



Social Capital and Health: Findings from The Scottish Health Survey and Scottish Social Attitudes Survey

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FINDINGS FROM THE SCOTTISH HEALTH SURVEY
AND THE SCOTTISH SOCIAL ATTITUDES SURVEY

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1 INTRODUCTION

- 1.1 Recent years have seen growing interest in understanding how an 'assets-based' approach might help address some of the long-standing problems and inequalities associated with health in Scotland. In his foreword to a paper launching the Assets Alliance Scotland (Assets Alliance Scotland, 2010), the Chief Medical Officer referred to research by the Glasgow Centre for Population Health, which has compared Glasgow with Manchester and Liverpool and found that income inequalities alone cannot explain Glasgow's relatively poor health. There appears to be a 'Glasgow effect' and indeed a 'Scotland effect' in relation to health that cannot be reduced simply to differences in socio-economic structures. Instead, it is suggested that this difference is psychosocial, relating to cultural forces, particularly in the most deprived communities, that go beyond differences of economic position. As the Chief Medical Officer puts it, 'there is something within the spirit of individuals living within deprived communities that needs healed'. An assets-based approach seeks to rectify this situation, by focusing on supporting and utilising the innate capacities and coping mechanisms that individuals and communities possess. In doing so, it is hoped that health will improve, because people will be equipped to take control of their social circumstances and sustain their own wellbeing.
- 1.2 In its focus on psychosocial factors and on the associations and informal linkages that exist within the community and between the community and external institutions, the assets-based approach has clear links with research on the relationship between 'social capital' and health. The Office of National Statistics (ONS) has adopted the Organisation for Economic Co-operation and Development (OECD) definition for their work on social capital, which highlights the role of networks as well as the importance of shared values and understandings: "Networks together with shared norms, values and understandings that facilitate co-operation within or among groups" (Cote and Healy, 2001:41). This link is explicitly referred to in the Chief Medical Officer's most recent annual report (2011), which highlights the 'recognition of social capital (the connections within and between social networks) and its importance as an asset' in discussing Area Based Community Development as an assets-based approach that could be applied to improve health and wellbeing. Conversely, in perhaps the best known account of social capital, *Bowling Alone*, Putnam (2000) links declining social capital with a range of negative outcomes for health and wellbeing. He argued that people in America have become disconnected from their family, friends, neighbours and social structures and that this shrinking access to social capital was associated with health outcomes ranging from more teenage pregnancies to higher mortality rates. He points to studies that indicate that stroke victims with strong support networks recover more physical capacities than stroke victims with weak social networks, and that older people who are involved with clubs, volunteering or local politics consider themselves in better general health than uninvolved people, even after accounting for socio-economic status and other demographic factors.

- 1.3 This paper explores the Scottish evidence for a link between social capital and health outcomes in order to inform the ongoing development of an assets-based approach to addressing health problems and inequalities. It uses data from two sources – the 2009 Scottish Health Survey (SHeS 2009¹) and the 2009 Scottish Social Attitudes survey (SSA 2009²), although the majority of the paper focuses on the former due to the inclusion of self-assessed health plus WEMWBS variables. The Scottish Health Survey is commissioned by the Scottish Government and aims to monitor health in Scotland, while the Scottish Social Attitudes survey is an annual survey exploring social and political attitudes. In 2009, both surveys included a number of measures of social capital, alongside a wide range of demographic measures and relevant health outcomes.

¹ For full details of the methodology for this survey, see Bromley & Given (eds.) (2010).

² For full details of the methodology for SSA 2009, see Annex B to Ormston (2010).

