



**Nuffield Foundation Economic Advantage and Disadvantage (EAD)
Programme:**

**THE DISTRIBUTION AND DYNAMICS OF ECONOMIC AND
SOCIAL WELLBEING IN THE UK:**

**An analysis of the recession using multidimensional indicators
of living standards (MILS)**

Main Public Output

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Executive summary

Background and rationale

- Living standards in the United Kingdom are typically measured using income as a proxy. Past research into living standards focuses on how living standards have changed over time, the extent to which there are inequalities in living standards for different groups, and the impact of the recession on living standards. There is little research that combines economic and non-economic indicators to inform living standards. We contend that indicators of living standards, which are multidimensional in nature and that go beyond disposable (net) income and expenditure or consumption as a proxy, are able to capture a fuller picture of living standards and can serve to better inform policy making and policy research.
- Our conceptual framework of multidimensional indicators of living standards (MILS) aligns with the German approach to measuring individual and societal welfare (which in turn is based on the Scandinavian level of living and American subjective well-being approaches) by combining objective indicators of living circumstances with subjective assessments of these circumstances.
- Unlike previous work in the UK, living standards are defined here as the sum total of individual/family welfare using both objective and subjective indicators in eleven key dimensions of individual/family welfare, which fall under three broad domains: 'What We Have', 'What We Do' and 'Where We Live'. Our conceptual model was originally applied to the 2012 Poverty and Social Exclusion survey (PSE2012) data (Patsios, Pomati, & Hillyard, 2018).
- PSE2012 was a snapshot of living standards in the midst of the economic downturn. Relatively less is known about the evolution of multidimensional indicators of living standards either side of PSE2012 and over the recession as a whole in the UK. Moreover, no one survey can capture the trends and changes in multidimensional indicators of living standards at the individual and/or family level: this requires micro-analyses of harmonised and validated data from multiple sources.

Goal and Aims the project

- This research sought to provide greater understanding of the relationship between objective and subjective indicators of living standards and how this changed over the course of the recession for different family life-course types using data from three national surveys.
- Using the conceptual model of living standards developed by Patsios, Pomati & Hillyard (2018), the aims of the project were to:
 - 1) Produce descriptive baseline findings on the extent to which there are disparities in objective and subjective levels of resources amongst different groups in society and how these have changed over the recessionary period;
 - 2) Analyse how subjective indicators of personal resources vary according to relevant objective indicators; and
 - 3) Explore the extent to which different family life-course types over-estimate low levels of resources (adaptation) or under-estimate high levels of resources (dissonance).

- The research sought to add to the existing evidence on the impact of the recession base by:
 - Adding measures/indicators of ‘social outcomes’ to previous work carried out former LSE CASE, whose research looked at how ‘economic outcomes’ *changed* for different groups over the recession.
 - Associations between economic and social outcomes were analysed to show whether the economic and social ‘winners and losers’ were similar.
 - Including a range of additional ‘subjective’ indicators to the work carried out by the Institute for Fiscal Studies’ (IFS) work on living standards in the UK, the New Policy Institute’s (NPI) indicators for monitoring poverty and social exclusion, and the Joseph Rowntree Foundation’s new UK Poverty report series.
 - Net disposable income was supplemented with multidimensional indicators of living standards available in 10-years of Family Resources Survey (FRS) and Waves 1-7 of Understanding Society (USoc) data.
 - Expanding the pool of indicators showed whether groups with higher levels of objective resources also have higher levels of subjective assessments of those resources and how this changed over the recession.
 - Attempting to bring further clarity to the debate about living standards and the life-course by looking more closely at measuring individual welfare and living standards in the context of people’s position in the life course.
 - Analysis was carried out using a bespoke family life-course type to obtain a more nuanced picture of the impact of the recession on different household compositions.
 - Producing family life-course group estimates to contextualise some of the trends found in the Office for National Statistics (ONS) measuring national and personal well-being programme.
 - This was done by selecting valid and reliable indicators of living standards and then showing the extent to which selected subjective indicators changed with their objective indicator counterpart over a ten-year period (2007-2016) in the UK.

Methodology

- First, a cross-walk of potential indicators available in ten years of Family Resources Survey (FRS) data (2006/07 thru 2015/16) and seven Waves of Understanding Society – The UK Household Longitudinal Study (USoc) data (2009-11 thru 2014-2016) were selected, harmonised and merged using the conceptual framework developed by Patsios, Pomati, & Hillyard (2018) as a guide.
- Second, a validation exercise was carried out on FRS and USoc candidate measures and indicators; only those that showed some level of association with income, subjective living standards, or social class were deemed valid and therefore selected for further analysis. Only objective indicators of resources with a clear subjective counterpart were used in the analysis.

- Third, we used the final set of measures to carry three stages of bivariate and multivariate statistical analysis. The main aim of the analysis is to validate our assumption that valid subjective indicators should show similar trends and cross-sectional variation to their objective counterpart because objective levels of resources are the most important drivers of subjective evaluations.

Final set of measures of What We have, What We Do and Where We Live

Domain	Objective indicator	Subjective indicator
What We Have	Household net income (PSE, USoc)	Subjective Relative Income (PSE) Satisfaction with Income (USoc)
	Financial Fluidity (PSE, FRS)	Satisfaction with Financial Situation (USoc)
	General Health Questionnaire (PSE, USoc)	Satisfaction with Life (PSE, USoc)
What We Do	Paid and unpaid work (including unpaid care) (PSE/USoc) Civic engagement (PSE/USoc) Political engagement (PSE) Social networks (PSE/USoc) Time pressure (PSE)	
Where We Live	Housing and accommodation (general information) (PSE/USoc) Problems with housing and accommodation (PSE) Problems in local area (PSE/USoc) Crime and personal safety in the area (PSE) Public and private service use (PSE)	

Analysis and Key findings

Stage 1) What happened to objective and subjective levels of resources over the recession?

Analysis:

- In the first stage, we examined changes and trends in the selected objective and subjective measures of personal resources (income, finances and health): (i) across time, (ii) for different family life-course types, and (iii) the bivariate cross-sectional association between objective and subjective counterpart. The aim was to explore whether objective and subjective trends displayed the same patterns across time and for individuals in different family life-course types.

Key findings:

Income

- Most family life-course types experienced a drop in incomes between 2008 and 2012 followed by an increase between 2013 and 2016, resulting in a “tick” shape of average income trajectories.
 - The clearest pattern in the change in this objective resource of living standards is the persistently lower levels of income experienced by single

parents and the general clear decrease in incomes during the economic downturn (2008-2012), followed by increases during the recovery (2013-2016).

- Single and couple pensioners saw a decrease in incomes between 2010 and 2012, but their incomes remained higher than the pre-recessionary levels, in contrast to other groups whose incomes dropped below their pre-recession levels (single adults of working age).

Satisfaction with income

- Changes in satisfaction with one's income (the only subjective indicator of income satisfaction available for more than one year) were remarkably similar to 2010-2016 average income trajectories.

Subjective relative income

- Answers to questions about how far adults feel their income is from poverty and average income (our measure of subjective relative income) show a positive correlation with their actual household income, which suggests that adults are generally aware of their level of resources.

Financial Fluidity

- Being behind with bills remained relatively stable during the economic downturn, but savings began to increase during the recovery period.
- We combined information on debts and savings into an overall measure called Financial Fluidity.
 - Similar to income, this measure shows that most groups were better off in 2016 than they were in 2007, with the exception of single adults of working age who saw no clear changes in their level of savings.
 - The most important difference between changes in incomes and financial fluidity are that whereas incomes have seen a clear dip between 2010 and 2012 (followed by a sharp rise in the recovery period) financial fluidity seems to have remained relatively stable during the recession and then increased after 2012.
 - These trends are also reflected in the difference between the evolution of satisfaction with income and the subjective assessment of one's financial situation shown above. Satisfaction with income shows the clear down-then-up trajectory, whereas satisfaction with financial situation on average shows a steady rise after 2012.

Health

- Mental health was measured using the General Health Questionnaire (12-item version, GHQ-12) which showed consistent levels of mental health over the period of the recession.
- The GHQ shows family life-course type differences similar to the subjective indicator of satisfaction with life, but the latter show much more variation between 2010 and 2016.
- Trends in satisfaction with health and satisfaction with life are quite similar to the ones seen in the satisfaction with income. Hence life and income satisfaction exhibit similar trends, that is a clear increase during the recovery (2013 to 2016).

Stage 2) What explains the variation in subjective indicators?

Analysis:

- Where a linear relationship was found between objective and subjective resources in Stage 1, linear regression was used to further analyse the association between objective resources and subjective counterparts, focusing in particular on how much of the variation (Adjusted R²) in the subjective measures is explained by the objective counterpart. First, we controlled for a range of demographic characteristics such as sex, age, ethnicity, and also employment status. Second, we examined the explanatory power of indicators of What We Do and Where We Live, as well as material deprivation. Lastly, we explored the impact of critical life events. The aim was to explore how much of the variation in the subjective measure was attributable to its objective counterpart controlling for a range of socio-demographic characteristics, objective indicators of engagement and location, and the impact of critical life events.

Key findings:

General

- Most of the variation in the subjective indicators (subjective relative income, satisfaction with income, satisfaction with life) was explained by the differences in objective indicators of resources, reiterating the finding that subjective and objective indicators show the same family life-course type patterns of economic advantage and disadvantage and fluctuation before and after the recession.

Subjective relative income and Satisfaction with income

- Income and material deprivation explained the largest amount of variation in subjective relative income and satisfaction with income.
 - Poverty may be measured in other ways besides having a low (relative) household income. Another approach is to consider if a household is materially deprived (the consequence of low levels of resources), meaning they lack the ability to afford key goods or services (also known as 'enforced lack in the literature). Other approaches use both income and material deprivation.
- Social class, education and employment do not add to the explanatory power of the models. Their role in explaining levels of perceived resources overlaps heavily with income so that when we control for income we see a modest increase in explained variation.

Satisfaction with life

- The GHQ accounts for a large amount of variation in satisfaction with life (our subjective 'counterpart' measure of mental health).
- Satisfaction with life also does not seem to be further explained by material deprivation once mental health and longstanding illness are controlled for.

What We Do and Where We Live

- Variation in activities and engagement (What We Do) and location (Where We Live) do not explain any further variation in the subjective indicators of income once income and material deprivation are introduced, nor do they explain any further

variation in satisfaction with life once objective mental health and longstanding illness are taken into account.

- As material deprivation includes some information on social activities and housing/accommodation deprivation, sensitivity analysis were carried out to determine whether the order in which material deprivation is entered in to the model affects the explanatory of What We Do and Where We Live:
 - The explanatory power of the available information on What We Do and Where We Live remains limited once we control for income and GHQ for satisfaction with income and satisfaction with life respectively
 - In contrast, there was indication that some of the indicators used in material deprivation do indeed overlap with information on social activities and accommodation/housing in subjective relative income.

Critical Life Events

- Critical life events do not seem to explain much additional variation in the two subjective indicators of income.
- However, satisfaction with life appears to be influenced by having had a major health problem in the past 12 months.

Stage 3) What is the distribution of welfare types across family life-course types?

Analysis:

In the final stage of the analysis, we explored further the variation in our subjective measures by using the concept of welfare types. Respondents were split into a fourfold classification: those who have high levels of objective and subjective resources ('Higher') and low levels of objective and subjective resources ('Lower'). We defined those who do not follow this pattern as 'Adaptive' (with low levels of objective resources yet high levels of satisfaction with these) and 'Dissonant' (with high levels of objective resources yet relatively low levels of satisfaction with these). The aim of this analysis was exploratory and aimed at shedding further light on the findings from Stage 2 but with a stronger focus on family life-course types. Given that we see objective resources are the main driver of the presented subjective measures, we expected that once we controlled for the former the probability of each family life-course type of being in any of the four welfare types would be relatively similar.

