How has UK wellbeing changed over time? Evidence from the Annual Population Survey 2012-2022

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About the author

Ben recently graduated from the London School of Economics, obtaining an MSc in economics. His research interests include macroeconomics and applied econometrics, particularly multivariate time series analysis. Ben has previously worked in the public sector as an Assistant Economist for the Office for National Statistics (ONS) analysing ONS data surveys and working with ONS civil servants to release statistical publications.

About the What Works Centre for Wellbeing

We are an independent collaborating centre and the aim of our work is to improve wellbeing and reduce misery in the UK. We believe that this is the ultimate goal of effective policy and community action. By accelerating research and democratising access to wellbeing evidence, we develop and share robust evidence for governments, businesses, communities and people to improve wellbeing across the UK.

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Introduction

The overall state of people's wellbeing can have serious impacts on productivity, health and other social and economic factors - with Santini et al. (2022) finding evidence that better mental wellbeing considerably reduces national productivity losses.

This means it is crucial for us to understand and track how people are doing. Gauging how UK residents have been affected by these socioeconomic forces and help policymakers infer what kind of policy interventions are necessary to support them.

To do this, we can look at national data, such as the Annual Population Survey (APS). This is a combined survey of households in the UK conducted by the Office for National Statistics (ONS), containing information regarding personal wellbeing. Each survey is carried out in the April of a particular year and finishes in the March of the subsequent year. We have collected and analysed all APS surveys between 2012/13 to 2021/22. The advantage of using the APS is its relatively greater sample size that has responded to the wellbeing questions.

Using data from the APS, this report aims to:
1. analyse and discuss the wellbeing of individuals in the UK over time and break this down by income, geography and demographic variables;
2. assess whether the Covid-19 pandemic has had an impact on the wellbeing of individuals in the UK.

The data

The APS contains four personal wellbeing questions that respondents aged 16 and over that were personally interviewed were asked. Respondents must give an answer on a scale of 0 to 10 for each of the four questions:

1. ***Life Satisfaction:*** Overall, how satisfied are you with your life nowadays? With 0 being 'not at all satisfied' and 10 being 'completely satisfied'.
2. ***Worthwhile:*** Overall, to what extent do you feel that the things you do in your life are worthwhile? With 0 being 'not at all worthwhile' and 10 being 'completely worthwhile'.
3. ***Happiness:*** Overall, how happy did you feel yesterday? With 0 being 'not at all happy' and 10 being 'completely happy'.
4. ***Anxiety:*** Overall, how anxious did you feel yesterday? With 0 being 'not all anxious' and 10 being 'completely anxious'.

Firstly, note that the four wellbeing variables analysed are weighted by the most recent personal wellbeing weights that are available for each Annual Population Survey (APS) data set. Applying these weights is important if we want the data

to accurately represent the UK population. Secondly, we are reporting on a cross-sectional analysis and not providing any definitive causal statements about wellbeing time trends.

General UK population wellbeing

To start, it is useful to look at the aggregate data and observe the experiences of the average person, as well as view the distribution of ratings.

The mean and median of a random variable are measures of location (or central tendency) of the random variable's distribution. When assessing the median and mean values of the four wellbeing variables (Figure 1) for the repeated cross-sections between April 2012 and March 2022 there is hardly any movement, with Life Satisfaction, Happiness and Worthwhile wellbeing variables remaining at a median value of 7.5 for each repeated cross-section and their weighted means lightly floating around the 7.5 value.

Interestingly, Anxiety increased to a median value of 2.5 for the April 2020 to March 2021 cross-section, relative to the other surveys, and its weighted mean has a notable relative increase for the surveys conducted during the pandemic and post-pandemic periods. Additionally, the Happiness, Life Satisfaction and Worthwhile variables experienced a slight decrease in their weighted mean values for the 2020/21 sample year and partially recovered in the following sample year.
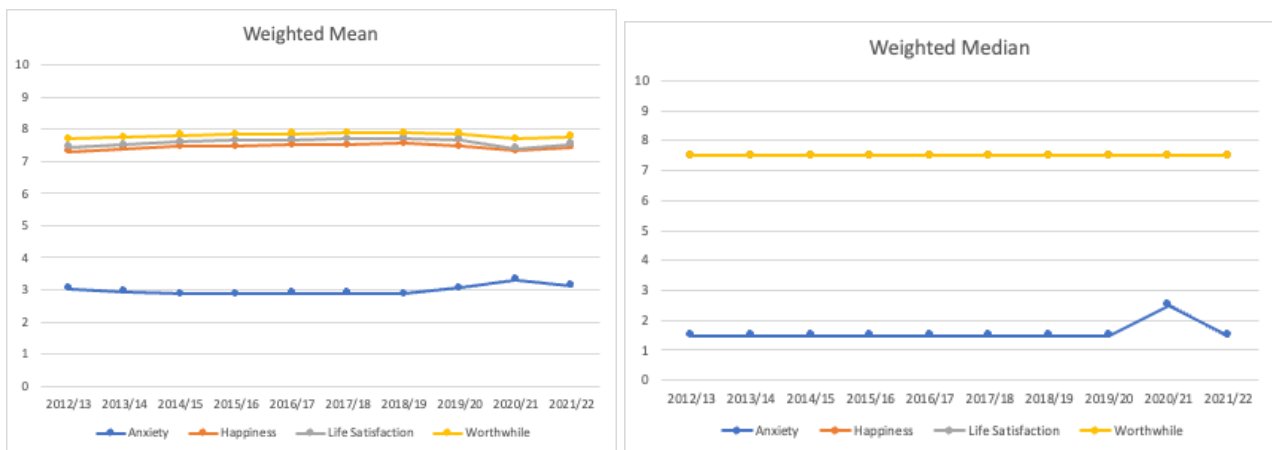

Figure 1: Weighted median and mean of four wellbeing measures. *The left chart shows the weighted mean values and the right chart displays the weighted median values. Note that the median values of Worthwhile, Happiness and Life Satisfaction overlap for all periods.*
Source: Annual Population Survey (APS)

Observing Figure 1, for any given sample year the weighted mean of the Anxiety variable is greater than its weighted median value. Such a result implies that after weighting there are outliers located towards the upper end of the wellbeing scale. That is, there are respondents reporting high anxiety levels which influence the weighted mean value. Note that for a given weighted median value, a greater weighted mean can *potentially* be caused by a greater pool of outliers reporting higher anxiety levels (after weighting).

The moments of a random variable (such as the four wellbeing variables) describe the characteristics of its distribution. Hence, it is worth looking at the estimates of the moments of the wellbeing variables to get a better gauge of the development of the population's wellbeing during the COVID-19 pandemic.

Tables 1, 2 and 3 show these estimates for the pre-pandemic and pandemic time periods.

Table 1: Estimates of the Weighted Moments for the 2018/19 Survey					
Wellbeing	**Weighted Mean**	**Weighted Median**	**Weighted Variance**	**Weighted Skewness**	**Weighted Kurtosis**
Anxiety	2.87	1.5	7.94	32.6	-0.574
Happiness	7.56	7.5	4.22	-36.4	1.28
Life Satisfaction	7.71	7.5	2.98	-36.2	2.45
Worthwhile	7.89	7.5	2.89	-51.6	2.51

Table 2: Estimates of the Weighted Moments for the 2019/20 Survey					
Wellbeing	**Weighted Mean**	**Weighted Median**	**Weighted Variance**	**Weighted Skewness**	**Weighted Kurtosis**
Anxiety	3.05	1.5	8.27	29.4	-0.736
Happiness	7.47	7.5	4.43	-47.1	1.15
Life Satisfaction	7.66	7.5	3.08	-47.4	2.49
Worthwhile	7.86	7.5	2.93	-57.8	2.53

Table 3: Estimates of the Weighted Moments for the 2020/21 Survey					
Wellbeing	Weighted Mean	Weighted Median	Weighted Variance	Weighted Skewness	Weighted Kurtosis
Anxiety	3.31	2.5	7.97	30.4	-0.872
Happiness	7.31	7.5	4.23	-61.2	0.906
Life Satisfaction	7.39	7.5	3.24	-65.9	1.77
Worthwhile	7.71	7.5	3.03	-103.0	2.19

For all sample periods, 2012/13 to 2021/22, the weighted skewness estimate for Worthwhile, Happiness and Life Satisfaction are negative and the weighted skewness estimate for Anxiety is positive, whereas the converse is true for the weighted excess kurtosis estimates (see Appendix for the other estimates).

A positive skew is a case where the data is centred around the left-hand tail of the mean, with the most extreme outliers situated to the right-hand side of the distribution. Conversely, a negative skew of a random variable is where the data is clustered around the right-hand side of its mean and the tail (the outliers) of the distribution is located on the left-hand side. Given this, it is unsurprising to note that, after weighting, respondents predominantly rated the Anxiety variable on the lower side of the scale (closer to zero) and rated the other three wellbeing variables on the upper side of the scale (closer to ten).

A negative excess kurtosis is where a variable generates less extreme outliers than a random variable that is normally distributed. In this scenario, a distribution is termed platykurtic. A positive excess kurtosis is where a variable generates more extreme outliers than a normally distributed random variable and is termed a leptokurtic distribution. Thus, after weighting, the respondents that report high Anxiety scores (the outliers) tend to be less extreme than the outliers in a normal distribution. For the other three wellbeing variables their outliers, which report scores on the lower end of the scale, are more extreme than the outliers from a normal distribution.

Looking at Tables 1, 2 and 3, the weighted variance and skewness estimates for the Anxiety variable have remained steady and with the weighted mean and median values increasing from the 2019/20 period to the 2020/21 period then this implies that the weighted distribution of Anxiety has essentially shifted further up the scale during the pandemic period. Furthermore, the weighted excess kurtosis estimate of Anxiety during the 2020/21 period is more negative compared to the previous periods, insinuating that the outliers of the distribution (which score high Anxiety scores) are even less extreme.