2 ANALYTICAL APPROACH

- 2.1 The analysis conducted for this paper used logistic regression to explore whether or not various aspects of social capital are independently associated with (a) how people view their health in general, and (b) their level of mental wellbeing, as measured by the Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS).
- 2.2 Logistic regression is a statistical technique that allows you to examine the relationship between a dependent variable (in this case, either general self-assessed health or WEMWBS score), and various independent variables (like sex, age, income, etc.). The analysis identifies which of these independent variables are significantly and independently related to the dependent variable, after controlling for the inter-relationships between variables.
- 2.3 As the Scottish Government's interest is particularly in the contribution that social capital makes to health, the analysis was conducted in two stages. First, regression models were created, looking at the relationship between the chosen health outcomes and various demographic and socio-economic variables commonly associated with those outcomes (for a full list of variables included, see regression models in Annex A). Second, a number of questions that aimed to measure different aspects of social capital were added to each model, to see how much social capital adds to our ability to explain differences in general health and wellbeing.
- 2.4 By including both demographic variables and measures of social capital in a regression model, it is possible to assess whether higher or lower levels of social capital appear to be significantly related to better or worse health outcomes even after controlling for demographic differences. This is important, since there are significant demographic differences in the distribution of both social capital and general health and wellbeing. For example, recent UK analysis found that people with higher incomes tend to score more highly than those with lower incomes on various measures of social participation³ (Ferragina et al, 2011), while previous analysis of SSA data has shown variations in levels of 'community-connectedness' by gender, age, income and area deprivation (Anderson & Dobbie, 2008). At the same time, analysis of the Scottish Health Survey has shown that general perceptions of health vary with age (with participants less likely to rate their health as 'good' or 'very good' as they get older), while mental wellbeing as measured by WEMWBS varies significantly with socio-economic classification and equivalised household income (Bromley et al, 2009). Without controlling for these demographic factors, it is possible that any association we find between social capital and health is simply a reflection of the fact that both health and social capital vary along particular demographic or socio-economic lines.
- 2.5 While the findings reported in this paper are primarily based on multivariable regression analysis (the full results of which are presented in Annex A), for ease of interpretation by general readers, significant differences identified by

³ 'Social participation' is often used interchangeably with 'social capital', since those with higher levels of participation are assumed to have greater social capital.

this analysis are illustrated in the main text using bivariate statistics (percentages based on cross-tabulations). Any differences between bivariate and multivariable findings are noted in the text or in footnotes.

Limits of the analysis

- 2.6 Logistic regression is a useful technique for exploring the relationship between multiple 'independent' variables and a given outcome. However, it can only tell us if a statistically significant and independent relationship exists between each variable and the outcome. It cannot tell us whether or not these 'independent' variables cause this outcome. In the context of this paper, this means that we cannot conclusively say that scoring more highly on any particular measure of social capital is the reason why someone has a higher level of health or wellbeing. It might be that having limited social networks reduces people's resilience and contributes to poor health, for example, but equally it could be that being in poor health limits people's ability to see their friends and relatives.
- 2.7 We cannot say conclusively which of these interpretations is correct. All this paper can say is whether or not a relationship between the two appears to exist. Further work is required to establish the direction of this relationship. This might involve, for example, a before and after study of participants in an initiative that explicitly aims to improve health via improving levels of social capital. Alternatively, future linkage of SHeS data to data collected about respondents by the NHS should enable analysts to assess whether those who exhibit relatively higher or lower levels of social capital now have better or worse health outcomes in the future.
- 2.8 Any analysis is also inevitably limited to the data available. For this analysis, the Scottish Government was interested primarily in questions that relate to aspects of social networks and social support, reciprocity and trust, and feelings of efficacy in relation to civic participation. The questions included are shown in Table 1, below. It is of course possible that had we included a different set of social capital variables we would have found different results. In particular, future analysis might usefully look at the relationship between health and volunteering, given the findings cited in Putnam suggesting a positive relationship between the two. However, as neither of the data sources used for this paper included a question measuring volunteering, this was not possible within the scope of this analysis.
- 2.9 As indicated in Table 1, SHeS 2009 and SSA 2009 each included a slightly different set of questions relating to three aspects of social capital included in the framework for measuring social capital in the UK, developed by ONS (Harper 2002). In particular, questions in SHeS on social networks tap into wider social support (how many people respondents could turn to in a crisis, and frequency of contact with relatives, friends or neighbours), while SSA questions on this topic are framed with reference to support in respondents' local areas.

