1 MENTAL WELLBEING AND THE SCOTTISH HEALTH SURVEY

1.1 INTRODUCTION

This project aims to assess the relationship between mental health and employment, social deprivation, social capital, and health in Scotland. The data was derived from the Scottish Health Survey (SHeS) 2020, and access to the dataset was kindly provided by the UK data Service (https://ukdataservice.ac.uk).

1.1.1 The Scottish Health Survey

The Scottish Health Survey is an annual survey which aims to provide information on aspects of the public's health and factors related to health for Scotland. The survey is usually conducted with face-to-face interviews, however because of the impact of COVID-19, interviews for the 2020 survey were conducted via telephone. Interviews were conducted from 5 August to 23 September 2020.

A multi-stage stratified sampling design was used, in which 11,000 addresses were selected from the Postcode Address file. Households were required to opt into the survey, and all adults 16 years and older in each household were also given the opportunity to take part. Interviews were conducted with 1,920 adults aged 16 and older in 1,384 households.

Further information including the original SHeS 2020 report as well as description of the sampling method, fieldwork, survey response and findings can be accessed here, and the technical report can be accessed here.

1.2 TOPICS

1.2.1 Mental health

The SHeS 2020 uses three measures of mental health: the Short General Health Questionnaire (GHQ-12), the Clinical Interview Schedule-Revised (CIS-R), and The Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS). The GHQ-12 is a widely used standard measure of mental distress and mental ill-health consisting of 12 questions, which provides an indication of deviation from people's usual functioning. It's popularity stems from the fact that it is short, can easily be scored 'clinically' (whether symptoms are present or not), as well as the severity of symptoms.[1]

The Clinical Interview Schedule-Revised (CIS-R) is a well-established tool for measuring the prevalence of mental health disorders. The CIS-R in its original form includes 14 sections measuring a wide range of neurotic symptoms including fatigue, sleep problems, irritability, worry, depression etc. The presence of these symptoms a week prior to an interview is measured. The SHeS version of the CIS-R measures two of the original 14 symptoms; the prevalence of depression and anxiety.[2]

The Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS) is a 14-item scale of mental wellbeing covering subjective well-being and psychological functioning, in which all items are worded positively and address aspects of positive mental health. The 14 items can also be combined into a

[1] Hystad, Helge Johnson (2020). The Dimensionality of the 12-Item General Health Questionnaire (GHQ-12): Comparisons of Factor Structures and Invariance Across Samples and Time. Accessed on 11 July 2022 from https://www.frontiersin.org/articles/10.3389/fpsyg.2020.01300/full#B23.

[2] Lewis, Araya, Dunn (1992). Measuring psychiatric disorder in the community: a standardized assessment for use by lay interviewers. Psychol Med 22:2. https://pubmed.ncbi.nlm.nih.gov/1615114/

composite variable where the minimum scale score is 14 (indicating low mental wellbeing) and the maximum is 70. The WEMWBS will be used in this project as it acts as the best overall measure of mental wellbeing at the time of interview. Only the composite score, measured on the ordinal level, and ranging from 14 to 70 will be used. [3]

1.2.2 Employment

Employment is measured using a single indicator, in which respondents were asked which of 15 options best describes their current situation. To make analysis clearer, employment categories are in places separated into the economically active and non-economically active. The economically active are defined as those who are employed in full-time or part-time work, apprenticeships, the self-employed, those in unpaid/voluntary work, and the unemployed and seeking work. The non-economically active are defined as those that are unemployed and not seeking work, permanently sick or disabled, looking after home or family, in education or retired.

1.2.3 Social Deprivation

Social deprivation is measured using the Scottish Index of Multiple Deprivation (SIMD). The SIMD is a derived measure which places the addresses of respondents within 7000 data zones across Scotland. Each of these zones are given a composite depravity score across seven domains: income, employment, education, health, access to services, crime, and housing. These data zones are then ranked from 1 (the most deprived) to the least deprived (ranked, 6,976). Data zones are often grouped into further categories to assist analysis and understanding. In the case of the SHeS 2020, these ranked data zones are collapsed into 5 groups each containing 20% of Scotland's data zones. Thus, each interviewed household is given a score of 1 to 5, with 1 being the most deprived and 5 the least deprived based on the household address. This composite measure of SIMD will be used in the following analysis.

1.2.4 Social Capital

Social capital is used to describe the social connections that provide support and that are beneficial to the quality of life and wellbeing of individuals. The SHeS includes three indicators of social capital, two of which will be used in the following analysis. The first measures the number of people adults believe they can turn to for comfort and support during a serious personal crisis, and the second measures how often adults contact relatives, friends, or neighbours in person, by phone, letter, email or through the internet.

1.2.5 Health

The SHeS uses a range of indicators for health and health behaviours including measures of general health, cardiovascular disease and diabetes, diet, obesity and food insecurity, physical activity, alcohol consumption, smoking, and dental health. To measure general health, two indicators were selected. The first asks adults to rate their general health on a five-point scale from very bad to very good, and the second asks whether respondents have a physical or mental health condition or illness lasting or expected to last 12 months or more.