Interestingly, the other three wellbeing variables have seen greater negative skews develop between 2018/19 and 2020/21, implying more extreme outliers situated on the low end (closer to zero) of the zero-to-ten scale. That is, more respondents reported low scores of Happiness, Life Satisfaction and Worthwhile. The unfavourable shift in the weighted distribution of Anxiety during the 2020/21 pandemic period can be observed in Figure 2.
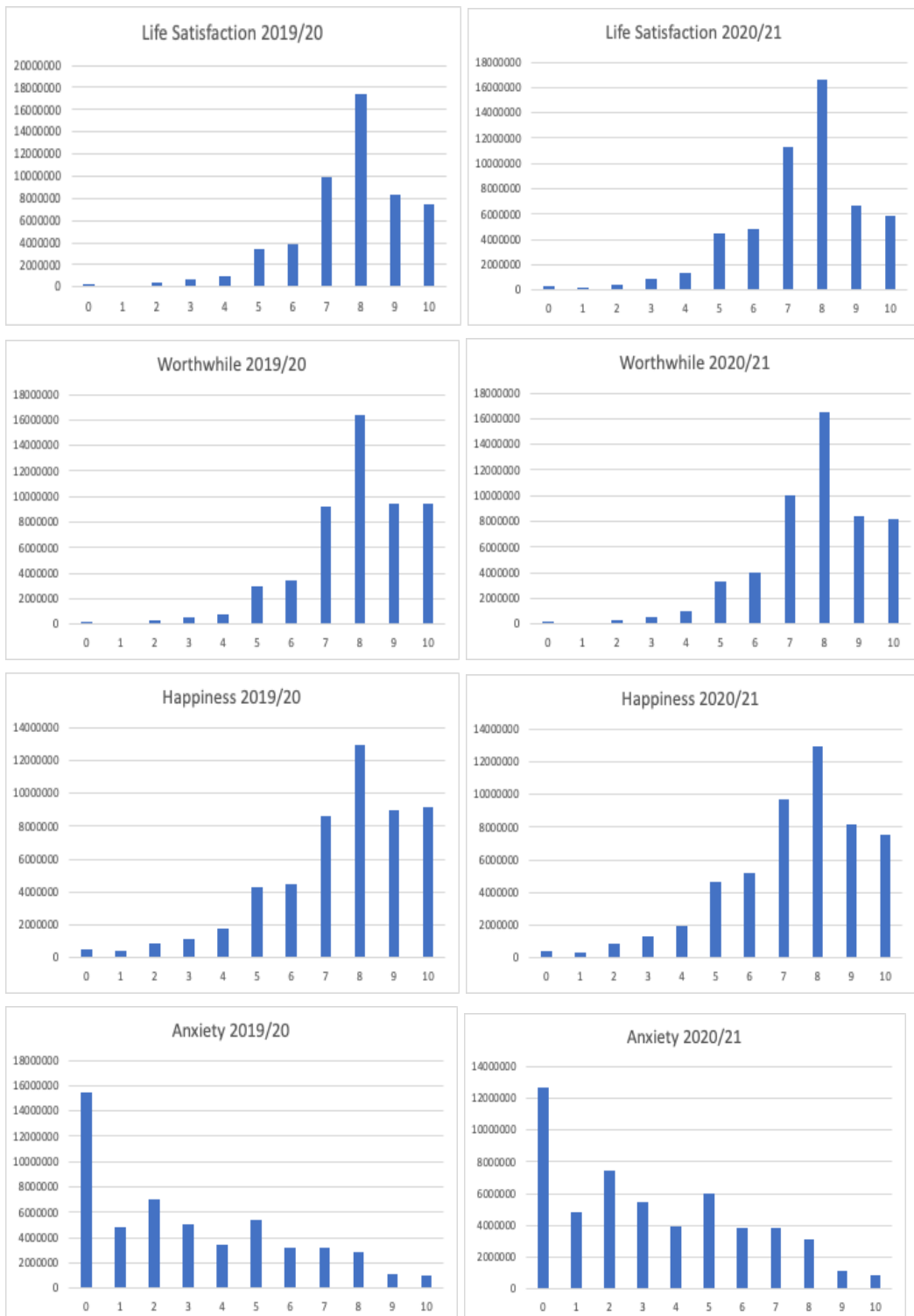

Figure 2: Histograms of four wellbeing variables under the 2019/20 and 2020/21 surveys. Source: Annual Population Survey (APS)

The four wellbeing variables before the outbreak of the COVID-19 pandemic were relatively stable. Clearly, the COVID-19 virus and the subsequent lockdown and containment restrictions have had an effect on the mental wellbeing of the UK population.

Figure 3 shows the percentage of respondents that reported high and low wellbeing scores. The charts succinctly show the change in wellbeing during the pandemic periods. The percentage of the population that reported high anxiety levels (a score between 6 and 10) increased from approximately 22% in 2019/20 to 24% in 2020/21. The percentage that reported low anxiety levels (a score between 0 and 1) decreased from roughly 38% in 2019/20 to 33% in 2020/21. People also felt their life satisfaction decline with about 30% of the population giving very high Life Satisfaction scores (a score between 9 and 10[1]) in 2020/21 compared with roughly 24% in 2019/20.
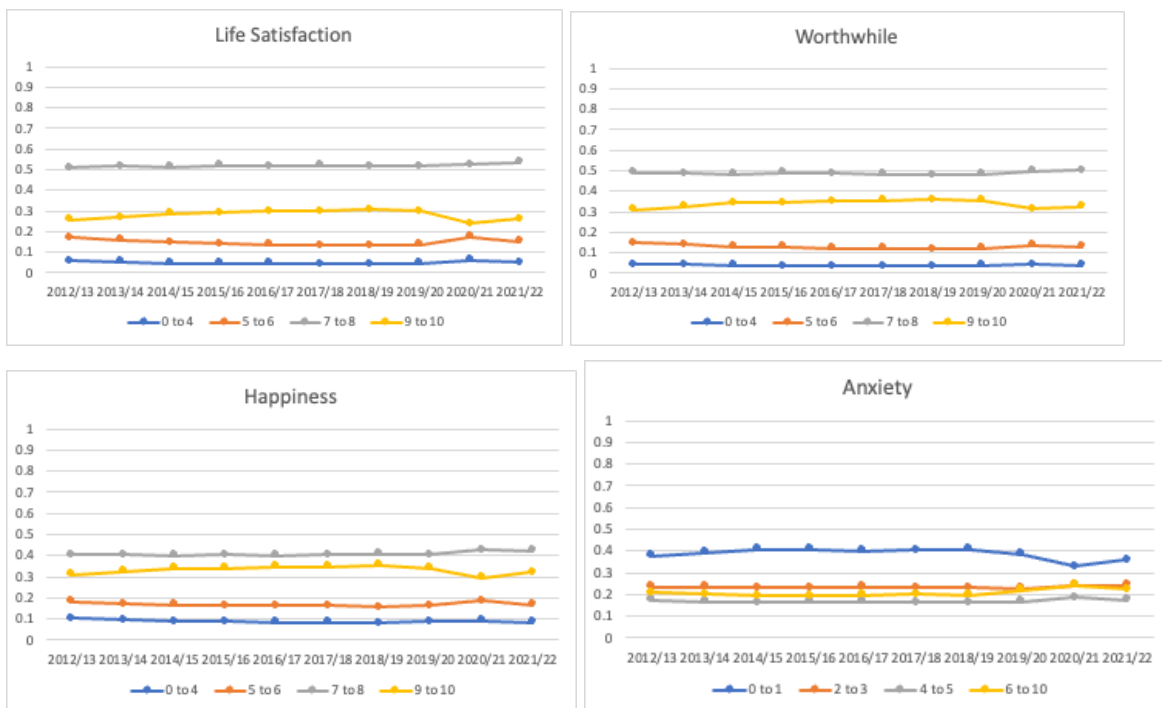

Figure 3: Proportion of the UK population that rated high and low wellbeing scores.
Source: Annual Population Survey (APS)

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[1] See
https://www.ons.gov.uk/peoplepopulationandcommunity/wellbeing/bulletins/measuringnationalwellbeing/april2021tomarch2022

Wellbeing by demographic and socio-economic factors

With the sample distributions of the wellbeing variables changing during the 2020/21 pandemic sub-period relative to the previous samples, it's useful to look by demographic to understand which sections of UK society have been driving the wellbeing indicators at the aggregate level.

Wellbeing by sex

During the pandemic surveys, female respondents reported greater Anxiety scores on average and by median values compared to the male respondents (Figure 4). The weighted median of Anxiety was 2.5 for the female sample group between 2019/20 and 2021/22. This was an increase from the consistent pre-pandemic weighted median of 1.5.

Figure 4 shows that the female respondents were contributing to the increased weighted mean and median values present in the total population in the 2020/21 survey. Furthermore, the weighted mean of Life Satisfaction, Happiness and Worthwhile for the female group is marginally greater for most of the sample years.

Figure 4: Weighted Mean and Median of the Four Wellbeing Variables by Sex. *The left chart graphs the weighted mean, right chart graphs the weighted*

median. Note that the median values of Worthwhile, Happiness and Life Satisfaction overlap for all periods.
Source: Annual Population Survey (APS)

Figure 5 depicts the disparities in the proportion of people scoring highly, specifically for the Anxiety variable, between the two sexes. This difference intensified during the 2020/21 sample period. Approximately 21% of the male population provided a high anxiety score (a score between 6 and 10) and 28% of the female population during the 2020/21 period.