Table 1 – Summary of questions included in analysis

Aspect of social capital (ONS framework)	SHeS 2009 questions	SSA 2009 questions
Social networks and social support	<p>If you had a serious personal crisis, how many people, if any, do you feel you could turn to for comfort and support?</p> <p>Not counting the people you live with, how often do you personally contact your relatives, friends or neighbours, either in person, by phone, letter, e-mail or through the internet?</p>	<p>How strongly do you agree or disagree that: I feel that there are people in this area I could turn to for advice or support</p> <p>I regularly stop and speak to people in my area</p>
Civic participation	<p>How involved do you feel in the local community?</p> <p>To what extent do you agree or disagree with the following statement: 'I can influence decisions affecting my local area'?</p>	<p>Thinking about improving your local area, how much would you agree or disagree with this statement: 'It is just too difficult for someone like me to do much about improving my local area'?</p>
Reciprocity and trust	<p>Generally speaking, would you say that most people can be trusted, or that you can't be too careful in dealing with people?</p>	<p>Generally speaking, would you say that most people can be trusted, or that you can't be too careful in dealing with people?</p>

2.10 Similarly, this paper focuses on the relationship between social capital and (a) self-assessed general health and (b) mental wellbeing. The former was measured in both SHeS 2009 and SSA 2009 by a question which asks simply:

How is your health in general? Would you say it is ...
 ... very good,
 good,
 fair,
 bad,
 or very bad?

2.11 Mental wellbeing was measured (in SHeS 2009) by a series of statements developed by a team of researchers at Warwick and Edinburgh Universities, known as the Warwick-Edinburgh Wellbeing Scale (WEMWBS – see Stewart-Brown, S and Janmohamed, K, 2008 for full details of the items included in this scale). Each person's combined responses to these statements provides a score, which can then be analysed. This paper focuses on patterns in those with a below average wellbeing score (defined as a score at least one standard deviation below the mean).

2.12 These questions were chosen on the basis that they are broad, general measures of health and wellbeing, and that analysis of the relationship between

social capital and health should start at this level. It is, of course, possible that there may be different relationships between people's social capital assets and specific physical and mental health outcomes, such as cardiovascular disease or depression. These are possible topics for future analyses.

3 KEY FINDINGS

- Overall, the findings suggest that understanding people's level of social capital assets does, to varying degrees, improve our ability to predict their level of general health or mental wellbeing.
- People's social networks – their contact with relatives, friends and neighbours in particular – appear to be associated with their self-assessed health. 80% of those who had contact with friends and relatives on most days felt their health was good or very good, compared with 66% of those who had contact once or twice a month or less. This relationship was still apparent after controlling for age and other demographic variables. Meanwhile, levels of mental wellbeing were higher among those who had more than two people they could turn to for support in a crisis.
- Civic participation and feelings of self-efficacy in relation to improving one's community also appear to matter. Those who felt involved in their local community were also more likely than those who did not feel involved at all to rate their health as good or very good, even after controlling for demographic factors.
- Similarly, those who agreed that they could influence decisions about their local area had higher levels of mental wellbeing than those who disagreed that this was the case. 91% of those who agreed or strongly agreed that they could influence their local area had an average or above average WEMWBS score, compared with 74% of those who strongly disagreed that this was the case.

4 DETAILED FINDINGS

4.1 The findings discussed here are based on the regression analyses described above. Where a factor is described as significantly associated with general health or mental wellbeing, this indicates (unless otherwise specified in text or footnotes) that it is independently statistically significant, even after its relationship with other variables is taken into account in a regression model. Full output from the regression analyses conducted for this paper are included in Annex A. In the following discussion, we use simple percentages (based on bivariate cross-tabulations) to illustrate key points for the lay reader.

General health

4.2 Before discussing the relationship between social capital and general health, it is worth briefly summarising key demographic and socio-economic variations in people's views of their own health (Table 2). As discussed in recent Scottish Health Survey reports, people's perceptions of their health tend to decline with age (see Bromley and Given, eds., 2011 for the most recent findings). In 2009, 91% of 16-24 year-olds considered their health to be good or very good, falling to 50% of those aged 75 and older. Analysis also shows that self-assessed health varies with area deprivation and income.⁴ 90% of those living in the least deprived areas of Scotland viewed their health as good or very good, compared with 65% of those living in the most deprived areas. Similarly, 91% of those in the highest income quartile rated their health as good, compared with 54% of those in the lowest income group. Economic status also matters, even after taking account of income. Those who were in paid employment (89%) or education (95%) had higher levels of self-assessed health than those who were unemployed (73%), retired (59%), permanently unable to work (14%) or looking after the home and family (73%).⁵ Similar patterns were apparent from analysis of SSA 2009 data – age, household income and economic activity were all closely related to self-assessed health.