1.3 NOTES

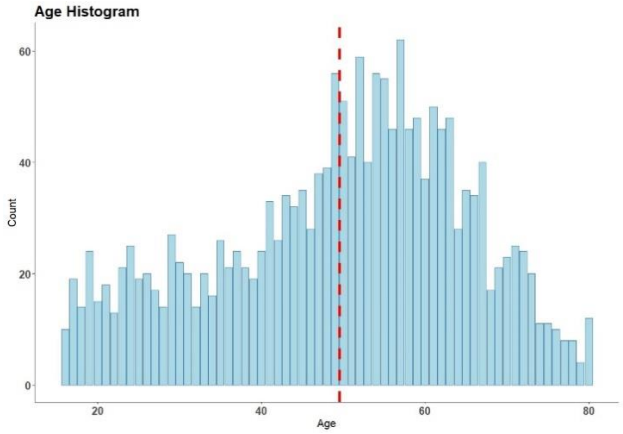
All findings presented are unweighted. Comments on statistical significance throughout the project have not taken stratifications in sample design or weighting into account. All findings have been rounded to 1 decimal places, and thus tables may not add up to 100.

[3] http://www.ocagingservicescollaborative.org/wp-content/uploads/2014/07/WEMWBS-User-Guide-Version-1-June-2008.pdf

Statistical significance is always reported at the 95% confidence interval unless otherwise specified. Statistical significance does not imply substantive importance, but rather that a relationship or difference is likely not due to chance.

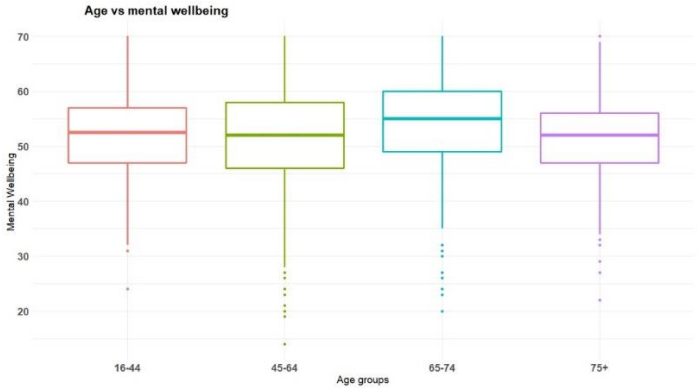
2 POPULATION DESCRIPTION

The mean age of the sample is 50[4] years old, and the median age is 52. The distribution is slightly negatively skewed (-.5), with most people (77%) 45 years and older. The majority (58%) of the sample are female, and females have a mean age of 49, while males tend to be slightly older with a mean age of 50. The following chart displays a histogram of age for all adults, with the red dotted line indicating the mean age.



3 MENTAL WELLBEING

Wellbeing was measured using the WEMWBS, where 14 is the lowest possible score (indicating low mental wellbeing) and 70 the highest (indicating high mental wellbeing). Mean mental wellbeing for all adults was 52.2, with no significant difference between males and females (52.1 and 52.4 respectively).[5] Mental wellbeing is highest for those in the 65-74 age bracket at 54.2, who have significantly higher mental wellbeing than other age brackets[6], and mental wellbeing is lowest for those in the 45-54 age bracket at 51.3.



[4] Only adults 16 years and older were allowed to partake in the survey, yet the age of 5% of respondents were recorded as younger than 16. When calculating statistics relating to age, these cases have been excluded.

[5] A Mann-Whitney test indicated there is not a statistically significant difference between males and females ($p = 0.7$).

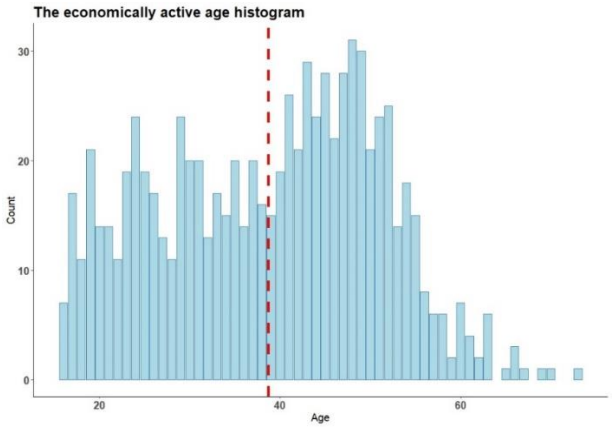
[6] A Kruskal-Wallis rank sum test indicated a statistically significant difference in mean mental wellbeing between at least two age groups, $H(3) = 33.889$, $p < 0.000$. Pairwise comparisons using Wilcoxon rank sum test with continuity correction was carried out for the four age groups. There was strong evidence ($p < 0.00$, adjusted using the Bonferroni correction) of a difference between 65–74-year-olds and 16-44, 45-64, and 75+ year olds.

4 EMPLOYMENT

Employment categories are separated into the economically active and non-economically active. The economically active are defined as those who are employed in full-time or part-time work, apprenticeships, the self-employed, and the unemployed and seeking work. The non-economically active include adults that are permanently sick or disabled, looking after home or family, in education (school/college/university), retired, and the unemployed and not seeking work.

