotland are not explained by conventional risk factors. *Journal of Epidemiology and Community Health*. 2005 Jul;59(7):565-7.
2. Hanlon P, Lawder RS, Buchanan D, Redpath A, Walsh D, Wood R, et al. Why is mortality higher in Scotland than in England and Wales? Decreasing influence of socio-economic deprivation between 1981 and 2001 supports the existence of a 'Scottish Effect'. *Journal of Public Health*. 2005 Jun;27(2):199-204.
3. Doran T, Drever F, Whitehead M. Is there a north-south divide in social class inequalities in health in Great Britain? Cross sectional study using data from the 2001 census. *British Medical Journal*. 2004 May 1;328(7447):1043-5.
4. Hanlon P, Walsh D, Buchanan D, Redpath A, Bain M, Brewster D, et al. Chasing the Scottish Effect. Why Scotland needs a step-change in health if it is to catch up with the rest of Europe: *Public Health Institute of Scotland/Information and Statistics Division of the Common Services Agency; 2001*.
5. Watt GCM, Ecob R. Analysis of falling mortality rates in Edinburgh and Glasgow. *Journal of Public Health Medicine*. 2000 Sep;22(3):330-6.
6. Dong W, Erens B, (Eds). *Scottish Health Survey 1995 (2 Vols)*. Edinburgh: The Stationery Office; 1997.
7. Shaw A, McMunn A, Field J, (Eds). *The 1998 Scottish Health Survey (2 Vols)*. Edinburgh: The Stationery Office; 2000.
8. Bromley C, Sprogston K, Shelton N, (Eds). *The 2003 Scottish Health Survey (4 Vols)*. Edinburgh: The Stationery Office; 2005.
9. Rodgers GB. Income and inequality as determinants of mortality: an international cross-section analysis. 1979. *International Journal of Epidemiology*. 2002 Jun;31(3):533-8.
10. De Irala-Estevez J, Groth M, Johansson L, Oltersdorf U, Prattala R, Martinez-Gonzalez M. A systematic review of socio-economic differences in food habits in Europe: consumption of fruit and vegetables. *European Journal of Clinical Nutrition*. 2000 Sep;54(9):706-14.
11. Macintyre K, Stewart S, Chalmers J, Pell J, Finlayson A, Boyd J, et al. Relation between socio-economic deprivation and death from a first myocardial infarction in Scotland: population based analysis. *British Medical Journal*. 2001 May 12;322(7295):1152-3.
12. Travers KD. The social organization of nutritional inequities. *Soc Sci Med*. 1996 Aug;43(4):543-53.
13. Shelton NJ. What not to eat: inequalities in healthy eating behaviour, evidence from the 1998 Scottish Health Survey. *Journal of Public Health*. 2005 Mar;27(1):36-44.
14. Wilkinson R, Marmot M, (eds). *Social Determinants of Health. The Solid Facts*. Second edition.: *World Health Organisation; 2003*.
15. Marmot M, Wilkinson RG, (eds). *Social Determinants of Health: Oxford University Press; 1999*.
16. MacIntyre S. Socio-economic Inequalities in Health in Scotland, *Social Justice Annual Report 2001*. Edinburgh: *Scottish Executive; 2001*.
17. Leyland AH. Increasing inequalities in premature mortality in Great Britain. *Journal of Epidemiology and Community Health*. 2004 Apr;58(4):296-302.
18. Social Disadvantage Research Centre. *Scottish Indices of Deprivation 2003*. Oxford: Department of Social Policy and Social Work, University of Oxford.
19. Hanlon P, Walsh D, Whyte B. *Let Glasgow Flourish: A comprehensive report on health and its determinants in Glasgow and West Central Scotland*. Glasgow: *Glasgow Centre for Population Health; 2006*.
20. Cameron AC, Trivedi PK. *Regression Analysis of Count Data*. Cambridge: *University Press; 1998*

ACKNOWLEDGEMENTS

Thank you to David Walsh, Prof Carol Tannahill, Prof Alastair Leyland, Prof Phil Hanlon and Pauline Mullen for comments and to Dr Carolyn Davies, Dr Denise Brown, Catherine Stewart, Naomi Hemy and Valerie Millar for proof reading and administrative assistance. Thank you also to ScotCen and NatCen for providing the additional anonymised postcode sector data harmonised across the three surveys, facilitating accurate account of the data hierarchy. Finally, thank you to the General Register Office for Scotland and Ruth Dundas for provision and management of mortality and population data.

CONTACT

Dr Linsay Gray

Medical Research Council
Social and Public Health Sciences Unit
4 Lilybank Gardens
Glasgow
G12 8RZ

Tel: 0141 357 7540

Email: : L.Gray@sphsu.mrc.ac.uk

Web: : www.sphsu.mrc.ac.uk and www.gcph.co.uk

A copy of the full report can be accessed at www.gcph.co.uk/library/references.htm