⁴ Differences in self-assessed health by both income and SIMD were found for both sexes in Bromley et al (eds.) (2010). However, note that in the analysis conducted for this report (based on the sub-sample of participants who also answered questions on social capital), while differences by income were significant at the bivariate level, income was only marginally significant ($p = 0.084$) once other factors were controlled for in multivariable regression analysis.

⁵ Regression analysis shows that economic status is statistically significant even after controlling for age. Those who were unable to work, retired, or looking after the home were all significantly more likely than those in paid employment to say that their health was fair, bad or very bad rather than good or very good. The difference between those in paid employment and those who were unemployed was not significant in the regression model, possibly because the model also controls for area deprivation and income, although at a bivariate level this difference was significant.

Table 2 – Self-assessed health by age, area deprivation and economic status (SHeS 2009)

	Very good/good	Fair	Bad/very bad	Sample size¹
	%	%	%	N
Age				
16-24	91	8	1	233
25-34	89	10	2	355
35-44	85	10	5	457
45-54	79	14	7	478
55-64	69	21	10	429
65-74	67	22	11	347
75+	50	36	15	303
Area deprivation (SIMD quintiles)²				
Most deprived	65	20	15	526
2 nd	75	18	7	497
3 rd	73	20	7	513
4 th	84	12	4	555
Least deprived	90	9	1	511
Annual household income				
Lowest quartile	54	28	18	524
2 nd quartile	75	17	8	509
3 rd quartile	86	11	3	599
Highest quartile	91	8	1	576
Socio-economic status				
In education	95	4	1	110
In paid employment, self-employed or on government training	89	10	1	1380
Permanently unable to work	14	35	50	131
Looking for/intending to look for paid work	73	16	10	77
Retired	59	27	14	687
Looking after home/family	73	22	5	183

1 – Note that the regression models on which the findings discussed in this paper are based were run on the sub-sample of SHeS 2009 respondents who were asked the social capital questions discussed below. All tables in this report are therefore based on this sub-sample.

2 – The Scottish Index of Multiple Deprivation (SIMD) 2009 measures the level of deprivation across Scotland – from the least deprived to the most deprived areas, based on 38 indicators in seven domains of: income, employment, health, education skills and training, housing, geographic access and crime. For more details about SIMD, see <http://www.scotland.gov.uk/Topics/Statistics/SIMD/>.

4.3 People's social capital assets were also significantly associated with their level of self-assessed health (Table 3). In particular, assets linked to people's own social networks and their feelings of self-efficacy in relation to community involvement were related to higher levels of self-assessed health. For example:

- Those who had regular contact with friends, relatives and neighbours were more likely than those whose social contact was more restricted to report that their health was good or very good. 80% of those who had contact with friends, relatives or neighbours most days reported that their health was good or very good, compared with just 66% of those who had

personal contact with friends, relatives or neighbours once or twice a month or less.

- Having more than two people to turn to in a crisis was also associated with higher levels of general health – 60% of those who had two or fewer people they could turn to said their health was good or very good, compared with 74% of those with three or four people they could rely on, and 81-83% of those with five or more people they could turn to.
- In contrast, feeling completely uninvolved in the community appears to be related to relatively lower levels of self-assessed health. However, here the difference appears to be between those who said they were not involved at all in their community and everyone else. 71% of those who said they were not involved at all in their community said their health was good or very good general health, compared with between 79% and 82% of those who felt they had some (even if not very much) community involvement.⁶

4.4 Regression analysis using SHeS 2009 data suggests that these relationships hold, even after demographic factors are controlled for.⁷

⁶ While there appears to be a relationship between feeling able to influence decisions over the local area and general health, individual differences between comparison and reference categories were not significant in the regression model, so this is not included in the table above. The bivariate relationship, however, is very similar to that between general health and feeling involved in the community, as described above. 81% of those who strongly agreed that they could influence decisions about their area felt their health was good or very good, compared with 72% of those who strongly disagreed. General social trust was not significantly related to self-assessed health in the regression model.

⁷ See Annex A, Model 1. Moreover, adding these variables to the model improved its ability to predict respondents' general health, albeit only very slightly (Nagelkerke R^2 , a measure of how well the model 'fits' and is able to predict the outcome in question, increased from 36.1% to 38.4%).