Key findings:

- Our findings on welfare types show differences across family life-course types.
- However, these differences are much smaller once income, material deprivation and objective mental health (GHQ) were controlled for.
 - For example, single parents had lower levels of life satisfaction but these seemed to be mostly accounted for by their greater levels of material deprivation, and lower income and objective mental health. This lends support to the findings above that it is mostly objective living standards that shape people's understanding and assessment of these, rather than their family life-course type.
 - The only exception was for single adults of working age (without children), who have levels of satisfaction with life roughly a third of a standard deviation lower than the mean. Single adults of working age are less likely to

have high satisfaction with life but differently from other groups with low satisfaction they are also less likely to adapt to it, even when controlling for material deprivation and income. This does align with literature showing that young single adults of working age have not fared well during the recession (Hills J. , Cunliffe, Obolenskaya, & Karagiannaki, 2015).

Summary and Conclusion

- Subjective indicators have so far been neglected and often dismissed as unreliable, yet we show that satisfaction with income, satisfaction with financial situation, and satisfaction with life can be used as valid and reliable subjective indicators for monitoring differences and changes in living standards.
- Living standards can be measured using some specific subjective indicators because their variation is mostly explained by variation in the relevant objective living standards.
- Why use subjective indicators then?
 - To corroborate objective indicators such as income and material deprivation, which are not collected consistently across surveys.
 - Can help track the evolution of living standards across time and across family life-course types because their variation is explained mostly by what people have rather than who they are, where they live and what they do.

Implications and recommendations

Policy making

Inequalities in living standards between different family life-course groups. The research has confirmed that some family life-course groups, e.g. single adults of working age, had been affected more than other by the economic downturn. Specifically, single adults below retirement age and single parents are two groups might warrant further policy attention, particularly during periods of economic downturn.

Research for policy

Social indicators – harmonised principles of indicators of subjective living standards. In order to contextualise some of the trends over time identified in this project and ongoing work on measuring national and personal well-being by ONS, the Government Statistical Service (GSS) should consider carrying out a Harmonised Principles exercise on subjective indicators of living standards (e.g. satisfaction with income, satisfaction with accommodation/home, satisfaction with local area/neighbourhoods).

Data collection and measurement

Material Deprivation. UK government should collect information on material deprivation indicators consistently and review the current suite of questions, ensuring that comparable questions are asked of all adults regardless of age (i.e. instead of the current situation where some questions are asked only of respondents of 65 years of age or older).

Financial situation. Where feasible, surveys should collect information about savings and debt and possibly economising activities so that trends and patterns in financial fluidity can be further explored.

Mental Health. Given the current drive to measure happiness and personal and national wellbeing, national surveys like the FRS include a validated and highly reliable mental health questionnaire like the General Health Questionnaire.

Subjective Relative Income. Surveys that aim to measure living standards and inequality should include questions about how respondents perceive their income.

Satisfaction with Income and Financial situation. Subjective indicators seem reliable and consistent over time. As such, large annual surveys like the FRS should collect these two simple questions yearly.

Life events. An accurate measurement of their physical and mental health might be more insightful than knowing whether someone has had a major health problem.

Further Research and Analysis

Family Life-course groups. There should be further research on the overlap between household and benefit unit types.

Section 1: Background and rationale

How living standards are currently measured in the UK

In the United Kingdom (UK), living standards are usually presented in the form of relative (usually equivalised) low income thresholds (e.g. DWP's Households below average income (HBAI) statistics on households below 60% of the median). Most research into UK living standards is concerned with how equally living standards are distributed (Belfield, Cribb, Hood, & Joyce, 2016) and how this has changed over time (Brewer & O'Dea, 2012), particularly over the Great Recession (Corlett, Finch, & Whittaker, 2016; Cribb, Hood, & Joyce, 2015). Although the use of proxy measures of living standards such as equivalised income might be easily understood by policy makers and researchers, they are difficult to translate into real-life economic, material and social conditions of life (Barnes, et al., 2012; Wood, et al., 2012). There is also little consensus on the combined use of objective versus subjective living standards, how they can be measured, analysed, interpreted, and utilised to inform public policy (Hobbs, Marrinan, & Kenny, 2015).

The multidimensional nature of living standards: beyond income as a proxy

Indicators of living standards which are multidimensional in nature and that go beyond disposable (net) income and expenditure or consumption as a proxy are necessary in order to capture a fuller picture and spectrum of living standards in the UK (Patsios, Pomati, & Hillyard, 2018). We contend that living standards are multidimensional in character, ranging from low income to financial difficulties (debt problems) and opportunities (ability to save or invest). Further, the focus on the lower end of the relative income or (material) deprivation spectrum serves to exclude a majority of the adult population not falling below such relative income thresholds and a minority falling just above this threshold which may in fact share many of the disadvantages of those falling just below the threshold. It is possible for individuals and households to be economically advantaged and disadvantaged at the same time (e.g. a couple without children and with high disposable income, who are unable to save/invest due to the level of mortgage/rent and as such has financial worries or poor satisfaction when asked about their income or current financial situation). Using a traditional proxy measurement of living standards, such nuances cannot be identified.

Objective vs. subjective measures and indicators: Towards a combined approach

Further afield (notably in Sweden, The Netherlands, Germany and United States), there is a longstanding tradition of measuring different dimensions of individual and societal welfare and subjective well-being using both objective and subjective indicators. For example, in their work on *The Euromodule* survey, Delhey, Böhnke, Habich, & Zapf (2001) and Zapf (2002) offer a helpful taxonomy of welfare concepts, which combines objective and subjective measures at the individual and societal level (see Figure 1 below). In this taxonomy, three main approaches to welfare measurement - based on the level (individual vs. societal) and type of measurement (objective vs. subjective) used - can be identified. The first rely on objective indicators for welfare measurement like the Scandinavian level of living approach to survey research (Erikson, 1974; Erikson, 1993). The second, known as the American quality of life approach, bases welfare predominantly on subjective indicators with wellbeing of individuals as final outcome of conditions and processes (Campbell A. , 1972; Campbell, Converse, & Rodgers, 1976; Diener & Suh, 1997; Noll, 2004). The third

combines objective and subjective indicators; examples of which are the German welfare approach (Delhey, Böhnke, Habich, & Zapf, 2002; Noll, 2002; Zapf W. , 1984). Allardt's "having, loving and being" trio approach towards welfare (Allardt, 1972; Allardt, 1993) and work carried out in New Zealand on living standards and economic wellbeing (Perry, 2002; Perry, 2009; Perry, 2017; Jensen, Spittal, Crichton, Sathiyandra, & Krishnan, 2002).

Figure 1 Taxonomy of welfare concepts

	Objective indicators	Subjective indicators
Individual level	Objective living conditions (e.g. income)	Subjective well-being (e.g. income satisfaction)
Societal level	Quality of society (e.g. income distribution)	Perceived quality of society (e.g. conflict between rich and poor)

Source: Delhey, Böhnke, Habich, & Zapf (2001), p. 10.

Taken together, there is increasing consensus that objective living conditions and subjective evaluations are actually just two sides of one coin (Delhey, Böhnke, Habich, & Zapf, 2001, p. 9). Subjective evaluations of personal life circumstances can relate to life as a whole as well as to different life domains, like work or income. This underlines the complementary nature of the two approaches, objective welfare measurement, and subjective well-being. Moreover, as Noll (2004) states, "the co-variations between objective and subjective indicators are of particular interest, since subjective well-being is supposed to be only partially determined by external conditions" (p. 159). In addition, using a single approach (ie. objective indicators only) may not reveal situations wherein "similar living conditions are evaluated quite differently, that people in bad conditions frequently are satisfied and privileged persons may be very dissatisfied" (Zapf W. , 1984, p. 20). According to Veenhoven (2002), "...social policy is not only concerned with objective matters such as 'income' and 'sanitation', but also with subjective things like 'trust' and 'perceived safety' in the streets. Such issues are typically intertwined, in the policy mix there is always a combination of material and mental matters. Hence objective indicators tell only half the story." (p. 42). The Stiglitz-Sen-Fitoussi report (2009) concluded that it is possible and crucial to collect meaningful and reliable data on subjective as well as objective well-being (Stiglitz, Sen, & Fitoussi, 2009). In short, both objective and subjective indicators are needed in order to inform the multidimensional nature of economic and social wellbeing (Veenhoven, 2002; Ravallion, 2012; OECD, 2013). According to Veenhoven (2002) "...subjective indicators are indispensable in social policy, both for selecting policy goals and for assessing policy success. Objective indicators alone do not provide sufficient information" (p. 40).

In the past, there had been a reliance in the UK on using objective measures/indicators of economic advantage and disadvantage. More recently, we have seen an increase in the use of both objective (level and sources of income, wealth and assets) and subjective measures (subjective poverty and financial security, i.e. ability to make ends meet) (Office for National Statistics, 2015b). In the UK, work has been carried out using objective and subjective indicators of social exclusion in three key domains: resources, participation and quality of life (Levitas, et al., 2007). At the national level, ONS' *Measuring National Well-being (MNW)*¹

¹ The Measuring National Well-being (MNW) programme was established in November 2010. The aim was to monitor and report "how the UK is doing" by producing accepted and trusted measures of the well-being of the nation. Twice a year we report progress against a set of headline indicators covering areas of our lives including our health, natural environment, personal finances and crime (Office for National Statistics, 2018g).

and *Personal Well-being* (PWB) programmes report national (and personal) well-being across a number of economic and non-economic domains using both objective and subjective indicators (Dolan, Layard, & Metcalfe, 2001; Office for National Statistics, 2015b). ONS produces annual assessments of UK progress against a set of headline national well-being indicators, which include health, natural environment, personal finances and crime. Change over time is also assessed to establish whether national well-being is improving or deteriorating (Office for National Statistics, 2018g). From December 2014, ONS also produced headline objective and subjective indicators of *Economic Well-being* (EWB) in order to give a more rounded and comprehensive basis for assessing changes in economic well-being (Office for National Statistics, 2014a). Although many of these trends are now broken down by age groups (and some by age and gender), which is important in understanding how people of different ages and gender are faring (Office for National Statistics, 2018e, p. 11), no in-depth analysis is provided for different family types in the UK.

The conceptual framework

Our conceptual framework on multidimensional indicators of living standards (MILS) aligns closely with Delhey, Böhnke, Habich, & Zapf's (2001) third taxonomy of individual-level welfare (see Figure 1 above) as it combines Scandinavian level of living and American subjective well-being approaches in order to identify a number of key domains of living standards (Patsios, Pomati, & Hillyard, 2018). It draws on the domains and indicators (both objective and subjective) found in the Bristol Social Exclusion Matrix (B-SEM) (Levitas, et al., 2007) and ONS Measuring National Well-being programme (Office for National Statistics, 2015b), but does so in an attempt to create a big picture view on how different individuals and households across the spectrum of society (both rich and poor) are faring. Moreover, our conceptual framework covers all of the indicators developed by NatCen/Demos' work on developing multi-dimensional indicators of poverty using cross-sectional data from Understanding Society (Wave 1 - 2009) (Barnes, et al., 2012; Wood, et al., 2012).

Initial findings from the PSE 2012 survey: what the current project adds?

The research presented in the current report builds on the initial findings from the PSE2012 survey, which showed that there are key differences in the extent to which adults living in different household types rate highly on the indicator measures, not only within domains and dimensions, but across them as well (Patsios, Pomati, & Hillyard, 2018). However, the PSE2012 was only a snapshot of living standards in the midst of the economic downturn and due to its cross-sectional nature, we know little about the evolution of multi-dimensional indicators of living standards either side of PSE2012 and over the recessionary period as a whole.