4.1 THE ECONOMICALLY ACTIVE

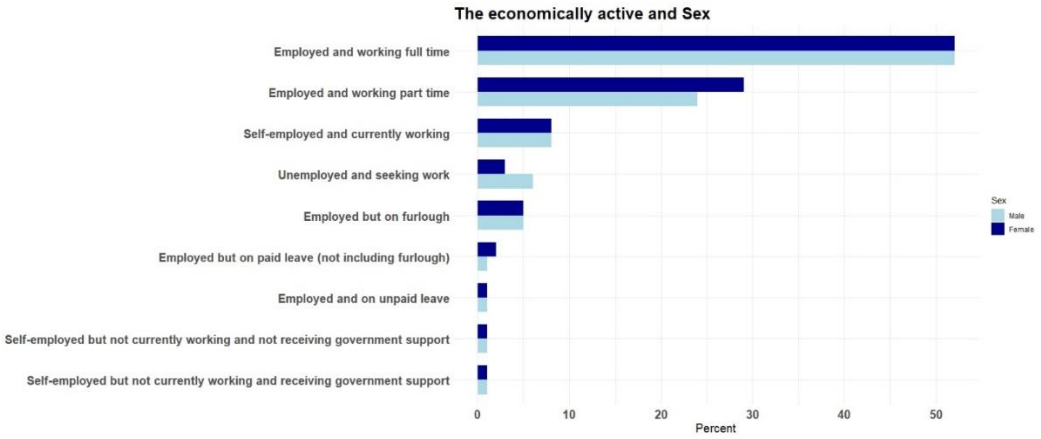
The Economically Active (EA) compose 47% of the sample, and most of the EA (59%) are female. However, if the proportion of females in the sample is considered, there is no difference between the number of males and females that are EA. The mean age of the economically active is 39[7] years old. Males are on average slightly older than females with a mean age of 40 compared to a mean age for females of 38.



Those in formal employment tend to be relatively young with a mean age of 37, and the self-employed tend to be older with a mean age of 42. The unemployed have a mean age of 38. The youngest category are those who are employed but on paid leave (not including furlough), whose mean age is 30.

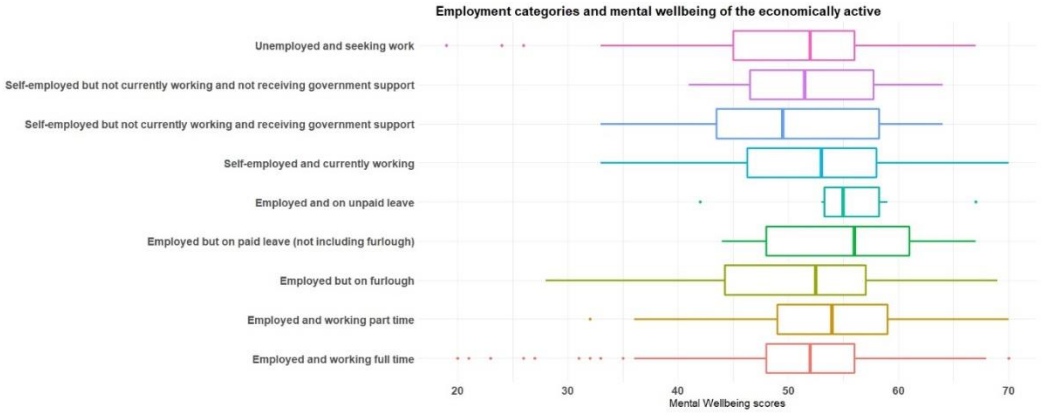
Just over half (51%) of the EA are employed and working full-time, and a further 27% are employed and working part-time. The self-employed make up 10% of the EA, the majority of whom (80%) are currently working. The unemployed and seeking work make up 4% of the EA. The following bar chart displays the employment categories of the EA with the addition of sex. The percentage of males and females that fall within each category are given. Females are more likely to work part time than males (28.3% of females vs 24% of males), and males are almost twice as likely to be unemployed and seeking work than females (5.7% of males vs 3% of females), though because of the low base (n=37), caution should be taken when generalizing this result.

[7] Note that for 9% of the economically active, the age was less than 16, and these respondents appeared normal otherwise. This is likely caused by data entry errors, and these cases have only been excluded when calculating age statistics.



4.2 THE ECONOMICALLY ACTIVE AND MENTAL WELLBEING

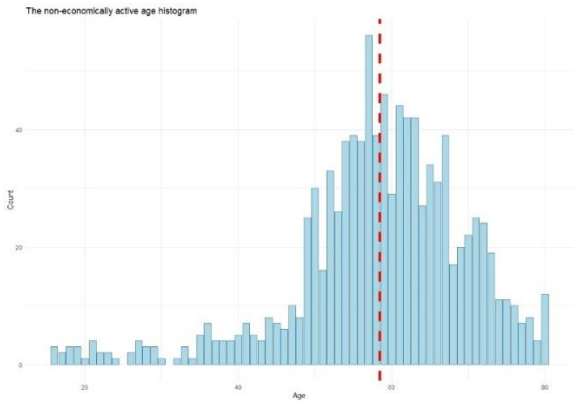
The mean mental wellbeing for the EA is 52, with no difference between males and females, and a relatively narrow range of 6. The group with the highest mental wellbeing are those who are employed and on unpaid leave (55.2), and those with the lowest are the unemployed and seeking work (49.2). In terms of sex, females who are employed and on unpaid leave experience the highest mean mental wellbeing of 60.7, higher than males who are employed and on unpaid leave (49.7). However, as the base is very small (n=6), this result should not be generalized. Those who are self-employed but not currently working and not receiving government support have a mean wellbeing (52.1), higher than those who are not currently working and receiving government support (49.4). However, the bases are also too low (n=8) to draw generalizable results.