Table 3 – Self-assessed health by social capital assets (SHeS 2009)

	Very good/good	Fair	Bad/very bad	Sample size
	%	%	%	N
How often contact friends, relatives and neighbours in person, by phone, letter or e-mail				
Most days	80	13	6	1765
Once or twice a week	75	19	6	668
Once or twice a month or less	66	23	11	151
How many people can turn to for support in a crisis				
2 or fewer	60	27	13	315
3 or 4 people	74	17	9	469
5 or 6 people	82	13	5	762
7-10 people	81	14	5	552
11+ people	83	12	5	473
How involved feel in local community				
A great deal	80	15	6	142
A fair amount	82	15	3	615
Not very much	79	15	6	1196
Not at all	71	18	10	625

4.5 The results of regression analysis of SSA 2009 were somewhat less conclusive,⁸ perhaps reflecting the fact that, as discussed above, SSA questions focused on social networks in the local area, rather than on wider networks and support – perhaps the latter play a bigger role in relation to health and wellbeing. However, findings at a bivariate level again tend to suggest that having strong support networks may make a difference to people’s general self-assessed health. For example, 76% of those who agreed strongly that there were people in their area they could turn to for advice and support had very good or good health, compared with 65% of those who disagreed with this statement.

Mental wellbeing

4.6 As with general health, mental wellbeing (as measured in SHeS 2009 by WEMWBS, described above) varies with age. However, in this case the relationship is not linear. Those aged 65-74 were most likely to have average or above WEMWBS scores, but there was no clear pattern across the other age groups. Mental wellbeing also varies with socio-economic status in a similar manner to general health. Those in employment or education have higher scores, particularly in comparison with those who are unemployed or

⁸ Adding social capital variables to a regression model of general health based on SSA data did increase the model fit (Nagelkerke R² increases from 30.9% to 34.8%). However, agreement/disagreement with the statement ‘I feel that there are people in this area I could turn to for advice and support’ was the only individual social capital variable significant at the 5% level (p <= 0.05) in the regression model. Moreover, the odds ratios for this variable were not entirely linear. However, at the bivariate level, the pattern was more linear.

permanently unable to work, while those living in the least deprived areas had higher self-reported wellbeing than those in the most deprived areas (Table 4).⁹

Table 4 – Mental wellbeing (WEMWBS) by age, area deprivation and socio-economic status (SHeS 2009)

	Good mental wellbeing	Average mental wellbeing ¹	Below average mental wellbeing	Sample size
	%	%	%	N
Age				
16-24	11	71	19	233
25-34	10	78	11	355
35-44	10	74	17	457
45-54	12	69	19	478
55-64	8	77	15	429
65-74	16	73	11	347
75+	12	68	20	303
Socio-economic status				
In education	13	76	11	110
In paid employment, self-employed or on government training	11	77	12	1380
Permanently unable to work	4	35	61	131
Looking for/intending to look for paid work	8	59	33	
Retired	13	72	16	687
Looking after home/family	7	74	19	183
Area deprivation (SIMD quintiles)				
1 st (most deprived)	9	69	22	526
2 nd	11	69	20	497
3 rd	12	71	17	513
4 th	11	76	13	555
5 th (least deprived)	12	80	8	511

1 – 'Average' is defined as within one standard deviation of the mean score.

4.7 Again, regression analysis suggests that social capital assets are positively associated with mental wellbeing even after controlling for demographic and socio-economic variations.¹⁰ In particular, feeling able to influence decisions in the local area and having more than one or two people to turn to in a crisis were significant.

- Those who agreed or strongly agreed that they could influence decisions about their local area were more likely to have average or above levels of

⁹ It is worth noting, however, that although significant at the bivariate level, differences by deprivation were only marginally significant ($p = 0.077$) in multivariable regression analysis, when controlling for other factors (see Annex A). Marital status was also marginally significant ($p = 0.084$), with the odds ratios suggesting that those who are single are more likely to have low wellbeing than those who are married or in a civil partnership.

¹⁰ See Annex A, Model 3. Adding various social capital variables to the regression model improved the fit (Nagelkerke R^2 increased from 17.1% to 25.1%).

mental wellbeing (91%) compared with those who disagreed (81%) or strongly disagreed (74%) that they had such influence.¹¹

- Levels of mental wellbeing were also higher among those who had more people they could turn to for support in a crisis. Between 87% and 91% of those who had five or more people they could turn to reported average or above average levels of mental wellbeing, compared with 75% of those who only had three or four people and 70% of those with two or fewer people they could rely on in a crisis.