In addition to this, roughly 30% of the female population gave a low anxiety score (0 to 1) whereas 36% of males gave a low score for the sample year. The differences are stark. These results suggest the female population, in general, suffering greater anxiety during the midst of the COVID-19 pandemic.
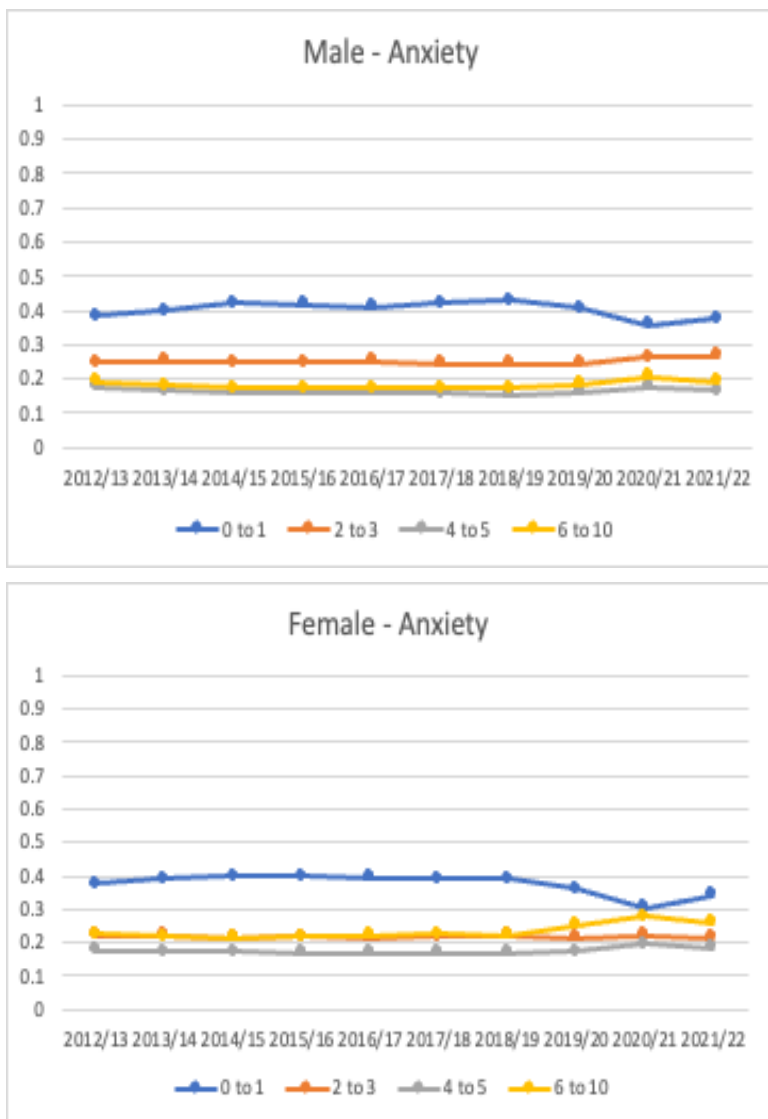

Figure 5: Proportion of the UK Population that Rated High and Low Wellbeing Scores Broken Down by Sex.
Source: Annual Population Survey (APS)

Wellbeing by age

To investigate if age-specific factors affect the wellbeing of individuals, we look at the data by age group. The COVID-19 virus poses a health risk to those that are older and the containment measures that were put in place by governments are likely to have an effect on wellbeing.

The 2020/21 APS data show increased signs of anxiety across a range of age bands during this time frame, like due to the health risk and subsequent containment measures of the Covid-19 pandemic. The weighted mean and median for Anxiety for all age bands is shown in Appendix (Figures A1 and A2).

A sizeable proportion of respondents in the 20-24 age bracket responded with relatively higher Anxiety scores even before the pandemic. This is depicted by the increase in weighted median value from 1.5 to 2.5 from the 2018/19 sample onwards (figure 6).

Figure 6: Weighted median of four wellbeing variables 20 to 24 year olds.
Note that the median values of Worthwhile, and Life Satisfaction overlap for all periods. Source: Annual Population Survey (APS)

Intuitively, one would suspect the older population to show greater signs of anxiety given the dangers the COVID-19 virus posed to older generations. However, while the pandemic has asymmetrically affected the age groups, it is not in the way we expect. The weighted median of Anxiety for the 65 to 99-year-olds has remained unchanged throughout at 1.5, not indicating any sign of increased anxiety from the age group (figure 7).
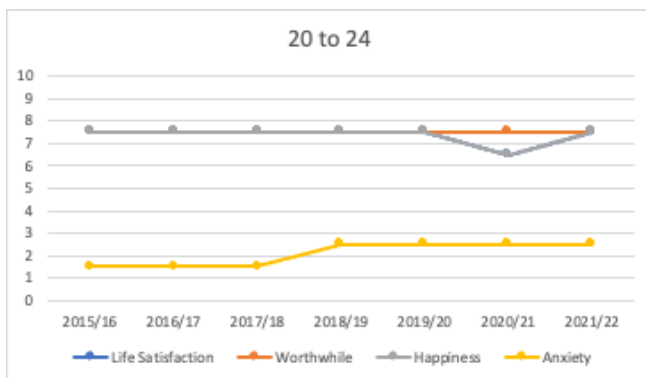
Figure 7: Weighted median of four wellbeing variables 65 to 99 year olds. *Note that the median values of Worthwhile, Happiness and Life Satisfaction overlap for all periods.* Source: Annual Population Survey (APS)

The weighted median of Anxiety for the 55 to 59 and 60 to 64-year-olds increased for the 2020/21 sample, but returned to 1.5 for the 2021/22 sample, not showing the persistence in anxiety which younger age groups are reporting.
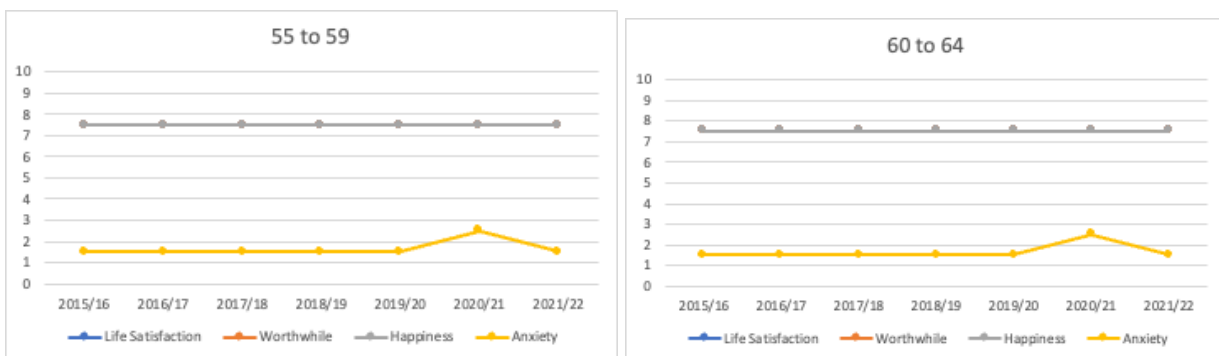
Figure 8: Weighted median of four wellbeing variables for 55 to 59 and 60 to 64-year-olds. *Note that the median values of Worthwhile, Happiness and Life Satisfaction overlap for all periods.*

The persistence of anxiety from the younger and middle-aged sections of the population may be influenced by the economic consequences and the social isolation brought about by the pandemic. The UK Government's mental health and wellbeing surveillance report provides evidence that younger adults faced greater psychological trauma during the pandemic, particularly in the case of depression, whether they have had thoughts of death/self-harm, and whether they have actually self-harmed.

Wellbeing by NUTS1 Region

Regional inequalities are a serious topic of discussion in the UK with policymakers in the UK Government focusing on minimising regional economic disparities. The Conservative Party are currently attempting to solve this issue with the "levelling up" policy. London and the South East stand out as the richest regional economies in terms of gross domestic product (GDP) and GDP per capita. Regional specificities such as the level of economic productivity could possibly drive differences in mental wellbeing.

The regional disparities for each of the wellbeing variables are presented in Figures 9 and 10. Respondents in London reported, overall, a greater median value for Anxiety compared to the rest of the NUTS1 regions for nearly all years surveyed. Except for 2014/15 and 2015/16, the weighted median of Anxiety was 2.5. What is also noteworthy is the increased median values for Anxiety during the COVID-19 episode, barring London and Wales. In the 2020/21 sample, the weighted median of Anxiety for all regions except Wales was 2.5, and respondents in Wales did not report high Anxiety scores in great enough numbers to increase the median figure.