No one survey can capture the trends and changes in multidimensional indicators of living standards: this requires combining and analysing data from multiple sources. In this project, we used large-scale cohort and longitudinal data found in the Poverty and Social Exclusion survey (PSE), Family Resources Survey (FRS) and Understanding Society (USoc) surveys to identify the trends, variation, and composition of objective and subjective indicators of living standards across different family types over the course of the recession in the UK.

Key trends in multidimensional indicators of living standards used in this report

Much has already been written about the impact of the recession and the extent to which this has impacted on different groups in society over the economic downturn and recovery (Cribb, Hood, & Joyce, 2015; Belfield, Cribb, Hood, & Joyce, 2015; Belfield, Cribb, Hood, & Joyce, 2016; Corlett, Finch, & Whittaker, 2016). Besides the sense of job insecurity that accompanied a weak labour market, households were affected by modest growth in earnings, reduced access to borrowing and falls in house prices and equity markets, compounded by the effect of high inflation which has eroded the real spending power of their incomes (Myers, 2011; Crossley, Low, & O'Dea, 2012). Traditionally, pensioner households and single parent households are more likely to be in the lower end of the income distribution, whereas working age couples without children are more likely to be at the higher end of the income distribution (Cribb, Hood, & Joyce, 2015; Belfield, Cribb, Hood, & Joyce, 2015; Belfield, Cribb, Hood, & Joyce, 2016). However, evidence also suggests that not all groups have been equally affected by the recession as government protected people dependent on certain types of social security (e.g. pensioners) more than the working population (Cribb, Hood, & Joyce, 2015). It is widely acknowledged that the younger and the poorest suffered most in terms of real income and wages (combined with higher levels of inflation) when the economy faltered (Office for National Statistics, 2015b). Higher than inflation rises in food and fuel prices will have eaten into fixed incomes particularly of the oldest and poorest pensioners.

Closer inspection of the literature on the types of resources explored in this report (income, financial situation and mental health) shows the following:

(1) Income

Median (equivalised) Income - The economic downturn (and subsequent recovery) had a larger effect on non-retired households, with median income in 2015/16 still 1.2% lower than pre-downturn levels in 2007/08 while the income for retired households grew by 13.0% over the same period (Office for National Statistics, 2017b, p. 2). The growth in the median incomes of retired households since 2007/08 has been driven by a number of factors. The first is the rise in both the amounts received and the number of households reporting receipts from private pensions or annuities. The second is an increase in average income from the State Pension, due in part to the effect of the "triple lock" (which guarantees to increase the basic State Pension by the higher of CPI inflation, average earnings or a minimum of 2.5% every year) (Office for National Statistics, 2017b, p. 13). For non-retired households, the fall in average disposable income after the economic downturn was largely due to fall in income from employment (including self-employment) (Office for National Statistics, 2017b, p. 13).

Satisfaction with income - In addition to the actual level of household income, it is important to consider individuals' perceptions of their own income (Office for National Statistics, 2016a). Drawing on data from USoc, ONS reports that satisfaction with income demonstrated a downward trend between 2007 and the financial year ending 2012 and a general improvement from 2013 onwards. By the end of financial year 2014, however, satisfaction with income still remains below the levels seen prior to the economic downturn (Office for National Statistics, 2016a, p. 8).

Benefits and welfare spending - Spending on all age groups (e.g. children, working age, pensioners) increased during the recession (Office for Budget Responsibility, 2018), but there were notable differences in welfare spending based on age groups. Spending as a proportion of all welfare spending on pensioners went through a long period of relatively stability up until the recession at which point it rose relatively sharply (Office for Budget Responsibility, 2018, p. 9). Spending on children also saw a relative increase in the 2000s, whereas spending on working-age groups was most cyclical in nature reflecting the link with unemployment (Office for Budget Responsibility, 2018, p. 9). JRF Analysis Unit (2017) states that “the real value of out-of-work benefits for families with children rose sharply between 1998/99 and 2003/04 and continued to rise more slowly until 2013/14 - meaning that the value of these benefits increased by more than inflation. This contributed to the fall in child poverty over that period. Since then, their real value has decreased slightly. From 2013 most working-age benefits and tax credits were restricted to rises of 1% a year, before being frozen in 2016” (p. 23).

Household spending - According to ONS’ latest Family Spending report, which draws on data from the Living Costs and Food Survey (LCF) (FYE 2002-2017), total weekly household spending adjusted for inflation increased from its lowest level of £507.20 seen in FYE 2012 to reach £533 in FYE 2016 (Office for National Statistics, 2017c). Despite this, average spending had still not returned to the pre-economic downturn levels of spending seen before 2007 (Office for National Statistics, 2017c).

Savings and assets - Wave 5 of the Wealth and Assets Survey (WAS) (covering the period July 2014 to June 2016), shows that median household total wealth including private pension wealth was £260,400 in July 2014 to June 2016 (Office for National Statistics, 2018d). This increased by 16% from £225,100 in July 2012 to June 2014 (Office for National Statistics, 2018d). In contrast, the household savings ratio rose sharply following the financial crisis (Quarter 1 2008 to Quarter 2 (Apr to June) 2009), decreased slightly between 2010 and 2012 before levelling out, but has been declining since Quarter 3 2015 (Office for National Statistics, 2017e).

(2) Financial situation

Household debt – There are some clear trends in terms of household debt over the recession. Household debt peaked in Q1 2008 at 148% of household disposable income. It then fell until reaching 127% by late 2015 (House of Commons Library, 2018a). Households currently spend 7.7 per cent of disposable income on debt repayments (including mortgage principal), down from 12.3 per cent at the start of 2008 and an all-time high of 12.9 per cent in 1990 when the base rate stopped just short of 15 per cent (Whittaker, 2018; Harari, 2018).

Financial commitments - There has been a rise in the levels of unsecured household debt or ‘consumer credit’ such as credit card debt, hire purchase agreements and unsecured loans over the course of the economic downturn and recovery (Harari, 2018; Whittaker, 2018; Hood, Joyce, & Sturrock, 2018a).

Economising behaviours - A study for the Joseph Rowntree Foundation (JRF) looking into how people on low incomes coped during the economic downturn (but before the public sector cuts took effect), showed that adapting to the rising cost of living created a considerable stressful burden by having to economise on food, heating and travel, spending more time and effort on shopping and cooking, whilst having less nutritious food. These

effects were disproportionately felt among people with disabilities, ethnic minorities, the poor, some women and single mothers (and their children), young unemployed and older people (Hossain, et al., 2011).

Satisfaction with financial situation – As part of ONS' national reporting on economic well-being (Office for National Statistics, 2014a), it provides trends analysis on the *Eurobarometer Consumer Survey*, which asks respondents about their views on the financial situation of their household over the past 12 months².

In the years before the economic downturn a peak of 3.3 was reported in October 2007 but in general it remained around the 0 no change balance. At the beginning of 2008 following the economic downturn the balance sharply fell and reached a low of negative 25.2 in March 2012. Between the end of Q4 2015 and the end of Q1 2016, the aggregate balance increased from 3.5 to 3.7, continuing the positive balances that have been seen in recent months following sharp increases since early 2013. (Office for National Statistics, 2016a, p. 7)

(3) Physical and mental health

Physical health - For some, the recession has meant worse diets, colder homes and less physical mobility, as households have been unable to adjust their spending without harming their well-being (Winters, McAteer, & Scott-Samuel, 2012, p. 11). One aggregate-level study in the UK found a long-term decline in self-rated after a possible brief period of improvement (Astell-Burt & Feng, 2013). However, the biggest impact of the recession on health was for those who were made unemployed, given the association between unemployment and poor health status (Cooper, McCausland, & Theodossiou, 2014; Jin, Chandrakant, & Svoboda, 1997).

Mental health - Depressive episodes rose during the economic downturn (Parmar, Stavropoulou, & Ioannidis, 2016; Gunnell, et al., 2015). The recession was associated with a reversal in previously falling suicide rates in England, as well as increases in suicide attempts and depression, particularly in males (Gunnell, et al., 2015, p. 1). In contrast, findings from ONS' Measuring National Wellbeing programme shows an improvement in mental health as measured by the General Health Questionnaire (GHQ) using British Household Panel Survey and UK Household Longitudinal Study data between 2008 and 2015-16 (Office for National Statistics, 2018e).

Material deprivation - It is also worth noting that measures of material deprivation have shown a decrease in enforced lack of certain household goods and consumption items and activities (McGuinness, 2018). As explained further in our methodology material deprivation reflects the inability to afford to participate in customary activities and socially perceived necessities. Differently from measures of economic, financial and physical resources, this is therefore not a measure of resources but rather reflects the extent to which households lack these.

² A negative balance means that, on average, respondents reported their financial situation got worse, a positive balance means they reported it improved and a zero balance indicates no change.

Key terms, definitions and time periods used in the analysis and reporting of findings

In the following section, definitions of the key terms used in our conceptual framework and analysis are provided, as well as details of the recession time periods used in the reporting of the findings.

Living standards

Living standards refer to the sum total of individual and household welfare. They are measured using a combination of objective living conditions and subjective assessments of these living conditions. Living standards include several domains and dimensions of the living situation or condition, which are relevant to the individual's welfare regardless of whether they are considered to be outcomes, resources, capabilities, or external circumstances (Brand, 2007; Noll, 2002; Noll, 2004). There are, however, different opinions of what the right notion and conceptualization of welfare is (Delhey, Böhnke, Habich, & Zapf, 2001). In the past, the notion of welfare was synonymous with material level of living (or wealth) and rates of economic growth as measured by GDP or GNP per capita. The idea of wealth as the primary goal of societal development was eventually broadened to include qualitative aspects of welfare development, and quality of life became the leading welfare paradigm and individual goal (Berger-Schmitt & Noll, 2000).

Living standards dimensions

In our conceptual framework, living standards are measured across a number of life dimensions: income, housing, education, work, family and so on. According to Brand (2007), the "commonality of dimensions is not, as one might expect, restricted to particular approaches (such as subjective well-being, micro or macro etc.), but appears indeed rather universal as far as the existing (culturally Western) frameworks are concerned" (p. 143). And despite social and cultural differences in understandings of individual welfare, Brand argues that there are underlying commonalities between resources, outcomes and human needs across several conceptual frameworks. Building on the work of Brand (2007), Table A 1 in Appendix A provides a summary of the key dimensions of individual and household welfare.

Living standards domains

In our conceptual framework, the dimensions of living standards were grouped into three overarching domains; we call these 'What We Have', 'What We Do', and 'Where We Live'. The allocation of the 11 dimensions of individual welfare into these three domains is based on a supposition that how and where economic and social resources are deployed ('What We Do' and 'Where We Live') play as important a role in one's objective living conditions and subjective experiences as does the actual (objective) level of resources (What We Have) (Patsios, Pomati, & Hillyard, 2018). In this report we focus on What We Have (i.e. individual and household resources) by analysing both objective and subjective indicators.

Objective and subjective indicators

Objective indicators represent ascertainable living circumstances independently of personal evaluations (e.g. weekly income, state of health, social contact, accommodation problems), whereas subjective indicators are based on individual's perception and evaluation of living circumstances or life in general (e.g. satisfaction with income, life satisfaction). The type of indicators preferred and chosen for empirical measurement depends on the concept of welfare used (Noll, 2004, p. 6).

Subjective well-being

Subjective well-being concerns general as well as domain-specific assessments and evaluations of living conditions and includes cognitive as well as affective components (Berger-Schmitt & Noll, 2000, p. 11).