4.8 However, in contrast with general health, mental wellbeing did not appear to vary significantly by frequency of contact with family, friends or neighbours.

Table 5 – Mental wellbeing (WEMWBS) by social capital assets (SHeS 2009)

	Above average	Average¹	Below average	Sample size
	%	%	%	N
How many people can turn to for support in a crisis				
2 or fewer	5	65	30	315
3 or 4 people	4	71	25	469
5 or 6 people	10	78	12	762
7-10 people	14	74	13	552
11+ people	18	72	9	473
Whether feel can influence decisions over local area				
Agree/strongly agree	16	75	9	573
Neither	13	75	12	716
Disagree	8	73	19	985
Strongly disagree	7	67	26	244

1 – 'Average' is defined as within one standard deviation of the mean score.

¹¹ A similar pattern was apparent at a bivariate level for feeling involved in the local community – those who were not at all involved were more likely to have low mental wellbeing and less likely to have average or above wellbeing compared with those who felt any level of involvement in their local community. However, as individual differences between reference and comparison categories were not significant in the regression model (see Annex A), these figures are not included in Table 5.

5 CONCLUSIONS

- 5.1 This paper provides further evidence of the potential relationship between social capital assets and better health. In particular, having people to turn to in a crisis, having frequent contact with family, friends and neighbours and feeling involved in and able to influence the local area appear to be important. In interpreting these findings, it is worth noting that the greatest differences appear to be between the (often relatively small) group of people who have very little social capital – those who have social contact with others once or twice a month or less, those who have two or fewer people they can rely on in a crisis, and those who have no involvement in their community at all – and the rest of the population. Improving the social capital of these groups even a little might, therefore, have significant impacts for their health and wellbeing. However, this of course assumes that their lower levels of general health stem from – rather than being a cause of – their relatively low levels of social capital assets.

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ANNEX A – REGRESSION MODELS

1. Regression analysis aims to summarise the relationship between a ‘dependent’ variable and one or more ‘independent’ explanatory variables. It shows how well we can estimate a respondent’s score on the dependent variable from knowledge of their scores on the independent variables. This technique takes into account relationships between the different independent variables (for example, between education and income, or social class and housing tenure). Regression is often undertaken to support a claim that the phenomena measured by the independent variables cause the phenomenon measured by the dependent variable. However, the causal ordering, if any, between the variables cannot be verified or falsified by the technique. Causality can only be inferred through special experimental designs or through assumptions made by the analyst.
2. All regression analysis assumes that the relationship between the dependent and each of the independent variables takes a particular form. This report was informed by logistic regression analysis – a method that summarises the relationship between a binary ‘dependent’ variable (one that takes the values ‘0’ or ‘1’) and one or more ‘independent’ explanatory variables. The tables in this annex show how the odds ratios for each category in significant explanatory variables compares to the odds ratio for the reference category (always taken to be 1.00).
3. Taking Model 1 (below) as an example, the dependent variable is self-assessed health. If the respondent rated their own health as fair, bad or very bad, the dependent variable takes a value of 1. If they rated their health as good or very good, it takes a value of 0. An odds ratio of above 1 means that, compared with respondents in the reference category, respondents in that category have higher odds of saying their health is fair/bad/very bad. Conversely, an odds ratio of below 1 means they have lower odds of saying this than respondents in the reference category. The 95% confidence intervals for these odds ratios are also important. Where the confidence interval does not include 1, this category is significantly different from the reference category. If we look at age in Model 1, we can see that those aged 35-44 have an odds ratio of 2.32, indicating that they have higher odds of saying standards in the health service have fallen compared with 16-24 year-olds (who are the reference category). The 95% confidence interval for this age group (1.07-5.02) does *not* include 1, indicating this difference is significant.
4. The significance of each independent variable is indicated by ‘P’. A p-value of 0.05 or less indicates that there is less than a 5% chance we would have found these differences between the categories just by chance if in fact no such difference exists, while a p-value of 0.01 or less indicates that there is a less than 1% chance. P-values of 0.05 or less are generally considered to indicate that the difference is highly statistically significant, while a p-value of 0.06 to 0.10 may be considered marginally significant. The models below show the odds ratios and 95% confidence intervals for those variables with P-values of less than or equal to 0.10 only; other variables are simply listed with their P-values.