London stands alone as a special case when in the context of analysing anxiety. Respondents in the Greater London region are possibly prone to specific problems that respondents in the rest of the UK may not have to bear.
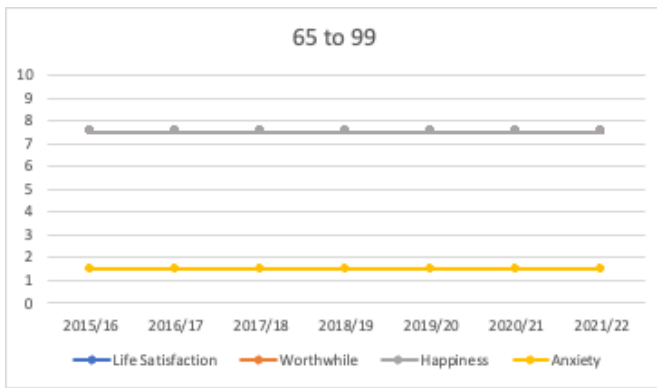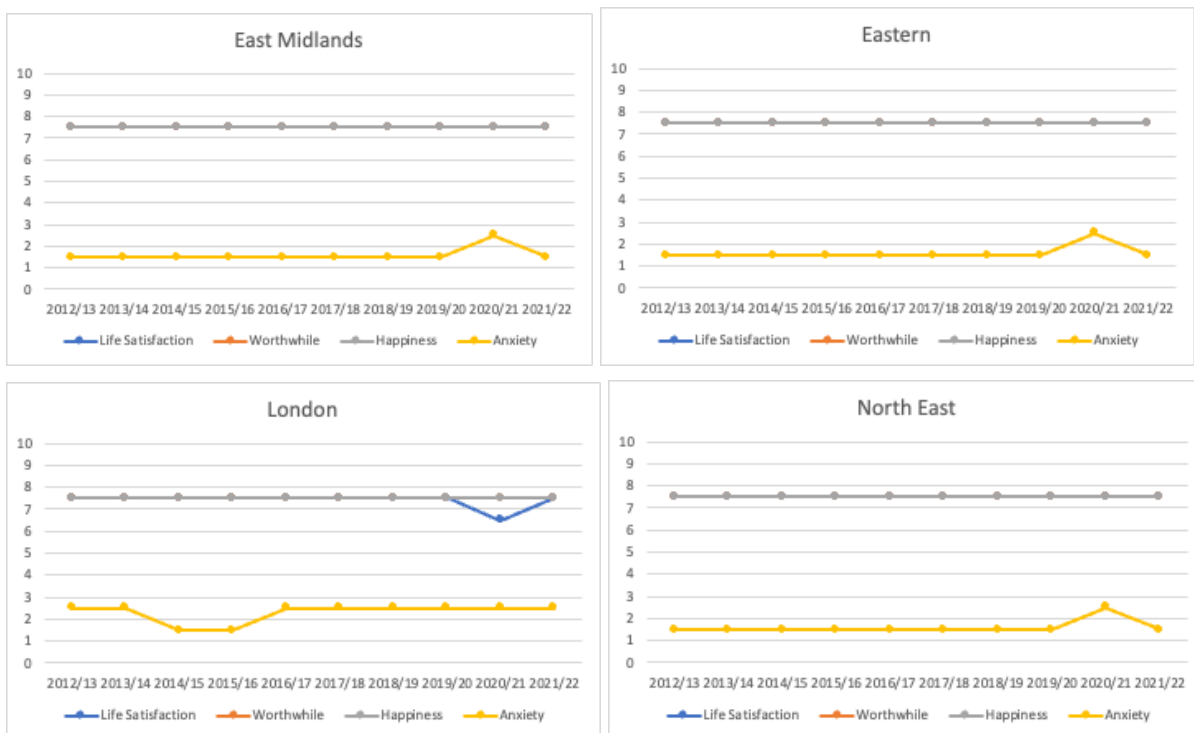
Figure 9: Weighted Median of the Four Wellbeing Variables by NUTS1 Regions. *Note that the median values of Worthwhile, Happiness and Life Satisfaction overlap for nearly all periods.*
Source: Annual Population Survey (APS)

East Midlands

Eastern

London

North East

North West

Northern Ireland

Scotland

South East
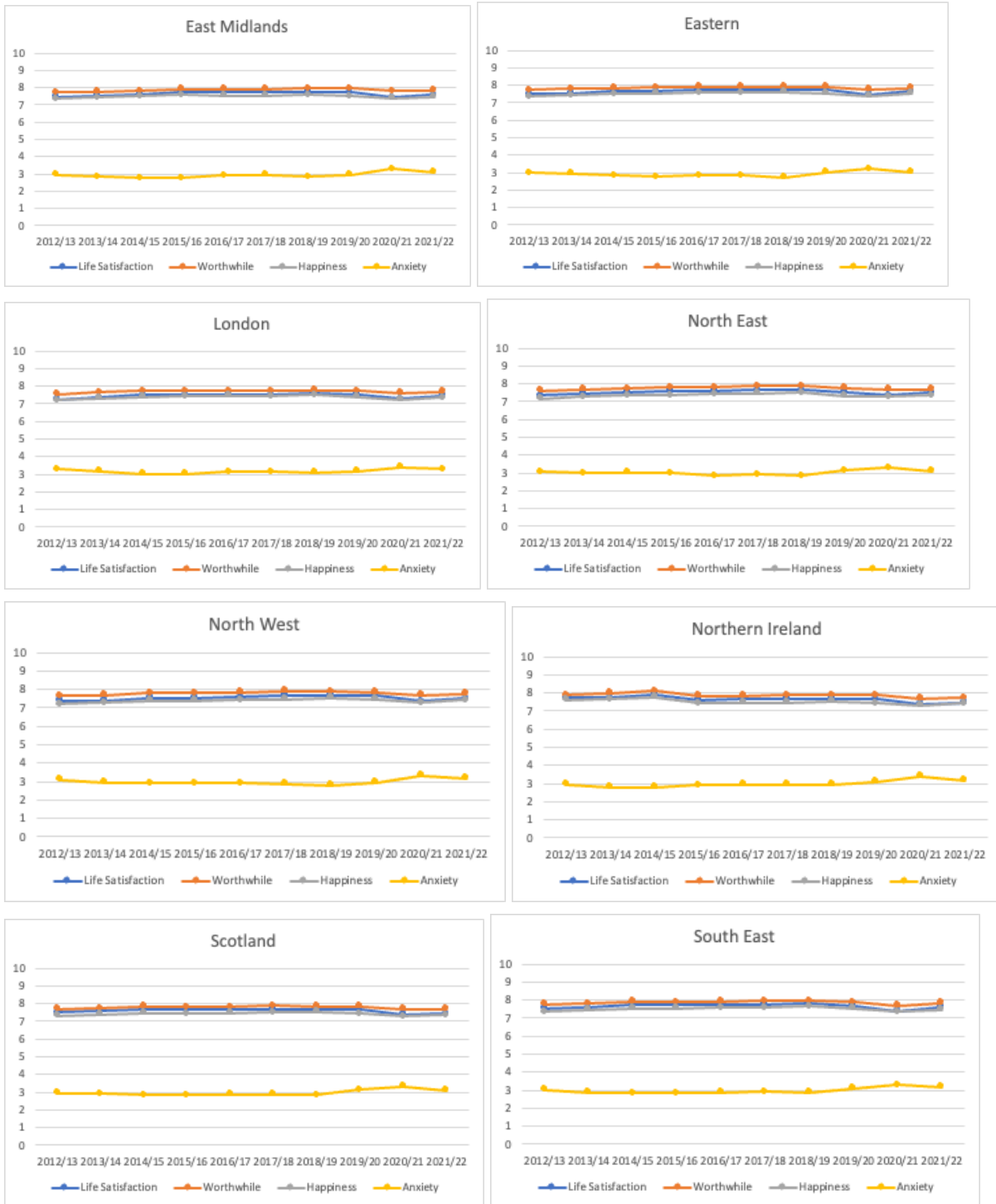
Figure 10: Weighted Mean of the Four Wellbeing Variables by NUTS1 Regions.
Source: Annual Population Survey (APS)

Wellbeing by weekly income

This section is specifically looking at the weekly income of the respondent's main job. The unique circumstances of the pandemic created financial hardships for those working in contact-intensive sectors. Typically, those on higher incomes were more likely to work from home as found by Dingel & Neiman (2020) and a report by the ONS. Given this, one could suspect that people in lower income brackets felt greater anxiety during this sub-period.

Observing the weighted median for each weekly income band, the lowest income bands have the greatest median values for Anxiety during and after the pandemic (Figure 11). For samples 2019/20 and 2020/21, the lowest income band (£0-99 per week) had a weighted median of Anxiety of 2.5, this increased to 3.5 in 2021/22.
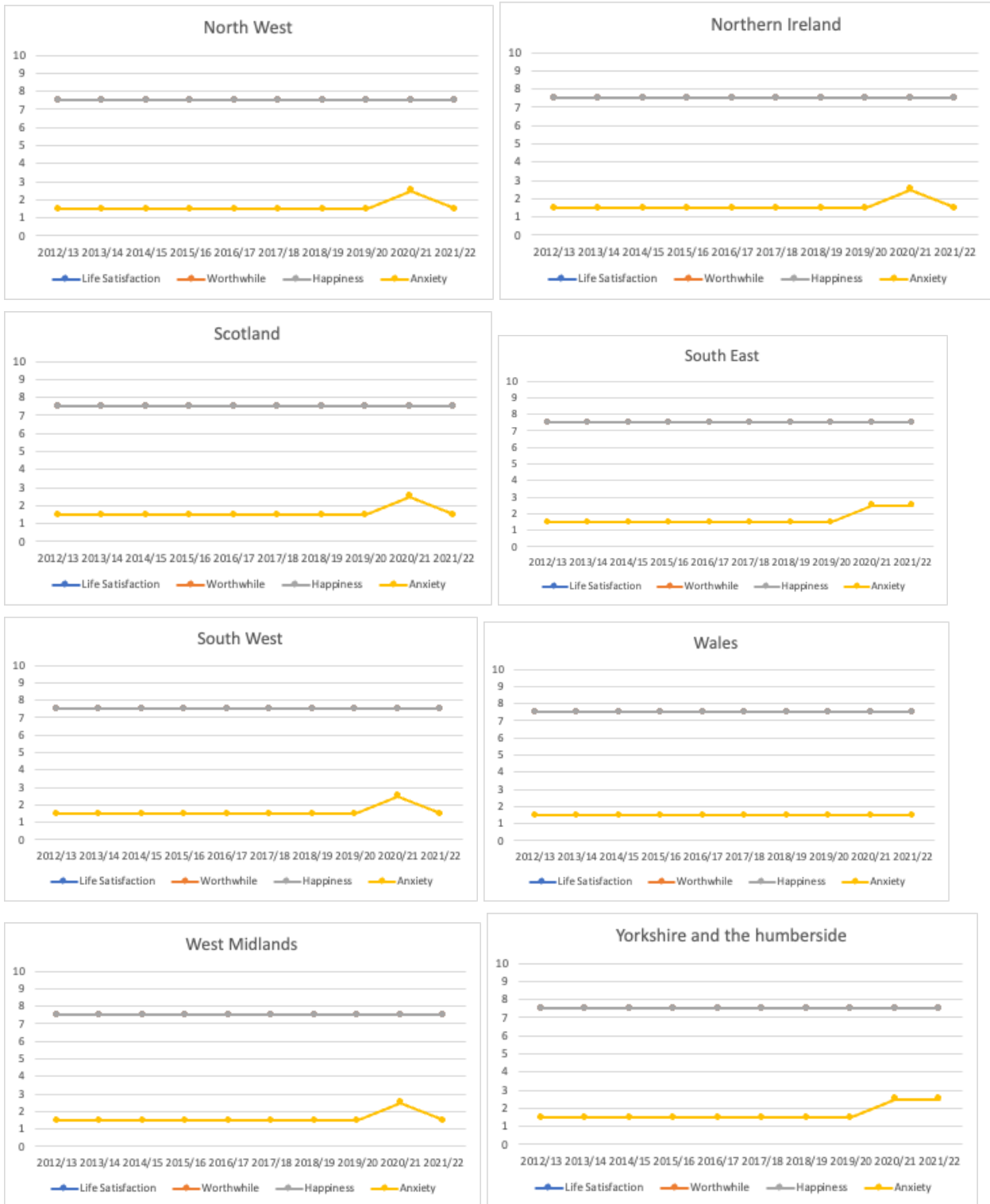
Figure 11: Weighted Median of the Four Wellbeing Variables by Gross Weekly Income Bands. *Note that the median values of Worthwhile, Happiness and Life Satisfaction overlap for all periods.*
Source: Annual Population Survey (APS)