Family life-course types

The concept of the “life course” pays particular attention to the individual life trajectory as a person moves through different roles and experiences and the “life course perspective” has become a dominant paradigm in social and behavioural sciences (Alwin, 2012). The family life-course types used in the analysis and findings in this report attempt to reflect the changing and diverse nature of the family formations in UK households by capturing adults who cohabit, single parents and multigenerational families and households. “Traditional” markers of the transition to adulthood, like leaving home, marrying and parenthood, no longer have the significance that they once had. Moreover, the frequency and timing of these events has changed dramatically (Pailhé, et al., 2014, p. 5). The dynamics of family formation and disruption have changed in contemporary societies, with family life courses becoming increasingly diverse as the sequence of events and the pace at which they occur have become less standardized than in previous decades (Pailhé, et al., 2014, p. 2). In short, more people are cohabiting, having children outside marital unions, and are experiencing the dissolution of their unions. Individuals are also more likely to re-partner, enter stepfamilies, or live separately from their children or in fact remain childless (Pailhé, et al., 2014, p. 2).

Critical life events

Critical life events are defined as incidents necessitating adjustment to habitual life either permanently or temporarily (Cleland, Kearns, Tannahill, & Ellaway, 2016). Some of the “life-course events and transitions” referred to above can also be deemed critical life events. However, in our research, critical life events are not restricted to these life course events and transitions (e.g. entering/dissolution of partnerships, re-partnering, having children, widowhood etc.), but also include a number of other positive and negative life events (Western & Tomaszewski, 2016) such as getting a new job or having a major health problem or becoming unemployed. Of particular interest in our research was the extent to which certain major life events (e.g. marriage, divorce, widowhood and unemployment) were able to explain changes in objective or subjective indicators of living standards (Clark & Georgellis, 2013). As such, critical life events are not treated in this research as an objective or subjective indicator (ie. they are not part of What We Do, What We Have or Where We Live), but rather are treated as possible explanatory variables for changes in objective and subjective indicators of living standards.

Welfare types (or typology of welfare positions)

Central to the concept of welfare types is a focus on the constellation of objective living conditions and subjective well-being across different life domains. Wolfgang Zapf developed a typology of welfare positions, which distinguishes between four constellations of objective living conditions and subjective well-being (see Figure 2 below).

Figure 2 Typology of Welfare Positions

Objective Living Conditions	Subjective Well-Being	
	Bad	Good
Bad	Deprivation	Adaptation
Good	Dissonance	Well-Being

Source: Adapted based on Zapf 1984, p. 25 (as cited in (Berger-Schmitt & Noll, 2000, p. 11)

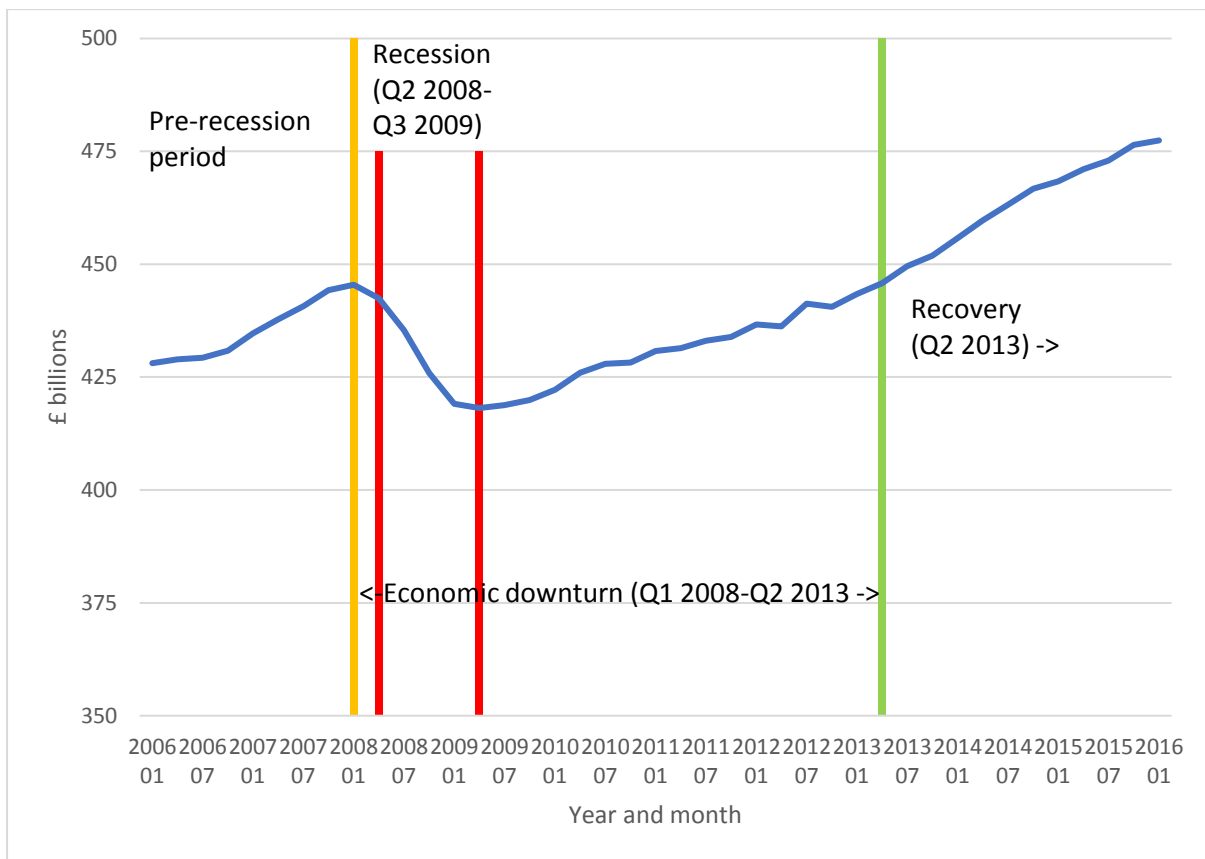
Using Zapf’s original terminology, the constellation of good living conditions and high subjective well-being is called well-being. The combination of good living conditions and low subjective well-being is denoted as dissonance. Poor living conditions coinciding with low subjective well-being represents a situation of deprivation. Finally, poor living conditions but nevertheless high subjective well-being is described as adaptation (Zapf 1984, p. 25-26, as cited in (Berger-Schmitt & Noll, 2000, p. 11).

UK recession, economic downturn and recovery: a timeline

Since 1992, the size of the UK economy, measured by adding up the value of all the goods and services produced in the country, had been getting bigger every quarter. But in April to June 2008, it began to fall. The economy kept getting smaller for five successive quarters. Two or more consecutive quarters of falling gross domestic product (GDP) is commonly called a recession (Office for National Statistics, 2018f). Following six consecutive quarters of negative growth, the UK economy finally moved out of recession in the last quarter of 2009. The economy had moved into technical recession in the third quarter of 2008 as GDP fell for a second successive quarter. At the height of the recession, GDP fell by 2.6% in a single quarter (Q1 2009) – the same percentage by which the economy expanded during the whole of 2007 (House of Commons Library, 2011, p. 29). Having shrunk by more than 6% between the first quarter of 2008 and the second quarter of 2009, the UK economy took five years to get back to the size it was before the recession (Office for National Statistics, 2018f).

Figure 3 below shows how UK GDP data aligns with the recession terminology used in this report. The pre-recession period refers to the period Q4 2006 thru Q2 2008 is covered by FRS 2006/07 and 2007/08 data. The period of the recession or recessionary period refers to the period following the second quarter of UK GDP decline in Q2 2008 through until Q4 2009 (this period is fully covered by FRS and USoc data, but not PSE data). The economic downturn refers to the period from the start of the UK GDP decline in Q1 2008 thru Q2 2013. For purposes of this research project, we align FRS 2008/09 thru 2012/13 data, PSE 2011/12 point in time data with the economic downturn, and USoc 2010 thru 2012 data with the economic downturn. The recovery period refers to the period commencing in Q2 2013 and is covered by FRS 2012/13 thru 2015/16 data and by USoc 2013 thru 2016 data (PSE2012 data is not available for the recovery period). The recovery period also denotes the period when UK GDP returned to pre-recession levels.

Figure 3 UK gross domestic product (GDP) and key timelines/periods used in this report



Source: Office for National Statistics, 2018f

Goals and Aims of the project

The overall goal of this research was to provide greater understanding of the relationship between objective and subjective indicators of living standards and how these have changed for different groups over the recessionary period in the UK. The project sought to inform measurement and influence policy and public debate on living standards drawing on the work by Patsios, Pomati & Hillyard (2018).

The three aims of this research were to:

- 1) Produce descriptive baseline findings on the extent to which there are disparities in objective and subjective levels of resources amongst different groups in society and how these have changed over the recessionary period;
- 2) Analyse how subjective indicators vary according to relevant objective indicators. This is important to show their validity in tracking living standards and inequalities over time and across groups; and
- 3) Explore how different family groups over-estimate (i.e. adapt to) low levels of resources and how other under-estimate high levels of resources (i.e. dissonance).

How the research adds to existing work?

First, this project adds to the work of former LSE CASE (Hills J. , Cunliffe, Gambaro, & Obolenskaya, 2013; Hills J. , Cunliffe, Obolenskaya, & Karagiannaki, 2015; Lupton, et al., 2015; Vizard, et al., 2015), whose research looked at how ‘economic outcomes’ (e.g. distribution of household income/household net incomes, educational qualifications, adult qualifications, employment, hourly wages and weekly earnings and wealth) *changed* for different groups by adding measures/indicators of ‘social outcomes’ (e.g. levels of social and political participation, unpaid work and caring, contact with social networks, quality of paid employment, satisfaction with day-to-day activities, social and political engagement) for different groups (e.g. young adults, pensioners) over the recession. We examined the extent to which there were any associations between economic and social outcomes over the recession and whether they affected some groups more than others. This allowed us to confirm who whether the economic and social ‘winners and losers’ were one in the same. In short, the project aimed to build on LSE CASE work by including additional resource and outcome domains (e.g. personal and social resources such as financial and other types of help from family and friends, finances and debts, physical and mental health).

Second, the project adds to the Institute for Fiscal Studies’ (IFS) work on living standards in the UK (Cribb J. , Hood, Joyce, & Norris Keiller, 2017; Cribb, Norris Keiller, Waters, & Tom, 2018; Belfield, Cribb, Hood, & Joyce, 2016), the New Policy Institute’s (NPI) indicators for monitoring poverty and social exclusion (MacInnes, Tinson, Hughes, Barry Born, & Aldridge, 2015; Tinson, et al., 2016), and the Joseph Rowntree Foundation’s new UK Poverty report series (JRF Analysis Unit, 2017), by including a range of additional ‘subjective’ indicators (e.g. subjective poverty, extent to which poverty affects health/health affects poverty, stress resulting from time demands). For example, the IFS uses income (HBAI) as a key ‘objective’ indicator of actual (or potential) material and economic well-being and uses only one subjective indicator (financial burden). We built on this by using the same datasets (Family Resources Survey (FRS)/Households Below Average Income (HBAI) alongside other datasets (i.e. 2012 Poverty and Social Exclusion UK Survey, Waves 1-7 of Understanding Society (USoc) with an expanded set of objective and subjective indicators. The research also builds

on the work on living standards carried out by the Resolution Foundation on improving outcomes for low to middle income households over the course of the recession (Corlett, Finch, & Whittaker, 2016), but also expands on their work to include households at the higher end of the income spectrum. Taken together, this allowed to show whether groups with higher levels of objective resources also have higher levels of subjective assessments of those resources and how this changed over the recession.

Third, the research sought to bring further clarity to the debate about living standards and the life-course (Esping-Andersen, 2000), which stresses that individual welfare and living standards are meaningful only in the context of people's life course and overall life chances. This perspective highlights the importance of the life course dynamics in understanding the relationship between objective resources and subjective assessments of these resources. Our focus on family life-course types should contribute to the government Life Chances indicators, which aim to map out differences in child's environment besides income, as well as understanding the full scale of inequalities of resources available to parents (Dermott & Pomati, 2015). Our research shows there are clear differences in both objective and subjective resources and that by and large our resources indicators can be used to obtain a more nuanced picture of these differences over the life course.