The above chart displays the boxplots of the employment categories for the EA and mental wellbeing. Those that are employed but on paid leave have the highest median mental wellbeing, followed by those who are employed and on unpaid leave. The employment category with the lowest median mental wellbeing are the self-employed who are not receiving government support. The inter-quartile range for the employed and working full-time is relatively small indicating a narrow range of wellbeing. However, the employed and working full time also have a fairly large number of outliers at the lower end of mental wellbeing, though this may be because of the relatively high number of adults that fall within this category. The boxplot for those that are employed and on furlough is comparatively long indicating a wide range of values of mental wellbeing.

4.3 THE NON-ECONOMICALLY ACTIVE

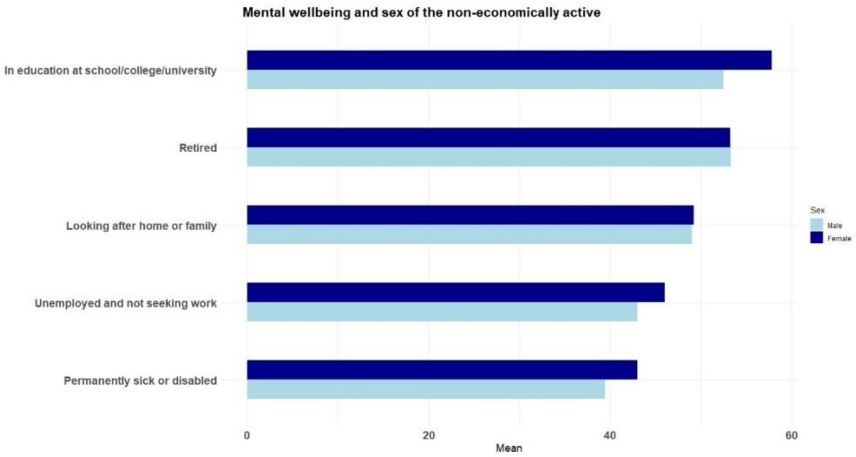
The majority of the non-economically active (NEA) are female (56%). However, if the proportion of females in the sample is considered, there is no difference between males and females. The mean age of the NEA is 58.4, with a minimum of 16 and a maximum of 80. The largest age group are those between 65-74 constituting 40.7% of the NEA, followed by those 75 years and older who constitute 29.7% of the NEA. Those between 16-44 only make up 4% of the NEA. There is no difference between the mean age of males and females (58.3 and 58.6 respectively).



Most of the NEA (86.2%) are retired, followed by those looking after home or family (5.7%), and those that are permanently sick or disabled (6%). Those in education, and those that are unemployed and not seeking work make up 0.9% and 1.2% of the NEA respectively. Each category of the NEA are further composed of equal numbers of males and females.

4.4 THE NON-ECONOMICALLY ACTIVE AND MENTAL WELLBEING

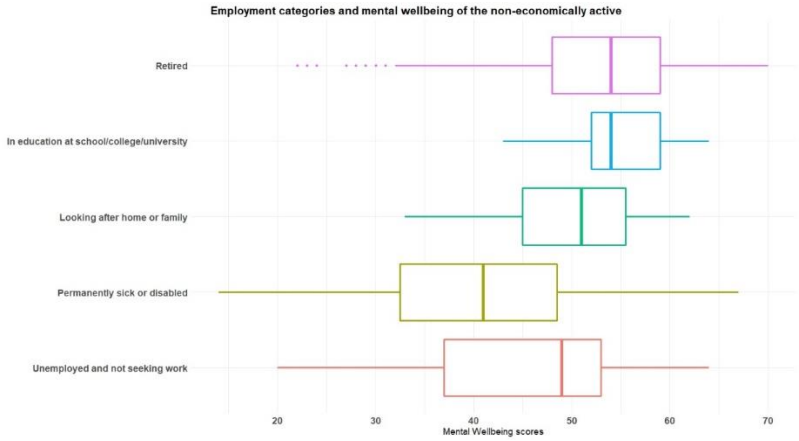
The mean mental wellbeing for the NEA is 52.2, and there is no difference between males and females. [8]



The above chart shows the mean mental wellbeing for each category of the NEA and sex. Those that are in education have the highest mean wellbeing of 55.4, followed by the retired with 53.3. Those with the lowest are the sick and disabled at 41.3, followed by the unemployed and not seeking work with a mean mental wellbeing of 45. There are a few notable differences between males and females regarding mean wellbeing. Females in education have the highest mean mental wellbeing of

[8] Spearman's rho correlation was used to assess the relationship between age and mental wellbeing for the NEA. There was not a statistically significant relationship between the two, p= 0.058.