The lowest income brackets also have the greatest weighted mean for Anxiety during 2020/21 and 2021/22 (Figure 12). For the 2020/21 sample, the £0-99 weekly income band had the greatest weighted mean of Anxiety of 3.56, with the £100-199 band having the second greatest weighted mean. There is no surprise that those who are placed in the lowest income brackets will respond negatively to the question associated with the Anxiety variable.
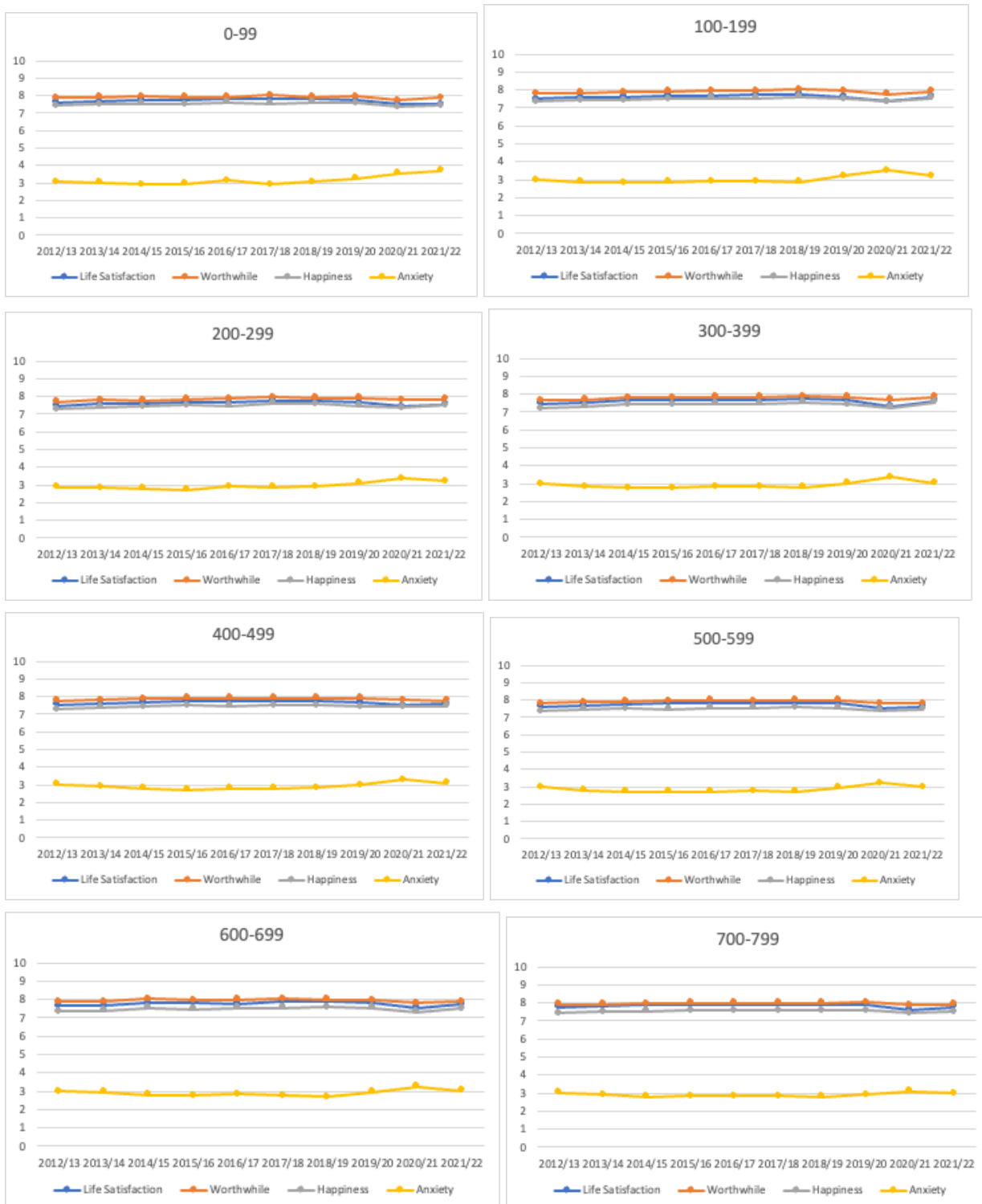
Figure 12: Weighted Mean of the Four Wellbeing Variables by Gross Weekly Income Bands. Source: Annual Population Survey (APS)

When the weighted median increases then this implies that the bottom half of the population that scored the lowest on the zero-to-ten wellbeing scale has now responded with a greater range.

Figure 13 shows the rapid decline of those in the bottom income bracket responding with low Anxiety scores and the increases in the proportion of respondents in the bottom band providing higher Anxiety scores. In 2017/18 the proportion of people in the lowest weekly income bracket that provided a very low Anxiety score (0 to 1) was roughly 40%, in 2021/22 it was roughly 29%.

Similarly, in 2018/19 the proportion of respondents in the £100-199 weekly income bracket giving low Anxiety scores (0 to 1) was approximately 41% and in 2020/21 it was 32% with a slight recovery in 2021/22 of 35%. The lower weekly income bands have been exhibiting a downtrend trend during the latter half of the decade, providing a greater number of higher Anxiety scores.

People situated in the higher income brackets have generally started to provide higher Anxiety scores but the development is not quite to the same extent.

Figure 13: Proportion of the UK Population that Rated High and Low Anxiety Scores Broken Down by Gross Weekly Income Bands.
Source: Annual Population Survey (APS)

Figure 13 (cont): Proportion of the UK Population that Rated High and Low Anxiety Scores Broken Down by Gross Weekly Income Bands.
Source: Annual Population Survey (APS)

Wellbeing by housing status

This section categorises the APS data by the accommodation details of individuals. The What Works Centre have reported on housing being a driver of wellbeing disparities. The quality of housing can have an effect on wellbeing. The ownership status of a home can also potentially affect the wellbeing of people and the financial difficulties they may have to bear.

Weighted medians of the wellbeing metrics by housing status are shown in Figure 14. What is most noticeable about Figure 14 is the greater median of Anxiety for the population that part-buy and part-rent. Excluding samples 2013/14, 2017/18 and 2018/19, the weighted median of Anxiety for part-buyers is 2.5 and 1.5 for the excluded samples. The respondents that own their homes outright have had a constant weighted median for all wellbeing metrics throughout the time period, even for the pandemic samples. Prior to the 2019/20 sample, all housing status groups, barring the part-buyers, had the same weighted median of Anxiety of 1.5 for every sample.
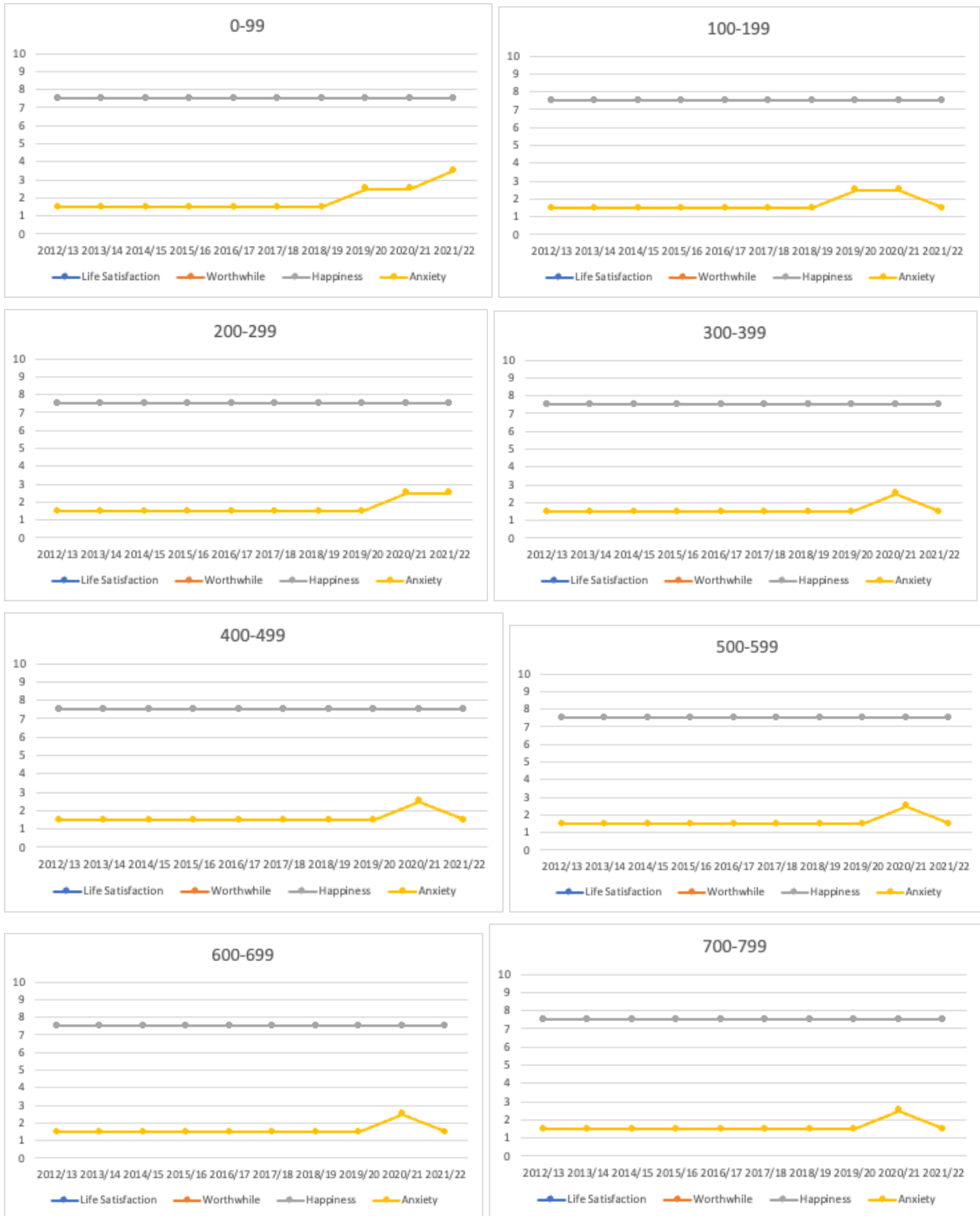
Figure 14: Weighted Median of the Four Wellbeing Variables by Housing Status. *Note that the median values of Worthwhile, Happiness and Life Satisfaction overlap for all periods.*
Source: Annual Population Survey (APS)