Fourth, the project produced family life-course group estimates , which can help to contextualise societal progress identified through work on national (macro-level) indicators such as those collected since 2011/12 by [ONS' Measuring National Well-Being](#) programme (Office for National Statistics, 2018e; Office for National Statistics, 2015a) and those produced since Dec 2014 on [Economic Well-being](#) (Office for National Statistics, 2014a). In our work, we advanced the understanding of the overlap between objective and subjective indicators by first selecting valid and reliable indicators and then analysing how objective indicators influence subjective ones. More validation and analysis at the individual and household level of the overlap between objective and subjective indicators needs to be undertaken so that we can establish for whom things have gotten "better" or "worse".

Section 2: Methodology

Identification of multidimensional indicators of living standards

A cross-walk of potential measures and indicators available in ten years of Family Resources Survey (FRS) data (2006/07 thru 2015/16) and seven years of Understanding Society – The UK Household Longitudinal Study (USoc) data (2009-11 thru 2014-2016) were harmonised and merged using our conceptual framework as a guide (Patsios, Pomati, & Hillyard, 2018).

Table 1 provides an overview of the key domains and dimensions used in the living standards analysis. Table A 2 in Appendix A expands on this table to show the range of candidate objective and measures and indicators available for the analysis in this project.

Table 1 PSE2012 Conceptual framework of LS: Domains and Dimensions

Domain / Dimension	Domain / Dimension	Domain / Dimension
<i>(A) What We Have</i>	<i>(B) What We Do</i>	<i>(C) Where We Live</i>
1. Economic resources	6. Paid and unpaid work	9. Housing and accommodation
2. Material goods	7. Social and political participation	10. Local area/Neighbourhood
3. Financial situation	8. Social relations and integration	11. Local services
4. Personal and social resources		
5. Physical and mental health		

Source: Adapted from Patsios, Pomati and Hillyard (2018) 'Living Standards in the UK'. In Glen Bramley; Nick Bailey (eds.) *Poverty and Social Exclusion in the UK: Volume 2 - The dimensions of disadvantage*. Bristol: Policy Press.

Surveys and sample sizes

Table 2 below provides a summary of the surveys and datasets used in the analysis, from which a range of key objective and subjective indicators of living standards were selected and harmonised to make them comparable across surveys. Table A 3 in Appendix A provides information on the surveys used to locate the variables needed for the harmonisation, validation and analysis.

Table A 4, Table A 5, and Table A 6 in Appendix A provide the unweighted and weight sample sizes for PSE, FRS and USoc surveys used in the analysis.

Table 2 Summary of key information available in cross-sectional and longitudinal surveys

Survey	Reference Dataset: PSEUK 2011-12 + FRS/HBAI 2010-11 (PSE_FRS)	Family Resources Survey (FRS) /HBAI	Understanding Society (USoc)
Years (Waves)	2011-12 (PSEUK) * 2010-11 (FRS/HBAI)	2006-07 thru 2015-16	2009-10 thru 2015-16 (Waves 1-7)
Time dimensions	Cross-sectional	Repeated cross- sectional	Longitudinal/panel/ cohort
Unit of analysis	Individuals Households	Individuals Households	Individuals (16+) Households

Sample size	* Sub-sample of FRS: 5k+ households 12k+ individuals 8k+ adults	25k+ households 29k+ families 44k+ adults	40k+ households 100k+ individuals
Sampling design	Multi-stage stratified random sample	Multi-stage stratified random sample	Multi-stage stratified random sample
Weighting	Used	Used	Used

Note: All surveys summarised with the exception of the Reference Dataset, which is held as part of the PSEUK2012 study, were downloaded from the [UK Data Service](#).

Selection of indicators

An initial set of candidate indicators for each dimension were identified using our conceptual model as a guide (see Table A 2 in Appendix A). Confirmation of the final set of measures and indicators was also based on a review of literature on key trends on the impact of the recession on different family life-course types (e.g. single pensioners, single adults of working age) (see *Key trends in multidimensional indicators of living standards used in this report*) and a validation exercise, which is described in further detail below.

Validation

Following harmonisation of the key measures/indicators in PSE, FRS and USoc surveys, a validation exercise was carried out on PSE, FRS and USoc candidate measures and indicators. We focused on construct validity in particular, by checking that each harmonised living standard variable shows the expected association with variables that are known to be associated with that particular aspect of living standards. Table B 1, Table B 2, and Table B 3 in Appendix B show how the PSE data was validated by looking at the association between each of the chosen candidate measure and the relevant validators. For the PSE, Satisfaction with standard of living, Social Class (3 categories), Equivalised Net Income, General Household Questionnaire, Happiness (ONS measure), Social Support, and Lack of obstacles to participating in social activities were used as validators.

Three validators were used for each of FRS 2014/15 and USoc 2014-15 surveys:

FRS 2014/15

- “Whether household is able to make ends meet” - Subjective ordinal measure with following response categories: 1 With great difficulty; 2 With difficulty; 3 With some difficulty; 4 Fairly easily; 5 Easily; 6 Very easily.
- National Statistics Socio-economic Classification (NS-SEC) - Three analytic class version with the following categories: Routine, Intermediate, and Management & Professional; and,
- Households Below Average Income (HBAI) FRS extended - net income for the household, which was ranked into quintiles.

USoc 2014-15

- “How well would you say you/yourself are managing financially these days?” - subjective ordinal measure with the following response categories: 1 Living comfortably; 2 Doing alright; 3 Just about getting by; 4 Finding it quite difficult; 5 or finding it very difficult. Variable has been reverse coded as follows for

purposes of validation: 1 Finding it very difficult; 2 Finding it quite difficult; 3 Just about getting by; 4 Doing alright; 5 Living comfortably.

- National Statistics Socio-economic Classification (NS-SEC) - Three analytic class version with the following categories: Routine, Intermediate, and Management & Professional; and,
- Total household net income - no deductions, which was ranked into quintiles.

Only those that showed some level of association with at least two of the validators were deemed valid and therefore selected for further analysis. This led to the following set of validated candidate measures.

PSE 2012

- What We Have - validation suggests keeping 21 out of 35 measures/indicators
- What We Do - validation suggests keeping 18 out of 20 measures/indicators
- Where We Live - validation suggests keeping 16 out of 21 measures/indicators

FRS 2014/15

- What We Have - validation suggests keeping 52 out of 63 measures/indicators
- What We Do - validation suggests keeping 17 out of 39 measures/indicators
- Where We Live - validation suggests keeping 24 out of 28 measures/indicators

USoc 2014-15

- What We Have - validation suggests keeping 49 out of 51 measures/indicators
- What We Do - validation suggests keeping 34 out of 56 measures/indicators
- Where We Live - validation suggests keeping 36 out of 49 measures/indicators

Measures of What We Have, What We Do and Where We Live

A) What We Have (Personal Resources)

The main purpose of this report was to explore at the variation in personal resources over the recessionary period and to determine how much of the variation in subjective assessment of one's resources was explained by socio-demographic characteristics, family life-course type, critical life events, What We Do and Where We Live. We therefore focused on measures of What We Have for which we had a clear objective and subjective counterpart. Table 3 shows the result of this selection across the three datasets.

Table 3 Final set of measures of resources (What We Have)

OBJECTIVE	SUBJECTIVE
Household net income After Housing Costs (PSE)	Subjective Relative Income (PSE) *
Household net income Before Housing Costs (USoc)	Satisfaction with Income (USoc) +
Financial Fluidity (PSE, FRS) *	Satisfaction with Financial Situation (USoc) +
General Health Questionnaire (PSE, USoc) *	Satisfaction with Life (PSE, USoc) +

Note: * latent score, + standardised Likert scale

Scoring and transformations

Apart from income, all other indicators in Table 3 were derived from non-monetary responses to survey questions. When dealing with indicators made of one single Likert-type scale variable (e.g. a question on satisfaction with income) we use standardised scores (also known as z-scores) and when dealing with indicators made up of several variables (the General Health Questionnaire, Financial Fluidity and Subjective Relative Income) we use Item Response Theory latent scores: both standardised and IRT latent scores range between -3 and 3 s.d. with 0 as the average. Both scores therefore represent deviations from the mean. The main advantage of using Item Response Theory latent scores (as opposed for example to standardised sums) is that information of widely different metric (e.g. ordinal, binary) is translated into a score that ranges mostly between -3 and + 3 standard deviations and that is also much more normally distributed than a standardised sum score and that is therefore more suitable to statistical modelling. Further details on the latent score measures are available in Appendix C.

Below, details are provided of each objective and subjective indicators of resources (What We Have) in Table 3 as well as the other variables used in the analysis.

Weekly net income

Household net (disposable) income Before Housing Costs was chosen over income after housing costs because of data availability and comparability. Understanding Society lacks information on income After Housing Costs (AHC) for approximately 15% of its cases as a result of missing housing cost information HBAI (Department for Work and Pensions, 2017b). Moreover, there are clear differences between the calculation of housing costs between USoc and FRS/HBAI (Department for Work and Pensions, 2017b). Income in all three datasets used in this report was equalised using Modified OECD equalisation weights to take into account family size and adjusted for CPI inflation (amount shown is in 2006 UK Sterling). Because we see housing costs as playing an important role in explaining subjective understandings of resources we have used Income After Housing Costs in Stage 2 and 3, which explore the relationship between objective resources and subjective assessments.

Financial fluidity

The measure of financial fluidity is a latent score which incorporates information about debt (whether households were behind with Council Tax, electricity bill, gas bill, other fuel bills like coal or oil, water rates, telephone bill, television / video rental or HP, other HP payments and amount of savings (in £). In the PSE this variable also incorporated questions on economising (whether respondents had undertaken any of these measures in the last 12 months to help them keep their living costs down: Skimped on food yourself so that others in the household would have enough to eat; Bought second hand clothes for yourself instead of new; Continued wearing clothes/shoes that had worn out instead of replacing them; Cut back on visits to hairdresser/barber; Postponed visits to the dentist; Spent less on hobbies than you would like; Gone without or cut back on social visits, going to the pub or eating out; Cut back on or cancelled pension contributions) and whether there had been times during the last 12 months when they had to borrow from any one of a number of sources in order to pay for their day-to-day needs (Pawnbroker (e.g. Albemarle & Bond or Cash Converters, Money lender (e.g. payday loans, doorstep, Money Shop, Provident), Unlicensed lender (e.g. loan shark), Social Fund loan, Credit Union, Friend(s), Family.

Subjective relative income

The measure of subjective relative income incorporates information on three PSE2012 questions:

- 1) “Do you think you could genuinely say you are poor now..?” There were three possible responses: 1. All the time; 2. Sometimes; 3. Never.
- 2) Respondents were also asked to choose an amount below which households would be in poverty and they were then asked “How far above or below that level would you say your household is?” with the following options given: 1. A lot above that level of income; 2. A little above; 3. About the same; 4. A little below; 5. A lot below that level of income.
- 3) “Generally, how would you rate your standard of living?” There were 5 possible responses: 1. Well above average 2. Above average 3. Average 4. Below average 5. Well below average

Questions 1 and 3 were asked to all adults, whereas question 2 was asked to the household respondent (and the response was allocated to all adults within the household).

Satisfaction with income

Our subjective measure of satisfaction with income comes from USoc, where respondents were asked to choose a number which they feel describes how dissatisfied or satisfied they are with their income. Responses were on a seven-point Likert-type scale ranging from 1. completely dissatisfied to 7. completely satisfied.

Satisfaction with financial situation

Our measure of satisfaction with financial situation draws on USoc, which asked respondents how well they would say they are managing financially these days. Responses were on a five-point Likert-type scale: 1. Living comfortably; 2. Doing alright; 3. Just about getting by; 4. Finding it quite difficult; and, 5. Finding it very difficult.