5. The models below were produced using the Complex Survey command (CS Logistic) in PASW. Unlike forward stepwise models, CS Logistic models can account for complex sample designs (in particular, the effects of clustering and associated weighting) when calculating odds ratios and determining significance.

Model 1: Factors associated with rating own health as fair/bad/very bad rather than good/very good (SHeS 2009)

Dependent variable encoding 1 = Fair/bad/very bad 0 = Good/very good	Odds ratio	95% confidence interval	Sample size (weighted)
Age (p = 0.002)			
16-24 (reference)	1.00		241
24-34	1.96	0.81-4.76	360
35-44	2.32	1.07-5.02	432
45-54	3.42	1.50-7.80	444
55-64	4.00	1.75-9.14	373
65-74	3.29	1.35-8.02	272
75+	6.01	2.31-15.61	204
Area deprivation (SIMD quintiles) (p < 0.001)			
Most deprived (reference)	1.00		412
2 nd	0.86	0.58-1.26	493
3 rd	0.87	0.56-1.35	430
4 th	0.48	0.32-0.72	471
Least deprived	0.34	0.21-0.54	519
Economic status (p < 0.001)			
Paid employment, self-employed or govt. training (ref.)	1.00		1414
In education	0.70	0.22-2.25	94
Looking for/intending to look for work	1.50	0.81-2.76	71
Permanently unable to work	29.12	14.34-59.15	104
Retired	2.95	1.82-4.77	505
Looking after home/family	1.84	1.14-2.98	138
Income quartiles (p = 0.084)			
Lowest quartile (reference)	1.00		393
2 nd quartile	0.82	0.57-1.16	422
3 rd quartile	0.63	0.42-0.96	583
Highest quartile	0.50	0.30-0.84	622
How involved feel in local community (p = 0.050)			
A great deal (reference)	1.00		109
A fair amount	1.51	0.78-2.92	509
Not very much	1.75	0.91-3.38	1125
Not at all	2.30	1.15-4.58	582
Feel can influence decisions over local area (p = 0.016)			
Agree/strongly agree (reference)	1.00		498
Neither	0.69	0.44-1.06	655
Disagree	1.08	0.71-1.65	933
Strongly disagree	1.41	0.77-2.56	241
Number of people could turn to in a crisis (p = 0.030)			
2 or fewer (reference)	1.00		270
3 or 4 people	0.79	0.53-1.19	412
5 or 6 people	0.54	0.36-0.81	699
7-10 people	0.70	0.45-1.10	515
11+ people	0.61	0.38-0.97	430
Personal contact with family, friends & neighbours (p = 0.033)			
Most days (reference)	1.00		1557
Once or twice a week	1.30	0.97-1.74	627
Once or twice a month or less	1.87	1.10-3.18	142

Sex (p = 0.328)			
NS-SEC socio-economic group (p = 0.590)			
Highest educational qualification (p = 0.104)			
Marital status (p = 0.993)			
General social trust (p = 0.638)			

Nagelkerke R2 = 38.4%

Model 2: Factors associated with rating own health as fair/bad/very bad rather than good/very good (SSA 2009)