Figure 15 shows that the proportion of people scoring low Anxiety scores that part-buy/part-rent have been dropping before and during the pandemic, and that the proportion of those giving high Anxiety scores have been continually rising. In the 2017/18 survey, 40% of part-buy respondents answered with a very low Anxiety score (0 to 1), this dropped to roughly 26% in the 2021/22 survey. The percentage of part-buyers giving a high Anxiety score (6 to 10 out of 10) increased from approximately 20% in 2017/18 to 30% in 2021/22. These kinds of trends also happened, to a large extent, to those that were renting or rent-free/squatting.
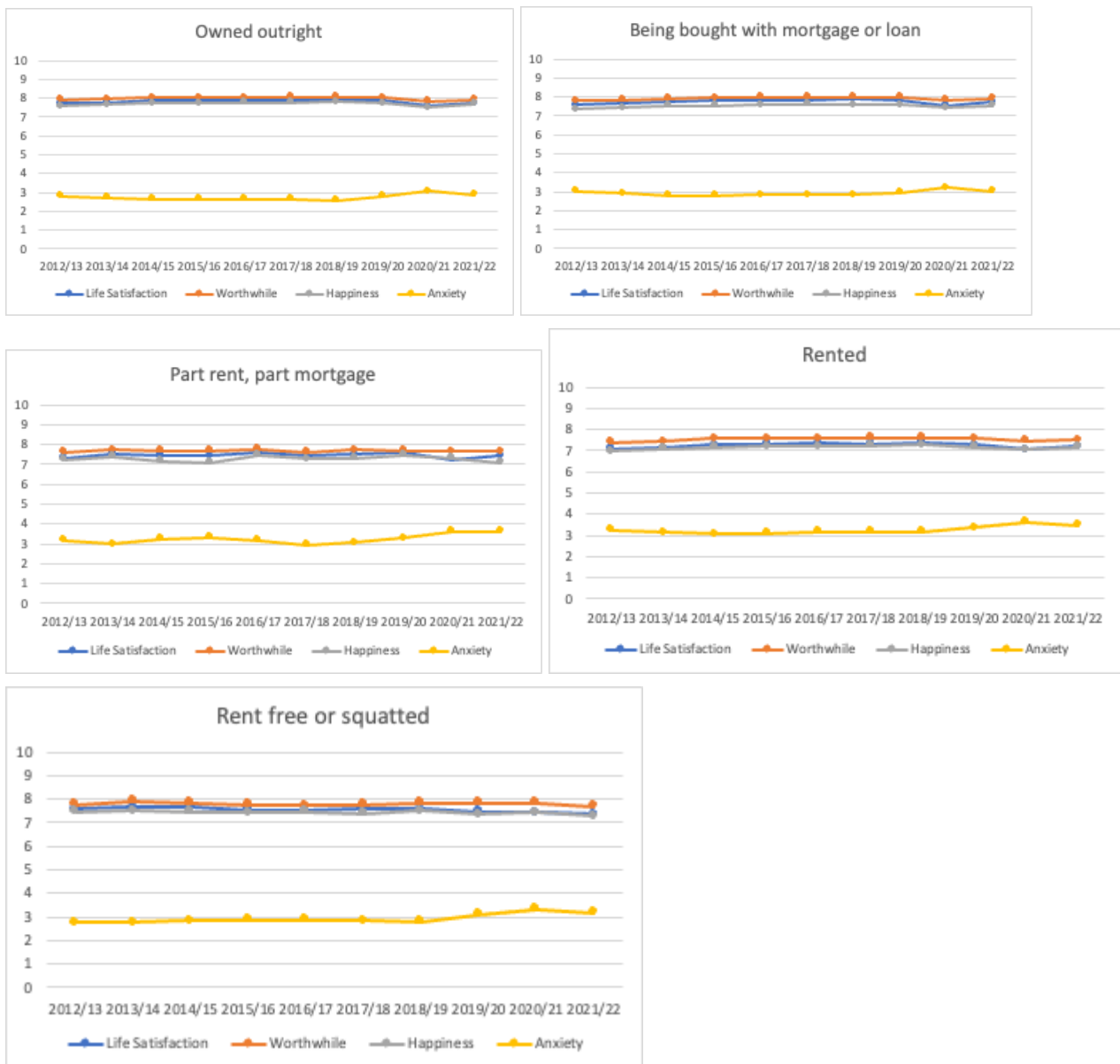
Figure 15: Weighted Mean of the Four Wellbeing Variables by Housing Status.

Source: Annual Population Survey (APS)