57.8, higher than males at 52.5. However, due to a small base number (n = 17), this finding cannot be generalized. Males who are permanently sick or disabled have the lowest mean wellbeing of 39.4, while females who are permanently sick or disabled have a mean wellbeing of 43.



The above chart displays the boxplots for the different categories of the NEA and mental wellbeing. The retired and those in education have the highest median mental wellbeing. However, the standard deviation for the retired is greater (8.3) than those in education, indicating a greater variability in mental wellbeing. the permanently sick and disabled have the great range of values, (53) and the largest standard deviation (11.2).

4.5 MENTAL WELLBEING AND EMPLOYMENT

There is no difference between the EA and NEA in terms of mean mental wellbeing (52.3 and 52.2 respectively). However, the mean mental wellbeing for different categories of NEA does have a larger range (14.1) than the categories of the EA (6), which may indicate that the reasons why adults are not economically active is important. Employees[9] do not have significantly higher mental wellbeing (53.2) than the self-employed and unemployed combined (50.57).[10] If employment groups are further disaggregated, the employed have significantly higher mental wellbeing than the unemployed (47.98)[11], but do not have significantly higher mental wellbeing than the self-employed (52).[12] The self-employed do not have significantly higher mental wellbeing than the unemployed.[13]

Adults with the highest mean mental wellbeing are employed and on either unpaid (55.2) or paid leave (55.1), followed by those in education (55.1), and those who are employed and working part-time (53.5). The permanently sick or disabled have the lowest mean wellbeing of 41.3, followed by those who are unemployed and not seeking work (45), and by the unemployed and seeking work

[9] Employees refers to those in formal employment and who are paid a wage. Employed and working full time, part-time, on furlough, on paid leave or unpaid leave.

[10] A Mann Whitney test indicated that there is not a statistically significant difference between the means of the two groups (p = 0.12).

[11] Unemployed and seeking work, unemployed and not seeking work. A Mann Whitney U test indicated that there is a statistically significant difference between the mean mental wellbeing of the employed and unemployed (employed n = 784, unemployed n = 52) = 16411, p = 0.017.

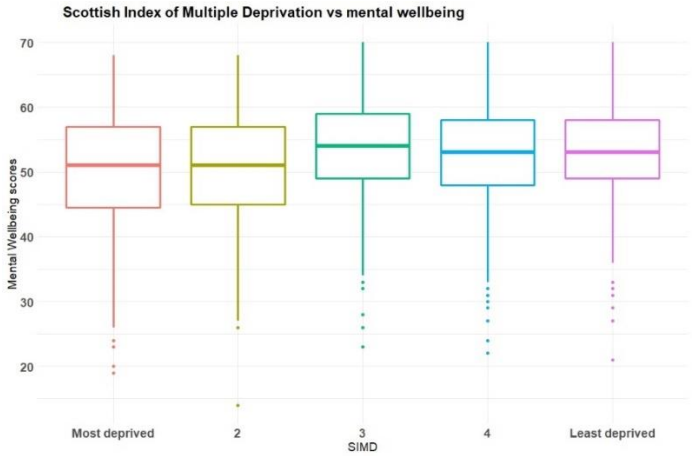
[12] Self-employed and currently working, not currently working and receiving government support, not currently working and not receiving government support. A Mann Whitney U test indicated that there is not a statistically significant difference between the mean mental wellbeing of the employed and self-employed, p = 0.86.

[13] A Mann Whitney U test indicated that there is not a statistically significant difference between the means of the two groups (p = 0.065).

(49.2). If employment and mental well-being are disaggregated by age, males that are permanently sick or disabled aged between 65-74 have the lowest mental wellbeing of 34.7, followed by males aged 45-64 who are permanently sick or disabled (39.6).

5 THE SCOTTISH INDEX OF MULTIPLE DEPRIVATION

The Scottish Index of Multiple Deprivation (SIMD) separates ranked data zones in Scotland into five quintiles, one being the most deprived and five the least. Each category is thus made up of 20% of Scottish data zones. Only 13% of the SHeS 2020 sample fall within the most deprived areas, while 26% fall within the least deprived. Thus, the sampling method oversampled those in wealthier areas, and under sampled those in poorer areas.

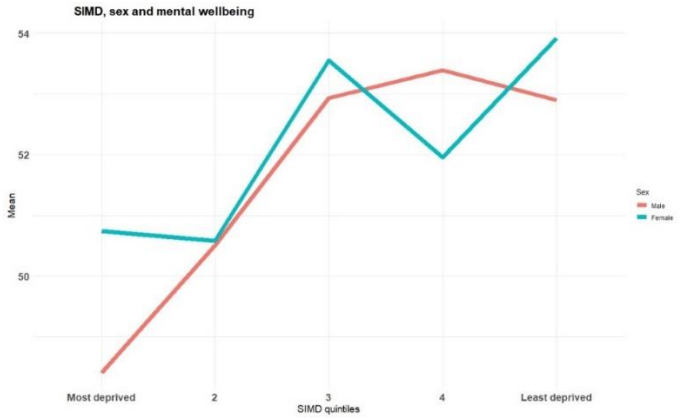


5.1 THE SCOTTISH INDEX OF MULTIPLE DEPRIVATION AND MENTAL WELLBEING

Mean mental wellbeing tends to increase with improvements in SIMD from the most deprived (49.8) to the least deprived (53.5), and this is a statistically significant though weak relationship.[14] The only statistically significant difference between consecutive SIMD categories is between groups 2 and 3.[15] However, the range is relatively small (3.7). The relationship between SIMD and mental wellbeing differs slightly for males and females. For males, as SIMD ranking improves, mental wellbeing initially increases rapidly and then more slowly. For females, mental wellbeing follows a cubic polynomial shape. Males in the most deprived areas have the lowest mental wellbeing of 48.4, while females in the least deprived areas have the highest wellbeing.