Mental health

Our measure of objective mental health is based on the widely-used General Health Questionnaire (GHQ-12 item version), which is found in PSE 2012 and all years of USoc (but not FRS). The scale asks whether the respondent has experienced the following symptoms or behaviours: able to concentrate on whatever doing; recently lost much sleep over worry; felt playing a useful part in things; felt capable of making decision about things; felt constantly under strain; recently felt couldn't overcome difficulties; able to enjoy normal day-to-day activities; able to face up to problems; been feeling unhappy and depressed; recently losing confidence in oneself; recently thinking of oneself as a worthless person; feeling reasonably happy. Each item is rated on a four-point scale, and although differing from question to question usually takes the following form: More so than usual; Same as usual; Less so than usual; Much less than usual or Not at all; No more than usual; Rather more than usual; Much more than usual. We used the bi-modal scoring method (0-0-1-1). A score of four or more has been shown to indicate that the individual has symptoms of mild to moderate illness such as anxiety or depression. A high score on the GHQ indicates that the respondent may have a mild to moderate mental illness (Golderberg & Williams, 1988).

Satisfaction with life

Our measure of satisfaction with life in the PSE is based on ONS' personal well-being question on how satisfied respondents are with life nowadays. Respondents were asked to

give a number from 0 to 10 which best reflects how satisfied they are (0 being completely dissatisfied and 10 being completely satisfied). USoc also asked respondents about their satisfaction with life overall, but uses different response categories (seven-point Likert-type scale, ranging from 1. completely dissatisfied to 7. completely satisfied).

B) What We Do

For the purposes of explaining variation in subjective assessment of objective resources, a set of objective measures, which capture people’s involvement in work and society were used. Table 4 shows the result of this selection across the three datasets.

Table 4 Final set of measures of engagement (What We Do)

OBJECTIVE
Paid and unpaid work (including unpaid care) (PSE/USoc)
Civic engagement (PSE/USoc)
Political engagement (PSE)
Social networks (PSE/USoc)
Time pressure (PSE)

Below, details are provided of each objective and subjective indicators of engagement (What We Do) used in the analysis.

Paid and unpaid work (including unpaid care)

For the PSE and USoc, we used information on employment status, total number of hours worked in all jobs as well as total number of hours involved in unpaid childcare and unpaid adult care, and whether or not the respondent is involved in voluntary work or charitable activity.

Civic engagement

For the PSE and USoc, information is available on whether respondents participate in any of these organisations: sports club, social club; health, disability or welfare group; conservation or animal welfare group; humanitarian or peace group; trade union or staff association; minority ethnic organisation scouts/guides organisation; pensioners group/organisation; environmental group; political party; tenants/residents group or neighbourhood; religious group or church organisation; women’s group/feminist organisation; women’s institute/townswomen’s guilds; parents/school association; voluntary services group, professional organisation; other group or organisation; or, other community or civic group. Information from each of these binary items was collapsed into a scale using Item Response Theory although the analysis was also repeated by using the simple sum of all the individual variables and revealed similar results.

Political engagement

For the PSE, information is available on political involvement, such as whether or not the respondent is involved in voluntary work or charitable activity and whether they contacted a local councillor or MP, attended a public meeting, taken part in a demonstration or protest, in a strike or picket or an online campaign, signed a petition (in person or online), boycotted certain products for political or ethical reasons, been an officer of a campaigning organisation or pressure group and whether they voted in the last General Election. Both individual items and simple sum of all the variables revealed similar results.

Social networks

For the PSE, information is available on how often and how many friends and relatives respondents see. In USoc, limited information was available on contact with social networks, specifically whether they go out socially or visit friends when you feel like it or not.

Time pressure

In the PSE, a measure of “time crunch” was also available. This is a sum score of ten statements with which respondents are asked to agree or disagree: I plan to slow down in the coming year; I consider myself a workaholic; When I need more time, I tend to cut back on my sleep; At the end of the day, I often feel that I have not accomplished what I set out to do; I worry that I don't spend enough time with my family and friends; I feel that I'm constantly under stress trying to accomplish more than I can handle; I feel trapped in a daily routine; I feel that I just don't have time for fun anymore; I often feel under stress when I don't have enough time; I would like to spend more time alone). For more details on this scale, see Frederick (1995) and Zukewich (1998).

C) Where We Live

For the purposes of explaining variation in subjective assessment of objective resources, a set of objective measures to capture people's housing and local area circumstances. Table 5 shows the result of this selection across the three datasets.

Table 5 Final set of measures of location (Where We Live)

OBJECTIVE
Housing and accommodation (general information) (PSE/USoc)
Problems with housing and accommodation (PSE)
Problems in local area (PSE/USoc)
Crime and personal safety in the area (PSE)
Public and Private service use (PSE)

Below, details are provided of each objective and subjective indicators of location (Where We Live) used in the analysis.

Housing and accommodation (general information)

For both PSE and USoc we used information on type of accommodation (whether the dwelling can be described as Whole house/bungalow, detached, Whole house/bungalow, semi-detached, Whole house/bungalow, terraced, Purpose-built flat or maisonette, Converted house/building, Caravan/Mobile home or Houseboat, Other), the number of bedrooms per person, and number of rooms per person.

Problems with housing and accommodation

PSE information was used on problems with housing and accommodation such as shortage of space, too dark, not enough light, heating faulty or difficult to control or regulate, heating system or radiators not sufficient, draughts, leaky roof, damp or mould (on walls, ceilings, floors, foundations, etc), rot in window frames or floors, problems with plumbing or drains, condensation, no place to sit outside (e.g. no terrace, balcony or garden), other problem with housing/accommodation. A latent IRT score was created from these measures

although the simple sum of these problems was also used to corroborate the findings. FRS provided relatively little information on housing and accommodation problems and USoc did not provide any information on this measure.

Problems in local area

We also used PSE information on problems in local problems (air pollution, lack of open public spaces, risk from traffic for pedestrians and cyclists, illegal parking (e.g. on pavements); joy riding; people being drunk or rowdy in the street/park, graffiti on walls and buildings; rubbish or litter lying around, dogs and dog or cat mess in this area; homes and gardens in bad condition; vandalism and deliberate damage to property; people using or dealing drugs; received insults or harassment in the local area). USoc includes information on noise from neighbours, drunks/tramps on street, graffiti on walls, rubbish on street, vandalism, racial insults/attacks, teenagers hanging about, cars stolen/broken into and people attacked on street. We used these variables on the presence or absence of these problems individually and as a latent IRT score.

Crime and personal safety

For the PSE, we used information on whether respondents had their home broken into and something stolen or they experienced being physically attacked by a stranger or acquaintance.

Service use

For the PSE, we also used information on whether respondents feel their local area facilities are adequate (libraries, public sports facilities, museums and galleries, evening classes, public or community village hall, Citizen's Advice Bureau or other advice services, pub, a doctor, a dentist, an optician, a post office, chemists, a corner shop, medium to large supermarkets banks and building societies). Individual variables and latent scores were used. Understanding society contains information on services but unfortunately this was only asked to a small subset of the sample, so was not included in the analysis.

D) Other key variables used in the analysis

Socio-demographic characteristics

We used the following socio-demographic characteristics in the analysis:

Sex - Available in all three surveys: main gender categories of female and male were used.

Age - All adults 18 years of age or older were included in analysis of PSE data, whereas those 16 years of age or older were used in FRS (top-coded at 80 years of age) and USoc analysis (not top-coded).

Ethnic group - The ethnic group of respondents was harmonised across surveys and then recoded into five main categories: White, Mixed/ Multiple ethnic groups, Asian/ Asian British, Black/ African/Caribbean/ Black British, and other ethnic group.

Number of dependent children - We used number of dependent children living in the benefit unit/household for purposes of the analysis.

Education - Highest level of education was harmonised across surveys and then recoded into the four following (ordinal) variable: Below A-levels, A-Levels or higher, and Degree level or higher.

Employment status - The employment status of all adults in the household was harmonised across surveys and then recoded (where necessary) into the following categories: self-employed, in paid employment (full or part-time), unemployed, retired, looking after family/home, student, long-term sick or disabled, and other inactive.

Social class - The National Statistics Socio-economic classification (NS-SEC) Analytic classes (8-class version³) were harmonised across surveys and reverse coded into the three following analytic classes categories: Routine, Intermediate, and Management & professional.

Physical health

For purposes of the analyses, the objective measure of physical health was the presence of any longstanding illness or disability, which is found in all surveys and years.

Satisfaction with health

Our measure of subjective satisfaction with health is taken from USoc, where respondents were asked to choose a number which they feel describes how dissatisfied or satisfied they are with their health. Responses were on a seven-point Likert-type scale ranging from 1. completely dissatisfied to 7. Completely satisfied.

Material deprivation

Poverty may be measured in other ways besides having a low (relative) household income. Another approach is to consider if a household is materially deprived (the consequence of low levels of resources), meaning they lack the ability to afford key goods or services. According to the OECD (2017), “material deprivation refers to the inability of individuals or households to afford those consumption goods and activities that are typical in a society at a given point in time, irrespective of people’s preferences with respect to these items”. While most quantitative research on economic living standards uses income (in some way) to distinguish the income poor, the reliance solely on income to measure poverty has been questioned because it is considered by many to be an indirect measure of poverty (Ringen, 1988). In short, there is increased awareness of the limitations of using income as the key or sole measure of economic living standards. This has been reflected in a focus on the role which non-monetary measures of deprivation can play in capturing and understanding poverty and exclusion both in the UK and the European Union (EU). Material deprivation has now been used by a range of studies and by the European Union to monitor poverty trends (Fusco, Guio, & Marlier, 2013; Guio, Gordon, & Marlier, 2012; Guio A.-C. , Gordon, Najera, & Pomati, 2017).

Adult (consumption) items and household goods

For the purposes of this study we used information on adult (PSE and USoc) and benefit unit (FRS) deprivation items. The items used in the PSE2012 survey are listed in Table 6 below.

³ NS-SEC Analytic classes: 1. Higher managerial, administrative and professional occupations (1.1 Large employers and higher managerial and administrative occupations, 1.2 Higher professional occupations), 2. Lower managerial, administrative and professional occupations, 3. Intermediate occupations, 4. Small employers and own account workers, 5. Lower supervisory and technical occupations, 6. Semi-routine occupations. 7. Routine occupations, 8. Never worked and long-term unemployed. More information on NS-SEC available at:

<https://www.ons.gov.uk/methodology/classificationsandstandards/otherclassifications/thenationalstatisticsocioeconomicclassificationnssecrebasedonsoc2010>

Table 6 Summary of adult/household items available in the PSE2012 survey

Material deprivation: Adult level	Material deprivation: Household level
Enough money to keep your home in a decent state of decoration	Car
Enough money to replace any worn out furniture	Washing machine
Enough money to replace or repair broken electrical goods such as refrigerator or washing machine	Damp-free home
A small amount of money to spend each week on yourself, not on your family	Television
Two pairs of all-weather shoes	Telephone at home (landline or mobile)
Regular savings (of at least £20 a month) for rainy days	Home computer
A warm waterproof coat	Internet connection at home
Replace worn out clothes with new (not second hand) ones	Household contents insurance
A roast joint (or vegetarian equivalent) once a week	Curtains or window blinds
Presents for friends or family once a year	A table, with chairs, at which all the family can eat
Mobile phone	Dishwasher
Meat, fish or vegetarian equivalent every other day	A second car or other vehicle (NOT motorcycle)
Heating to keep home adequately warm	A second bathroom (with shower or bath)
Two meals a day	Pay TV (eg. Sky, Virgin, etc.)
Hair done or cut regularly	Home security (burglar alarm) system
Fresh fruit and vegetables every day	A spare bedroom
An outfit to wear for social or family occasions such as parties and weddings	A second home
Appropriate clothes to wear for job interviews	High Definition Plasma or LCD TV
All recommended dental work/treatment	
Regular payments into an occupational or private pension	
Private health insurance	

FRS and USoc also contain material deprivation indicators at either household/benefit level or individual level on: having enough money to keep your home in a decent state of decoration; replace any worn out furniture and broken electrical goods such as refrigerator or washing machine; a small amount of money to spend each week on yourself (not on your family); two pairs of all-weather shoes; regular savings (of at least £20 a month) for rainy days; replace worn out clothes with new (not second hand) ones; a roast joint (or vegetarian equivalent) once a week; presents for friends or family once a year; meat, fish or vegetarian equivalent every other day; heating to keep home adequately warm; fresh fruit and vegetables every day; all recommended dental work/treatment; regular payments into an occupational or private pension; car; washing machine; damp-free home; television; telephone at home (landline or mobile); home computer; internet connection at home; household contents insurance; dishwasher; a second car or other vehicle (not motorcycle); pay tv (eg. Sky, Virgin, etc.); home security (burglar alarm) system.