The weighted median of Anxiety for those that own their homes outright has remained constant and the weighted mean has slightly increased during the pandemic (Figure 16). Figure 16 displays the steady fall in the proportion of homeowners answering a low score on Anxiety (0 to 1) during the pandemic periods. This relatively small downward trend in people giving low anxiety scores was not enough to influence the weighted median figures during the pandemic samples. The message here is that not enough homeowners were giving mid-to-high anxiety scores compared to the other housing status groups (in proportional terms).
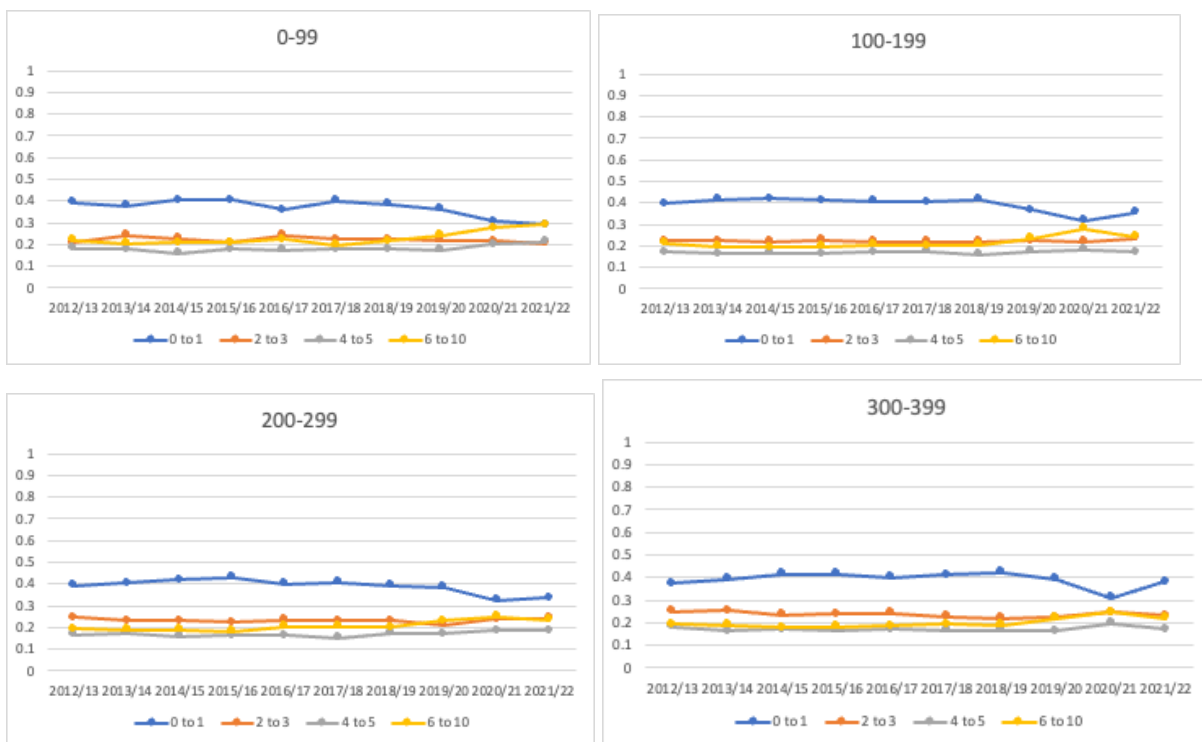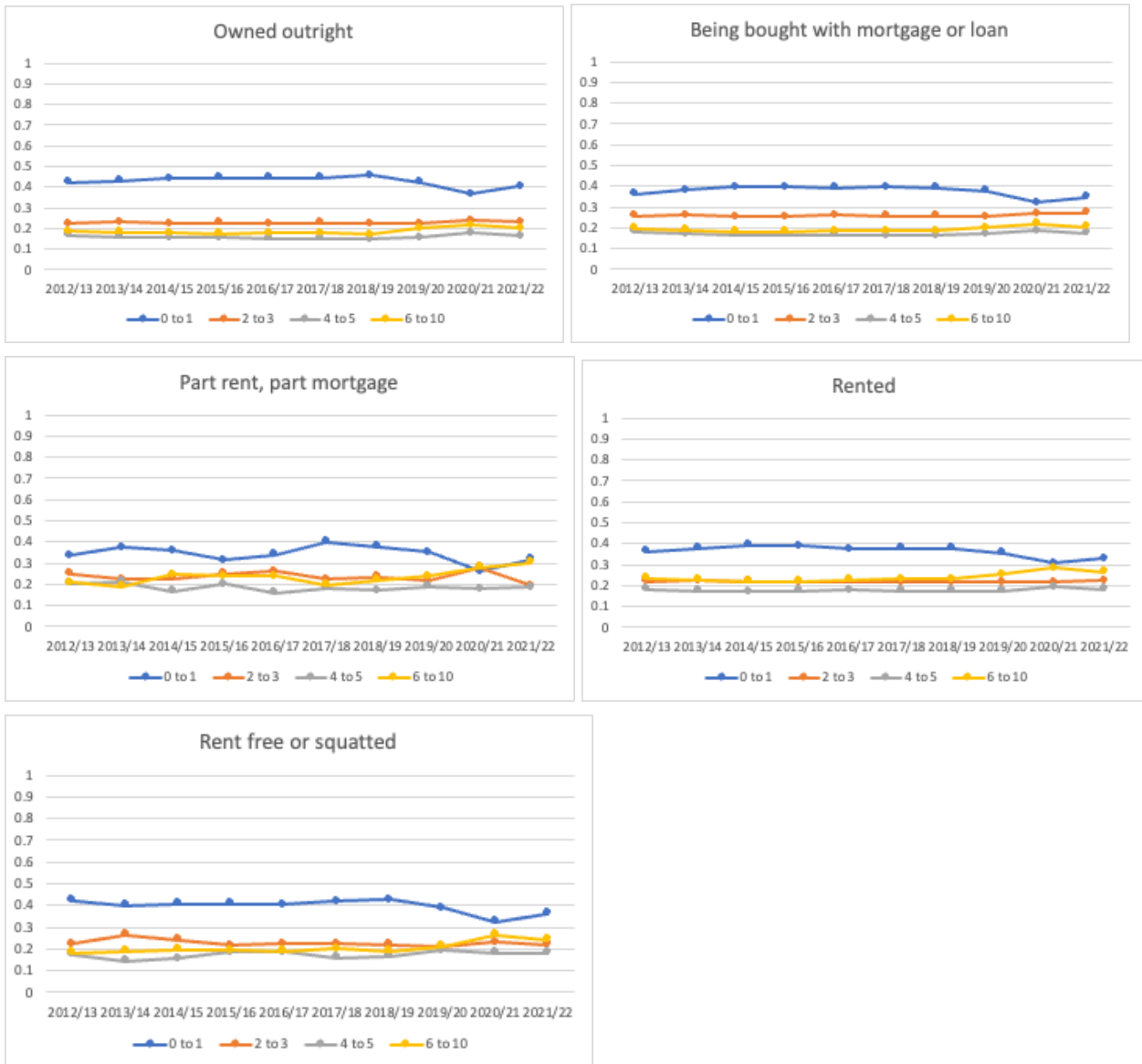
Figure 16: Proportion of the UK Population that Rated High and Low Anxiety Scores Broken Down by Housing Status.
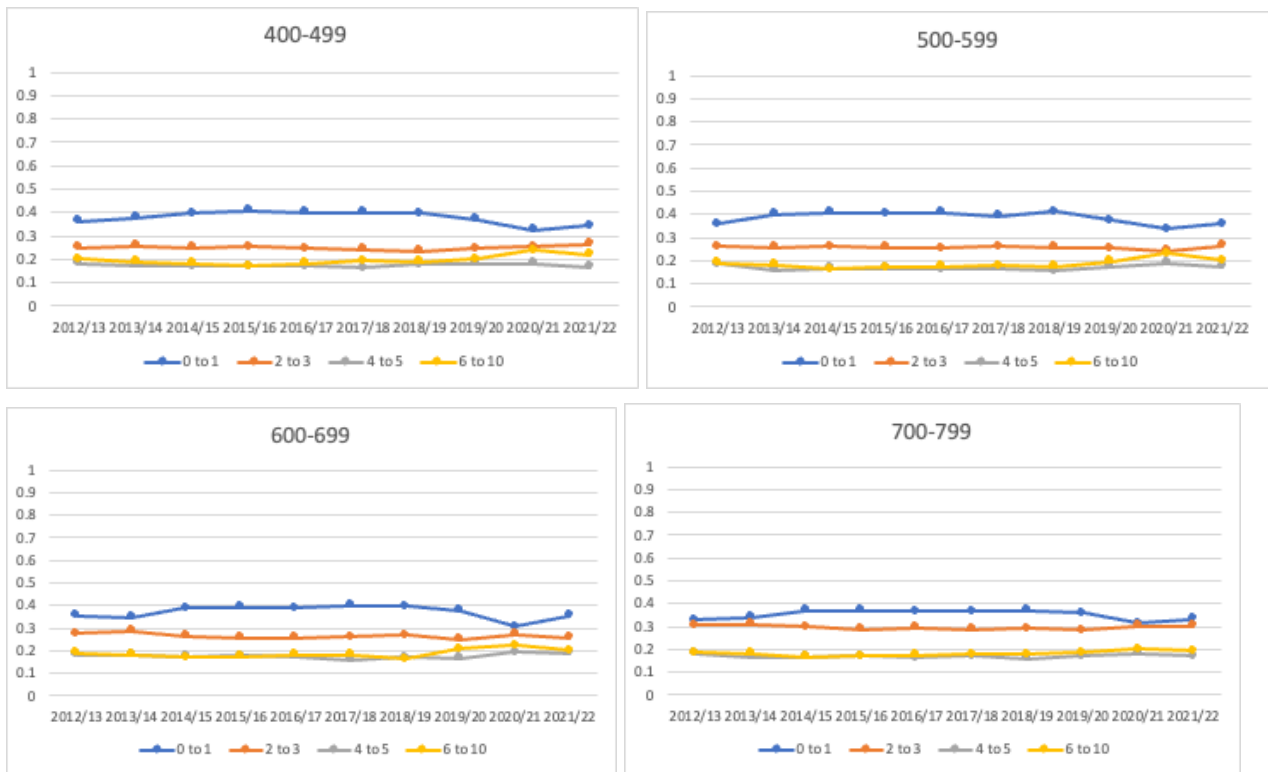
Source: Annual Population Survey (APS)

Conclusion

The Annual Population Survey (APS) provides information on individuals in the UK population. In particular, the surveys contain demographic, socio-economic and wellbeing variables. Four wellbeing variables are stored in the APS and provide a measure of people's life satisfaction, in addition to how worthwhile, happy and anxious they feel their life is currently. The time frame considered in this report spans from 2012/13 to 2021/22.

Of the four wellbeing variables, Anxiety is the most variable measure at the aggregate level and when broken down by demographic and socio-economic factors. Before the pandemic all four wellbeing measures were fairly stable at the UK population level and even when broken down by various factors. During the pandemic, the UK population generally responded with higher Anxiety scores, with fewer people answering low scores of anxiety. The other three wellbeing measures did not see the kind of volatility that the Anxiety variable experienced.

When dissecting the data, females generally felt more anxious compared to the male population during the pandemic, those on lower weekly incomes reported higher Anxiety scores during the pandemic, people living in the London region experienced greater anxiety relative to other regions, and those part-buying / part-renting homes or just renting reported higher anxiety.

References

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Appendix

The Pearson correlation coefficient and Spearman's rank correlation coefficient are both measures of association between two random variables. These two measures can help to determine the relationship between two random variables. That is, whether two random variables are strongly positively related, strongly negatively related, etc.

Under the context of the four wellbeing variables, they are ordinal variables, which means that these variables have categories (a scale of 0 to 10) and that these categories are ordered (0 being "not at all" and 10 being "completely") and this implies that the Spearman's correlation coefficient is more appropriate. Despite this, both measures are useful to get a picture of the relationships between the wellbeing variables.

When looking at both correlation measures (tables A1-A7) Anxiety is negatively correlated with the other wellbeing variables for all sample periods. That is, the Pearson and Spearman's correlation coefficients are negative. In simple terms, this means that a respondent that provides a high Anxiety score is likely to provide a low score for Life Satisfaction, Worthwhile and Happiness. On the other hand, the other three wellbeing variables are positively correlated with each other under all weighted samples (see the Appendix). Their Pearson and Spearman's correlation coefficients are positive. This means that if someone chooses a high Life Satisfaction score, for example, then they're likely to also choose a high Worthwhile and Happiness score.