[14] Spearman's rho correlation was used to assess the relationship between SIMD and mental wellbeing. There was a statistically significant positive association between the two, $r = 0.107$, $p < 0.000$.

[15] Kruskal-Wallis Test was used to assess whether there is a significant difference between the mean mental wellbeing of different SIMD quintiles. A significant difference was found (Chi-squared = 33.447, $p < 0.000$, df = 4) between at least two groups. To find out which pairs of SIMD categories have significant differences, pairwise Wilcoxon signed rank comparisons were produced for each pair of groups with a Bonferroni adjustment.

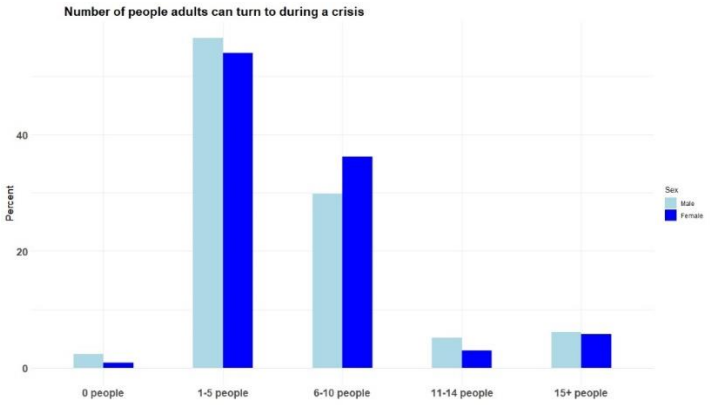


6 SOCIAL CAPITAL

Two indicators of social capital are used. The first measures the number of people adults believe they can turn to for comfort and support during a serious personal crisis, and the second measures how often they contact relatives, friends, or neighbours in person, by phone, letter, email or through the internet.

6.1 NUMBER OF PEOPLE ADULTS CAN TURN TO DURING A CRISIS

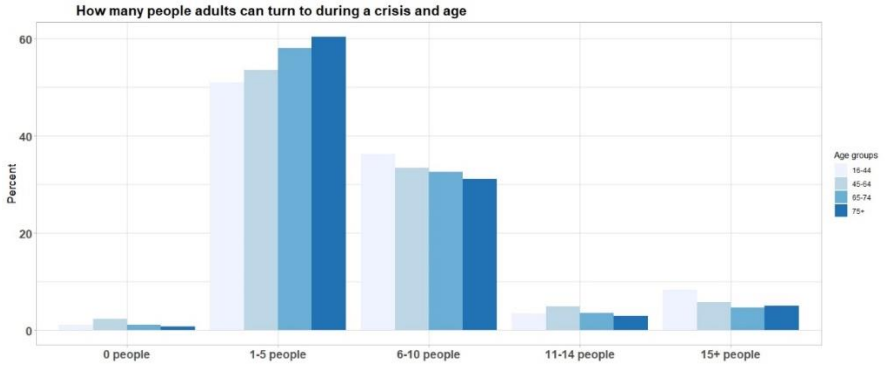
Just over half (55.1%) of adults stated that in a time of crisis, they have between one and five people they can turn to. Only 1.5% of all adult's state that they have zero people they can turn to, and a third (33.5%) stated that they have 6-10 people they could turn to. While there isn't a significant difference between males and females regarding the number of people they can turn to during a crisis[16], males compose a higher proportion of those in the extreme categories of either having 0[17] people they can turn to or over 11 people, while females tend to group more around the mean (6-10). When viewed as the proportion of each sex in each category, males are more than twice as likely to have 0 people they can turn to than females (2.3% and 0.9%) but are also almost twice as likely to have 11-14 people they can turn to (5.2% and 3%).



[16] A Mann-Whitney test showed that there is not a significant difference between males and females, p = 0.1892.

[17] Note that the number of observations for this category is 28 and thus may not be generalizable to the broader population.

There is not a significant relationship between the number of people adults feel they can turn to during a crisis and age[18], or age groups.[19] The following chart displays the number of people adults felt they could turn to during a crisis by age, given as a percentage of each age group. Thus, 51% of those between 16-44 felt that they have 1-5 people they could turn to. The chart indicates two trends. The number of adults who have 1-5 people they feel they can turn to increases with age, while the number of adults who have 6-10 people they can turn to decreases with age. This may indicate that as people get older, they tend to feel that they have fewer people they can turn to during a crisis.