Dependent variable encoding 1 = Fair/bad/very bad 0 = Good/very good	Odds ratio	95% confidence interval	Sample size (weighted)
Age (p < 0.001)			
16-24 (reference)	1.00		128
24-34	3.33	1.07-10.36	183
35-44	5.38	1.92-15.10	238
45-54	10.09	3.61-28.23	214
55-64	9.74	3.19-29.73	188
65-74	8.85	2.67-29.38	155
75+	11.58	3.31-40.45	74
Economic status (p < 0.001)			
Paid employment, education or govt. training (ref.)	1.00		734
Unemployed	1.60	0.74-3.48	68
Permanently sick or disabled	48.61	13.53-174.75	55
Retired	2.23	1.19-4.19	250
Looking after home/family	2.66	1.61-4.40	73
Income quartiles (p = 0.025)			
£11,999 or less (reference)	1.00		195
£12,000-£22,999	0.90	0.54-1.51	236
£23,000-£37,999	0.49	0.29-0.84	250
£38,000+	0.50	0.24-1.04	315
Income unknown	1.03	0.51-2.08	183
Sex (p = 0.073)			
Male (Reference)	1.00		560
Female	0.73	0.52-1.03	620
NS-SEC socio-economic group (p = 0.075)			
Semi-routine or routine occupations (reference)	1.00		363
Lower supervisory & technical	0.87	0.47-1.62	143
Small employers & own account workers	0.67	0.31-1.44	101
Intermediate occupations	0.44	0.24-0.81	140
Employers, managers & professionals	0.48	0.26-0.88	433
Highest educational qualification (p = 0.100)			
No qualification (reference)	1.00		223
Higher education or degree	0.74	0.39-1.39	401
Highers or equivalent	1.71	0.81-3.61	208
Standard grade or other school level qualification	0.82	0.54-1.24	347
Agree/disagree 'I feel that there are people in this area I could turn to for advice and support' (p = 0.026)			
Agree strongly (reference)	1.00		279
Agree	0.62	0.35-1.08	575
Neither	1.49	0.71-3.13	134
Disagree/disagree strongly	1.19	0.59-2.39	192
General social trust (p = 0.090)			
Most people can be trusted (reference)	1.00		626
Can't be too careful dealing with people	1.48	0.94-2.35	553
Area deprivation (SIMD quintiles) (p = 0.410)			
Marital status (p = 0.566)			
Agree/disagree too difficult for someone like me to do much about improving local area (p = 0.853)			
Agree/disagree 'I regularly stop and speak to people in my area' (p = 0.259)			

Nagelkerke R2 = 34.8%

Model 3: Factors associated with below average WEMWBS score (SHeS 2009)

Dependent variable encoding 1 = 1 standard deviation or more below average WEMWBS score 0 = Average/above average score	Odds ratio	95% confidence interval	Sample size (weighted)
Age (p = 0.043)			
16-24 (reference)	1.00		221
24-34	0.66	0.35-1.26	338
35-44	1.04	0.56-1.93	404
45-54	1.10	0.54-2.25	413
55-64	0.61	0.27-1.36	348
65-74	0.44	0.17-1.16	245
75+	0.73	0.27-2.00	164
Economic status (p < 0.001)			
Paid employment, self-employed or govt. training (ref.)	1.00		1325
In education	0.88	0.32-2.42	83
Looking for/intending to look for work	2.33	1.24-4.38	66
Permanently unable to work	9.86	5.52-17.62	91
Retired	2.03	1.10-3.77	441
Looking after home/family	1.53	0.83-2.80	127
Area deprivation (SIMD quintiles) (p = 0.077)			
1 st (most deprived)	1.00		366
2 nd	1.48	0.96-2.27	458
3 rd	1.28	0.80-2.06	395
4 th	0.96	0.61-1.54	436
5 th – most deprived	0.77	0.44-1.38	477
Marital status (p = 0.084)			
Married/civil partnership (reference)	1.00		1176
Living as married	1.15	0.67-1.97	221
Single	1.68	1.06-2.67	428
Separated	1.82	0.87-3.77	50
Divorced/dissolved civil partnership	1.68	0.94-3.00	113
Widowed/surviving civil partner	1.61	0.93-2.78	144
How involved feel in local community (p = < 0.001)			
A great deal (reference)	1.00		100
A fair amount	0.70	0.34-1.44	467
Not very much	0.93	0.47-1.85	1055
Not at all	1.79	0.89-3.66	509
Number of people could turn to in a crisis (p < 0.001)			
2 or fewer (reference)	1.00		237
3 or 4 people	1.15	0.74-1.78	369
5 or 6 people	0.51	0.32-0.80	642
7-10 people	0.62	0.37-1.04	481
11+ people	0.49	0.29-0.85	403
Whether feel can influence decisions over local area (p = 0.008)			
Agree/strongly agree (reference)	1.00		472
Neither	1.38	0.87-2.20	597
Disagree	1.99	1.26-3.16	839
Strongly disagree	2.31	1.33-4.01	224
Sex (p = 0.11)			
Income quartiles (p = 0.544)			
NS-SEC socio-economic group (p = 0.295)			
Highest educational qualification (p = 0.158)			

General social trust (p = 0.104)			
How often have personal contact with family, friends or neighbours (p = 0.168)			

Nagelkerke R2 = 25.1%

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