Adult participation in common social activities

For the purposes of this study we used information on adult (PSE and USoc) and benefit unit (FRS) activities. The social activities covered in the PSE2012 survey are listed in Table 7 below. The table also indicates in parentheses where similar measures are found in FRS/USoc. As these social activities are covered under the general category of material deprivation, these are not presented as separate measures of engagement in the analyses.

Table 7 Summary of adult activities available in the PSE2012 survey

Common social activities
A hobby or leisure activity (FRS/US)
A holiday away from home for one week a year, not staying with relatives (FRS/US)
Friends or family round for a meal or drink at least once a month (FRS/US)
Going out socially once a fortnight
Celebrations on special occasions such as Christmas
A meal out once a month
Holidays abroad once a year
Visits to friends or family in other parts of the country 4 times a year
Going out for a drink once a fortnight
Attending weddings, funerals and other such occasions
Visiting friends or family in hospital or other institutions
Attending church, mosque, synagogue or other places of worship (USoc)
Going to the cinema, theatre or music event once a month (USoc)
Taking part in sport/exercise activities or classes (USoc)

Scoring of material deprivation

In line with the literature on enforced lack (Mack & Lansley, 1985), all respondents were classified as deprived on a given item if they didn't have/do the item because they couldn't afford it, whereas those who had the item, didn't have the item but didn't want it/need it were classified as not deprived on that item.

Family Life-course types

The rationale for using family life-course groups was outlined above (see section above on *Key terms, definitions* and time periods used in the analysis and reporting of findings). In short, we took a close look at individuals in benefit units and allocated them a category based on a family life-course definition. Moreover, to make different households comparable only households with one benefit unit were analysed. In other words, the small minority of two or more benefit unit households were not the focus of this report. This was motivated by two main reasons. Firstly, we needed a comparable unit of analysis across the three datasets and from a family life-course perspective a single parent benefit unit living (in the same household) with a couple pensioner benefit unit is not comparable to a single parent household. Similarly, children over the age of 18 living with their parents who might be pensioners will be considered are not strictly comparable to single adult households. All households with more than one benefit unit were therefore recoded as multi-pensioner, multi-generational and other working age families.

Across all datasets we were able to correctly assign over 99.5% of adults into a family life-course type (see Table 8 below). There were a small number of adults we were not able to allocate into new family type due to missing or conflicting information on family status (e.g. number of benefit units in the household, benefit unit number, number of adults and

children in household, age of respondent and marital status). Therefore, the analyses according to family life-course types presented in this report do not include households that are multigenerational in nature (e.g. adult children living with their parents, multiple single adult, or multiple single parent households). The reason for not presenting results for these more complex and less explored households is to make the report in line with DWP HBAI reports, which generally use traditional benefit unit classifications. Taken together the six main family type categories account for 70% or more of adults living in households across all surveys.

Table 8 Percentage of adults in bespoke household family type in PSE, FRS and USoc surveys (unweighted)

	PSEUK 2012	FRS 2007-2016	USoc 2009-2016
	%	%	%
1-Single Pensioner	9.3	8.8	7.3
2-Single adult of working age	8.3	8.5	6.9
3-Pensioner couple (1 or 2 pensioners)	18.5	18.0	15.1
4-Working age Couple without children	14.5	16.2	12.2
5-Single parent of working age	5.2	4.1	4.1
6-Working age couple with children	23.4	21.8	22.5
7- Multi-pensioner, multi-generational and other working age families	19.0	22.2	31.5
Sub-Total	98.3	99.7	99.6
Missing (or not able to allocate)	1.7	0.3	0.4
Total % (Sample size)	100.0 (8,494)	100.0 (394,425)	100.0 (334,897)

Critical life events

The rationale for including critical life events in the analysis is provided in the section above on *Key terms, definitions and time periods used in the analysis and reporting of findings*.

In the PSE, respondents were asked whether a series of event had happened to them in the last 12 months, including: moved house; had a baby or adopted a child; left the parental home (including going to university); got divorced, separated or ended an intimate relationship; got married, entered into a civil partnership or started cohabiting; widowed; death of a close relative or friend; retired; lost or left your job (excluding retirement); started a new job; or had a major health problem.

In USoc, a series of separate questions were asked in the *Annual Events History Module*, which commenced in Wave 2, including whether respondents had moved and the reason(s) for the move, any change in marital status from the previous wave (and how their marital status had changed, e.g. they became single, married, civil partner etc), becoming a parent, change in employment status, and whether they had been diagnosed with any new health conditions.

Critical life events were harmonised across PSE and USoc datasets prior to use in the analysis.

Welfare types

Using Zapf's (1984) typology of welfare positions as a guide, we allocated respondents between those who have high levels of objective and subjective resources ('Higher') and low levels of objective and subjective resources ('Lower'). We define those who do not follow this pattern as 'Adaptive' (with low levels of objective resources yet high levels of satisfaction with these) and 'Dissonant' (with high levels of objective resources yet relatively low levels of satisfaction with these).

Three specific "objective-subjective counterpart" welfare types are used in this analysis:

- 1) Objective income measured using net weekly household and subjective relative income (ie. how far above/below an estimated income poverty threshold);
- 2) Objective income measured using net weekly household income and satisfaction with income measured on a seven-point Likert-type scale (ranging completely dissatisfied to complete satisfied); and
- 3) Objective mental health measured using the General Health Questionnaire (12-item version) and satisfaction with life measured on a seven-point Likert-type scale (ranging completely dissatisfied to complete satisfied).

Heat maps⁴ are used to present the analysis of welfare types across family life-course types.

Analysis

The analysis presented in this report consists of three stages. The main aim of the analysis is to validate our assumption that valid subjective indicators should show similar trends and cross-sectional variation to their objective counterpart because objective levels of resources are the most important drivers of subjective evaluations.

Stage 1 – Trend Analysis

In the first stage we examined changes and trends in the selected objective and subjective measures of personal resources (income, finances and health) (i) across time, (ii) for different family life-course types, and where data allows it, we also examined (iii) the bivariate cross-sectional association between objective and subjective counterpart. The aim was to explore whether objective and subjective trends displayed the same trends across time, family life-course types and individuals.

According to our conceptual framework one of the major sources of variation in subjective indicators should be its objective counterpart and these three analyses are our first attempt to confirm this hypothesis. The analysis also aims to present the first analysis of objective as well as subjective trends in personal resources (including household net income) according to family life-course types and explore their ability to reproduce known trends as well as present new trends in inter-generational inequalities.

Stage 2 – Variation in subjective measures

Having found a linear relationship between objective and subjective resources in Stage 1, we used linear regression analysis to further analyse the association between objective resources and subjective counterparts, focusing in particular on how much of the variation (Adjusted R²) in the subjective measures is explained by the objective counterpart but this

⁴ A heat map is a two-dimensional representation of data in which values are represented by colours. A simple heat map provides an immediate visual summary of information.

time controlling for a range of demographic characteristics such as sex, age but also employment status. We also explored whether critical life events and information and What We Do and Where We Live (see Methodology) helped explain any further variation once the objective counterpart and main demographic characteristics had been controlled for. Once again, the rationale was to explore how much of the variation in the subjective measure was attributable to the objective counterpart. Observing that a sizeable amount of variation in the subjective indicator was systematically attributable to non-related aspects of social participation and one's living environment (once objective personal resources are taken into account) would suggest that further work on the validity of these indicators needs to be undertaken before they are used for monitoring living standards.

In this analysis we also introduced the measure of material deprivation, in other words the enforced lack of common goods, activities and living conditions (see Methodology above for a full list) due to lack of resources. We use this to better measure the current level of objective economic resources of our respondents as material deprivation can better measure (the consequences of) previous income shocks and fluctuations. Information on both current annual income and material deprivation should therefore reflect a more informed picture of people's level of resources. It is however also arguable that there may be an overlap between material deprivation and indicators of Where We Live (housing deprivation) and What We Do (social activities deprivation) so that controlling for material deprivation may prevent us from detecting the influence of What We Do and Where We Live. We therefore present our models both with and without material deprivation.

Whenever possible we carried out the analysis on the PSE as this has the widest range of measures on material deprivation as well as Where We Live and What We Do. Moreover, as we needed data on objective and respective subjective measures for the same individuals we used the PSE to look at how much variation in Subjective Relative Income is explained by household net income, and how much variation in satisfaction with life is explained by objective mental health (GHQ) while we used USoc to do the same for Satisfaction with income and household net income.

Stage 3 – Distribution of welfare types across family life-course types

In the final set of analysis, we explore further the variation in our subjective measures by using the idea of welfare types. We split respondents into a fourfold classification: those who have high levels of objective and subjective resources ('Higher') and low levels of objective and subjective resources ('Lower'). We define those who do not follow this pattern as 'Adaptive' (with low levels of objective resources yet high levels of satisfaction with these) and 'Dissonant' (with high levels of objective resources yet relatively low levels of satisfaction with these). We define "higher" as above the mean and "lower" as below the mean for both objective and subjective indicators. The aim of this analysis is exploratory and aimed at shedding further light on the findings from Stage 2 but with a stronger focus on family life-course types. Given that we see objective resources are the main driver of the proposed subjective measures, we expect that once we control for the former the probability of each group of being in any of the four groups will be relatively similar.

Unit of measurement

The unit of analysis is the individual; household and benefit unit information has been assigned to each adult household member. Individuals less than 16 years of age are not included in the results.

Weighting

Cross-sectional person weights (re-based using sample size) were used in the analysis of FRS, PSE and USoc data.