6.2 How often adults contact others

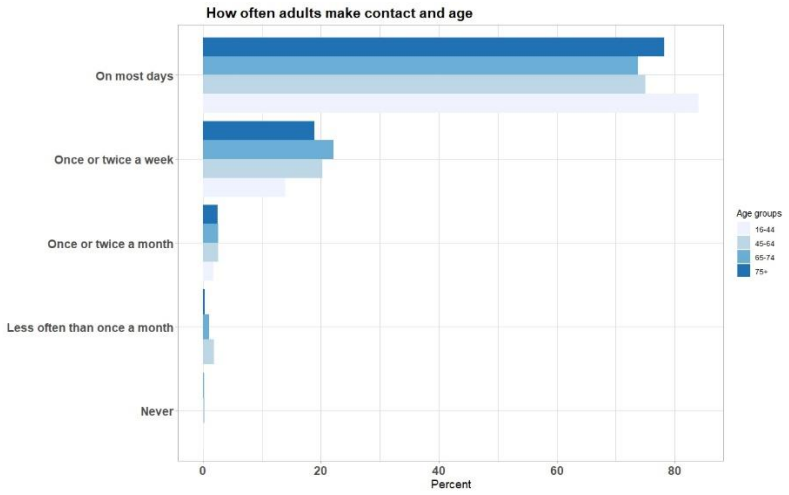
When asked how often adults contact relatives, friends or neighbours, most adults (77.4%) stated that they do so on most days, and a further 19% once or twice a week. Only 3.6% stated that they do so once or twice a month or less, and only 0.2% stating never. Females make contact significantly more frequently than males.[20] Females are also more likely to make contact on most days (84.4%) compared to males (67.7%), while males are nearly twice as likely to make contact one or twice a week (26.9%) compared to females (13.3%), and males are twice as likely to contact once or twice a month (3.7%) compared to females (1.5%). In terms of age, those between 16-44 are significantly more likely to contact others on most days compared to 45–64-year-olds and 65–74-year-olds.[21]

[18] A Spearman's rho correlation found a statistically significant relationship between age and the number of people adults felt they could turn to during a crisis, p= 0.060. However, the association is too small to be meaningful, r = -0.06, N = 1868.

[19] Kruskal-Wallis Test was used to assess whether there is a significant difference between the number of people adults felt they could turn to and age categories (16-44, 45-64, 65-74, 75+). No significant difference was found between groups (p = 0.051) among the four categories.

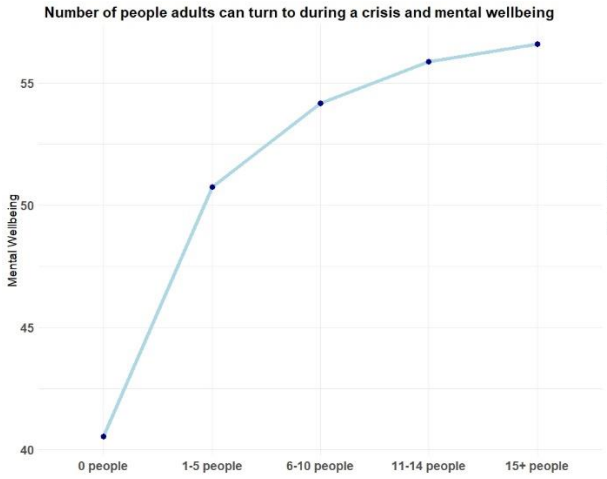
[20] A Mann-Whitney test indicated that is there is a statistically significant difference between males and females, W = 499795, p< 0.000.

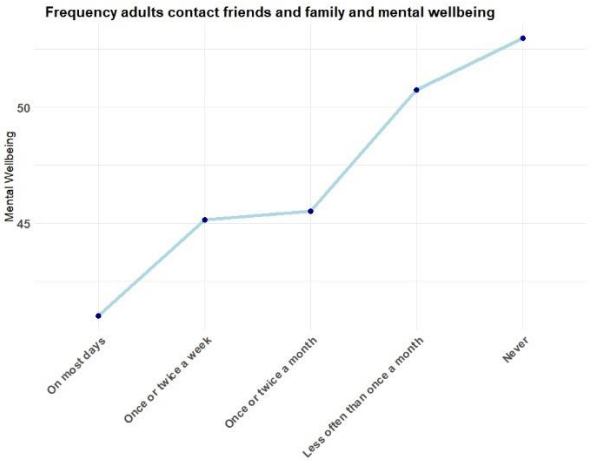
[21] A Kruskal-Wallis rank sum test was used to assess whether there is a significant difference between the number of people adults contact and age (groups: 16-44, 45-64, 65-74, 75+). A significant difference was found (Chi-squared = 17.066, p < 0.000, df = 3) among the four categories. Pairwise comparisons were calculated using Wilcoxon rank sum test, and statistically significant differences were found for 16–44-year-olds against 45–64-year-olds and 65–74-year-olds.