Table A1: Estimates of the Weighted Moments for the 2012/13 Survey					
Wellbeing	Weighted Mean	Weighted Median	Weighted Variance	Weighted Skewness	Weighted Kurtosis
Anxiety	3.03	1.5	8.11	24.5	-0.653
Happiness	7.29	7.5	4.75	-39.9	0.896
Life Satisfaction	7.45	7.5	3.35	-37.5	1.92
Worthwhile	7.69	7.5	3.08	-50.8	2.10

Table A2: Estimates of the Weighted Moments for the 2013/14 Survey					
Wellbeing	Weighted Mean	Weighted Median	Weighted Variance	Weighted Skewness	Weighted Kurtosis
Anxiety	2.93	1.5	7.97	22.3	-0.588

Table A2: Estimates of the Weighted Moments for the 2013/14 Survey

Happiness	7.38	7.5	4.65	-40.2	1.05
Life Satisfaction	7.51	7.5	3.30	-35.5	2.17
Worthwhile	7.74	7.5	3.05	-48.4	2.34

Table A3: Estimates of the Weighted Moments for the 2014/15 Survey

Wellbeing	Weighted Mean	Weighted Median	Weighted Variance	Weighted Skewness	Weighted Kurtosis
Anxiety	2.86	1.5	7.94	24.1	-0.555
Happiness	7.46	7.5	4.51	-41.9	1.15
Life Satisfaction	7.61	7.5	3.12	-32.8	2.32
Worthwhile	7.82	7.5	2.93	-47.6	2.37

Table A4: Estimates of the Weighted Moments for the 2015/16 Survey

Wellbeing	Weighted Mean	Weighted Median	Weighted Variance	Weighted Skewness	Weighted Kurtosis
Anxiety	2.87	1.5	7.94	25.9	-0.561
Happiness	7.48	7.5	4.46	-38.6	1.21
Life Satisfaction	7.65	7.5	3.04	-38.1	2.43
Worthwhile	7.84	7.5	2.87	-46.7	2.39

Table A5: Estimates of the Weighted Moments for the 2016/17 Survey

Wellbeing	Weighted Mean	Weighted Median	Weighted Variance	Weighted Skewness	Weighted Kurtosis
Anxiety	2.90	1.5	7.98	32.1	-0.576
Happiness	7.51	7.5	4.42	-49.6	1.18
Life Satisfaction	7.68	7.5	3.02	-40.8	2.40

Table A5: Estimates of the Weighted Moments for the 2016/17 Survey					
Worthwhile	7.86	7.5	2.86	-52.4	2.42

Table A6: Estimates of the Weighted Moments for the 2017/18 Survey					
Wellbeing	**Weighted Mean**	**Weighted Median**	**Weighted Variance**	**Weighted Skewness**	**Weighted Kurtosis**
Anxiety	2.89	1.5	8.00	26.6	-0.586
Happiness	7.52	7.5	4.35	-52.8	1.26
Life Satisfaction	7.69	7.5	3.02	-59.5	2.58
Worthwhile	7.88	7.5	2.88	-65.9	2.53

Table A7: Estimates of the Weighted Moments for the 2021/22 Survey					
Wellbeing	**Weighted Mean**	**Weighted Median**	**Weighted Variance**	**Weighted Skewness**	**Weighted Kurtosis**
Anxiety	3.12	1.5	7.93	39.9	-0.786
Happiness	7.45	7.5	4.20	-69.0	1.16
Life Satisfaction	7.54	7.5	3.00	-57.5	2.17
Worthwhile	7.77	7.5	2.90	-81.4	2.21

Spearman's Correlation Coefficients

Matrix 1: Correlation Matrix of the Wellbeing Variables for 2012/13 Survey				
	Life Satisfaction	**Worthwhile**	**Happiness**	**Anxiety**
Life Satisfaction	1			
Worthwhile	0.614	1		
Happiness	0.560	0.494	1	
Anxiety	-0.337	-0.257	-0.453	1

Matrix 2: Correlation Matrix of the Wellbeing Variables for 2013/14 Survey

	Life Satisfaction	Worthwhile	Happiness	Anxiety
Life Satisfaction	1			
Worthwhile	0.618	1		
Happiness	0.566	0.493	1	
Anxiety	-0.347	-0.262	-0.463	1

Matrix 3: Correlation Matrix of the Wellbeing Variables for 2014/15 Survey

	Life Satisfaction	Worthwhile	Happiness	Anxiety
Life Satisfaction	1			
Worthwhile	0.622	1		
Happiness	0.565	0.497	1	
Anxiety	-0.335	-0.258	-0.457	1

Matrix 4: Correlation Matrix of the Wellbeing Variables for 2015/16 Survey

	Life Satisfaction	Worthwhile	Happiness	Anxiety
Life Satisfaction	1			
Worthwhile	0.620	1		
Happiness	0.568	0.497	1	
Anxiety	-0.353	-0.271	-0.463	1

Matrix 5: Correlation Matrix of the Wellbeing Variables for 2016/17 Survey

	Life Satisfaction	Worthwhile	Happiness	Anxiety
Life Satisfaction	1			
Worthwhile	0.625	1		
Happiness	0.568	0.503	1	
Anxiety	-0.353	-0.281	-0.475	1

Matrix 6: Correlation Matrix of the Wellbeing Variables for 2017/18 Survey

	Life Satisfaction	Worthwhile	Happiness	Anxiety
Life Satisfaction	1			
Worthwhile	0.628	1		
Happiness	0.575	0.505	1	
Anxiety	-0.357	-0.282	-0.468	1

Matrix 7: Correlation Matrix of the Wellbeing Variables for 2018/19 Survey

	Life Satisfaction	Worthwhile	Happiness	Anxiety
Life Satisfaction	1			
Worthwhile	0.630	1		
Happiness	0.575	0.508	1	
Anxiety	-0.370	-0.286	-0.481	1

Matrix 8: Correlation Matrix of the Wellbeing Variables for 2019/20 Survey

	Life Satisfaction	Worthwhile	Happiness	Anxiety
Life Satisfaction	1			
Worthwhile	0.630	1		
Happiness	0.570	0.505	1	
Anxiety	-0.359	-0.281	-0.479	1

Matrix 9: Correlation Matrix of the Wellbeing Variables for 2020/21 Survey

	Life Satisfaction	Worthwhile	Happiness	Anxiety
Life Satisfaction	1			
Worthwhile	0.591	1		
Happiness	0.582	0.507	1	
Anxiety	-0.363	-0.282	-0.486	1

Matrix 10: Correlation Matrix of the Wellbeing Variables for 2021/22 Survey

		Life Satisfaction	Worthwhile	Happiness	Anxiety
Life Satisfaction		1			
Worthwhile		0.624	1		
Happiness		0.596	0.517	1	
Anxiety		-0.395	-0.306	-0.492	1

Pearson Correlation Coefficients

Matrix 1: Correlation Matrix of the Wellbeing Variables for 2012/13 Survey

	Life Satisfaction	Worthwhile	Happiness	Anxiety
Life Satisfaction	1			
Worthwhile	0.637	1		
Happiness	0.573	0.502	1	
Anxiety	-0.334	-0.252	-0.450	1

Matrix 2: Correlation Matrix of the Wellbeing Variables for 2013/14 Survey

	Life Satisfaction	Worthwhile	Happiness	Anxiety
Life Satisfaction	1			
Worthwhile	0.646	1		
Happiness	0.582	0.505	1	
Anxiety	-0.349	-0.262	-0.463	1

Matrix 3: Correlation Matrix of the Wellbeing Variables for 2014/15 Survey

	Life Satisfaction	Worthwhile	Happiness	Anxiety
Life Satisfaction	1			
Worthwhile	0.646	1		
Happiness	0.577	0.503	1	
Anxiety	-0.336	-0.255	-0.455	1

Matrix 4: Correlation Matrix of the Wellbeing Variables for 2015/16 Survey

	Life Satisfaction	Worthwhile	Happiness	Anxiety
Life Satisfaction	1			
Worthwhile	0.642	1		
Happiness	0.578	0.500	1	
Anxiety	-0.352	-0.266	-0.462	1

Matrix 5: Correlation Matrix of the Wellbeing Variables for 2016/17 Survey

	Life Satisfaction	Worthwhile	Happiness	Anxiety
Life Satisfaction	1			
Worthwhile	0.651	1		
Happiness	0.581	0.509	1	
Anxiety	-0.352	-0.274	-0.472	1

Matrix 6: Correlation Matrix of the Wellbeing Variables for 2017/18 Survey

	Life Satisfaction	Worthwhile	Happiness	Anxiety
Life Satisfaction	1			
Worthwhile	0.654	1		
Happiness	0.590	0.515	1	
Anxiety	-0.353	-0.276	-0.463	1

Matrix 7: Correlation Matrix of the Wellbeing Variables for 2018/19 Survey

	Life Satisfaction	Worthwhile	Happiness	Anxiety
Life Satisfaction	1			
Worthwhile	0.655	1		
Happiness	0.588	0.518	1	
Anxiety	-0.366	-0.283	-0.479	1

Matrix 8: Correlation Matrix of the Wellbeing Variables for 2019/20 Survey

	Life Satisfaction	Worthwhile	Happiness	Anxiety
Life Satisfaction	1			
Worthwhile	0.656	1		
Happiness	0.586	0.521	1	
Anxiety	-0.357	-0.280	-0.477	1

Matrix 9: Correlation Matrix of the Wellbeing Variables for 2020/21 Survey

	Life Satisfaction	Worthwhile	Happiness	Anxiety
Life Satisfaction	1			
Worthwhile	0.624	1		
Happiness	0.600	0.527	1	
Anxiety	-0.357	-0.280	-0.478	1

Matrix 10: Correlation Matrix of the Wellbeing Variables for 2021/22 Survey				
	Life Satisfaction	Worthwhile	Happiness	Anxiety
Life Satisfaction	1			
Worthwhile	0.654	1		
Happiness	0.613	0.532	1	
Anxiety	-0.389	-0.302	-0.487	1

Weighted mean and median of four wellbeing variables by age bands

Figure A1: Weighted mean of four wellbeing variables by age bands
Source: Annual Population Survey (APS)

16 to 17

18 to 19

20 to 24

25 to 29

30 to 34

35 to 39

40 to 44

45 to 49

Figure A2: Weighted median of four wellbeing variables by age bands. *Note that the median values of Worthwhile, Happiness and Life Satisfaction overlap for all periods.*
Source: Annual Population Survey (APS)