6.3 SOCIAL CAPITAL AND MENTAL WELLBEING

There is a significant difference in the number of people adults felt they could turn to during a crisis and mental wellbeing.[22] Mental wellbeing increases rapidly and then more slowly with the number of people adults felt they could turn to during a crisis. The largest difference is between those who feel they have 0 people they can turn to who have a mean mental wellbeing of 40.5, and those who have between 1-5 people they can turn to with a mean mental wellbeing score of 50.7, a difference of 10.2. This may indicate that believing there is at least one person an adult can turn to significantly increases mental wellbeing. There are no significant differences between males and females or age groups in terms of the number of people adults believe they can turn to during a crisis and mental wellbeing.





In terms of frequency of contact, mean mental wellbeing increases in a linear pattern with increases in the frequency of contact.[23] Adults who never contact relatives, friends or neighbours have the lowest mental well-being of 41. Of those who stated that they never make contact, males have lower mean levels of mental wellbeing (39.7) than females (45), however this cannot be generalized

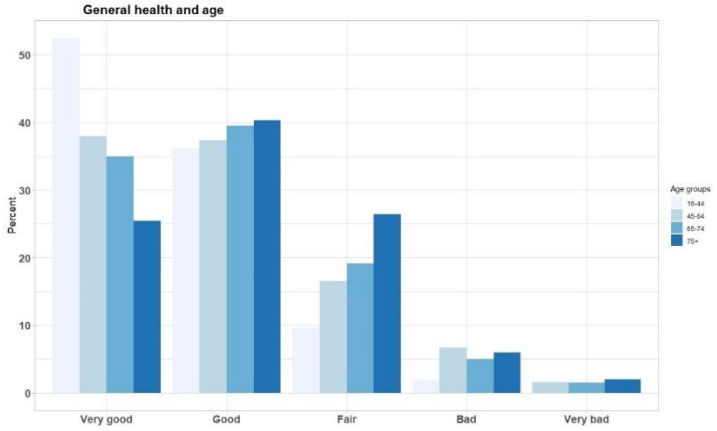
[22] Spearman's rho correlation was used to assess the relationship between the number of people adults felt they could turn to during a crisis and mental wellbeing. There was a statistically significant though weak positive relationship between the two, $r = 0.25$, $p < 0.000$.

[23] Spearman's rho correlation was used to assess the relationship between how often adults make contact and mental wellbeing. There was a statistically significant though weak positive relationship between the two, $r = 0.14$, $p < 0.000$.

due to a low base (n=4). Adults who contact relatives, friends or neighbours on most days have the highest mean mental wellbeing of 53, with no difference between males and females. There are no significant differences between males and females or age groups regarding how often adults contact others and mental wellbeing.

7 HEALTH

When asked how adults rate their general health, most (76.6%) rate their health as either very good or good, with 17% rating they health as fair and 5% as bad. Only 1.2% rate their health as very bad. Females are significantly more likely to rate their health as better than males[24], with 42.4% of females rating their health as very good (42.4%) compared to males (33.6%). The below chart displays the relationship between age and self-rated general health. The number of adults rating their health as 'very good' declines in a linear pattern with age, while increasing in a linear pattern by age for those who rated their health as 'good' or 'fair'. This indicates that people tend to view their general health as worse as they age.



When asked whether adults have a physical or mental health condition or illness lasting, or expected to last 12 months more, over half (54.4%) stated that they do, with no difference between males and females.[25] The percent of each age category stating that they have a long-term illness increases with age in a linear fashion, with 33% of those between 16-44 stating they have a long-term illness, 54% of those between 45-64, 65.9% of those between 65-74, and 68.3% of those older than 75.

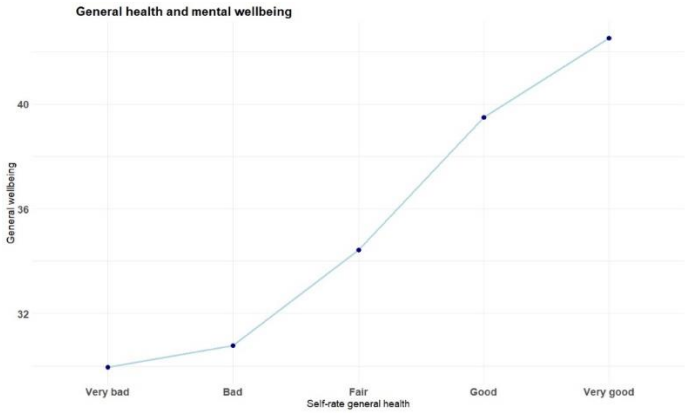
7.1 HEALTH AND MENTAL WELLBEING

The below chart displays the relationship between self-rated general health and mental well-being. There is a significant weak to moderate linear relationship between general health and mental wellbeing.[26] Mental wellbeing tends to improve as self-rated general health ratings improve.

[24] A Mann-Whitney test indicated that there is a statistically significant difference between males and females, (Male = 792, Female = 1078), W = 178205, p< 0.000.

[25] A Chi-square test of independence was performed to examine the relationship between long term illness and sex. The relationship between these variables were non-significant (p = 0.50515).

[26] Spearman's rho correlation was used to assess the relationship between self-rated general health and mental wellbeing. There was a statistically significant weak to moderate positive relationship between the two, r = -.478, p< 0.000.



Adults who rated their health as very bad have a mean mental health of 42.7, and adults who rated their general health as very good have a mean mental health score of 55.5, 12.8 points higher.