Section 3: Findings

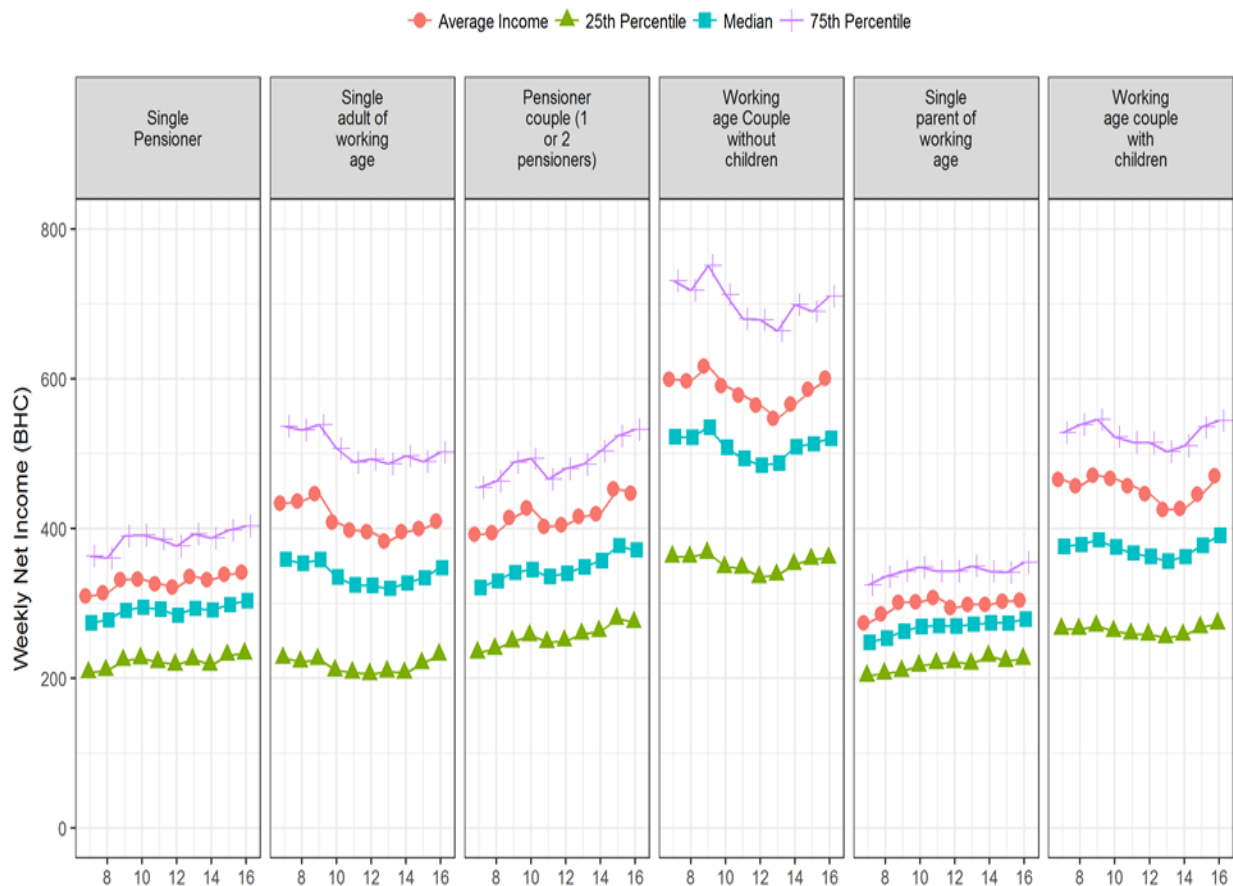
Stage 1) What happened to objective and subjective levels of resources over the recessionary period?

Income

Here, we explore the overall findings for each of the family life-course groups, so that we have a more detailed picture we can compare to our subjective income indicators. We do not look specifically at changes in social security income (either as amount or proportion of all income) as information on benefits after tax is not available in the FRS (Hick & Lanau, 2018) and as these life-course groups receive different combinations of taxable and non-taxable social security income it would be difficult to carry out a valid comparison. As such, we explore trends in household net income, which include private, social security and other sources of income.

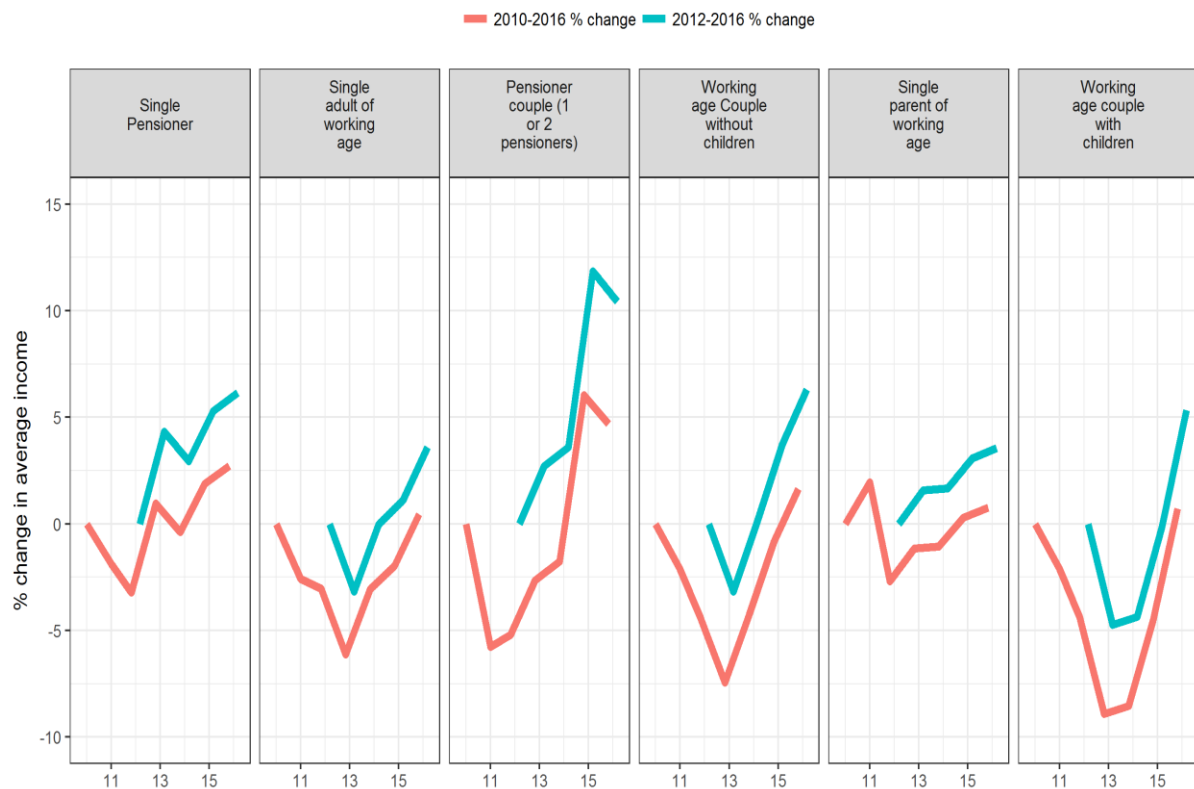
Figure 4 below shows trends in household net incomes for the different family life-course types (with incomes adjusted for inflation using April 2006 CPI). The clearest pattern in the changes in objective living standards is the persistently lower levels of income experienced by single parents of working age.

Figure 4 Changes in Weekly Net Income Before Housing Costs, CPI adjusted to 2006 (Source: Authors' calculations using FRS 2007-2016)



Moreover, we find that most family life-course types experienced a drop in incomes between 2010 and 2012 followed by an increase between 2013 and 2016 (the recovery), exemplified in the “tick” shape of average income trajectories for working age couples with and without children shown in the literature. This is represented below in Figure 5 in terms of percentage change for the different family life-course types.

Figure 5 Percentage changes in Weekly Net Income Before Housing Costs, CPI adjusted (Source: Authors’ calculations using FRS 2010-2016 and FRS 2012-2016)



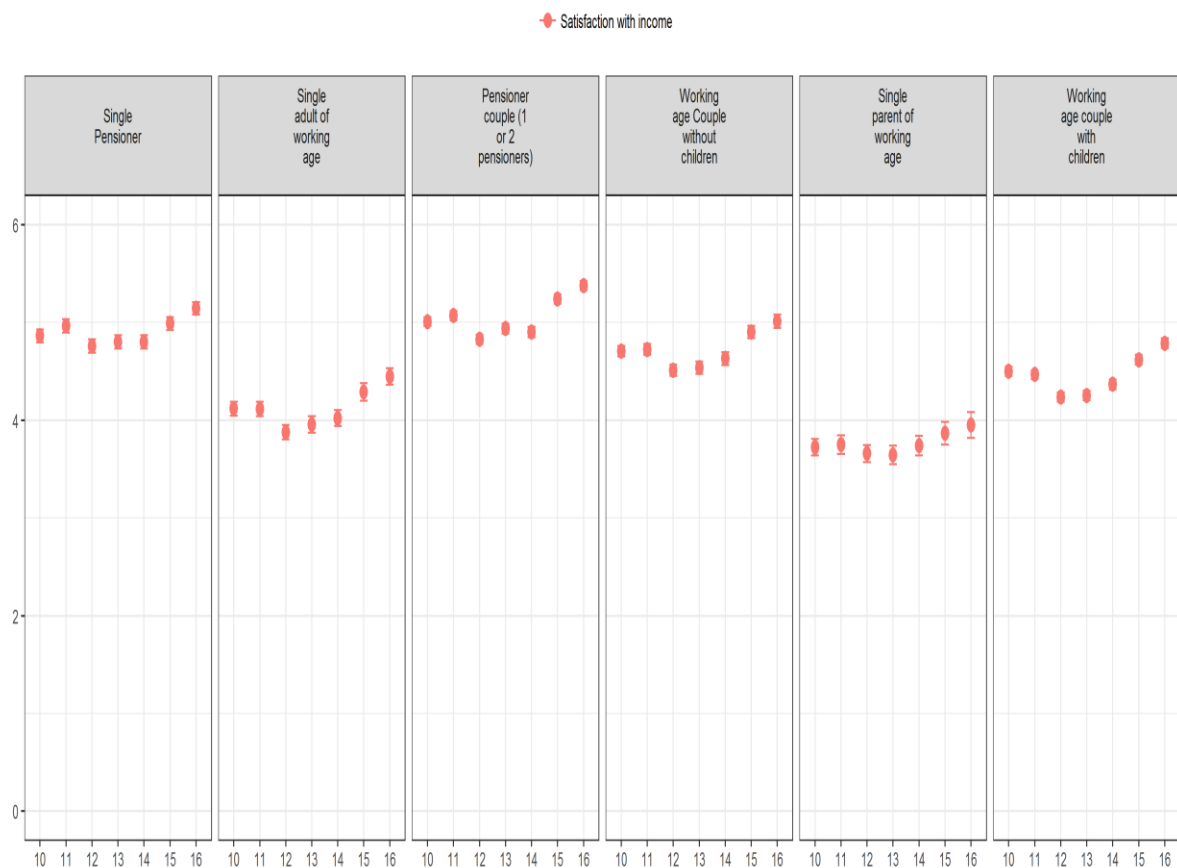
Going back to average income trends presented in Figure 4, these confirm that although both single and couple pensioners saw a decrease in incomes between 2010 and 2012, their incomes remained higher than the pre-recessionary levels, in contrast to other groups whose incomes dropped below their pre-recession levels. More specifically, single adults of working age, working age couple with and without children saw roughly a 5% decrease in their average incomes between 2007 and 2013, and as large as 8% for single adults. In contrast, pensioners and single parents experienced average income growth close to 5%. Most households then saw an increase in average incomes between 2013 and 2016 of roughly 5%, with the exception of pensioner couples who on top of not experiencing a dip in incomes between 2007 and 2013 also saw a growth in average incomes between 2013 and 2016 two times larger that of other groups (i.e. 10%). Because single adults of working age had seen a 2007-2013 drop larger than 5%, the increase of 5% experienced by most adults between 2013 and 2016 was not able to make up for the loss in average incomes, singling them out as the only group with an average income in 2016 below their pre-recession one. This narrative seems to have occurred across the distribution, as shown in the similar trends across, 25th and 75th percentiles, median and average incomes (see Figure 4 above).

Satisfaction with income and Subjective relative income

Here, we explore trends in satisfaction with income (our first subjective indicator of income). The 2010-2016 trajectories in Figure 5 look remarkably similar to the changes in satisfaction with one's income (the only subjective indicator of income satisfaction available for more than one year).

In Figure 6 below we present the average using the original metric for the sake of transparency (whereas we normally present standardised scores). A score of 5 signifies somewhat satisfied and ranges from 1 (completely dissatisfied) to 7 (completely satisfied). Although the data is not available for the period before the recession, it shows very clearly a consistent reversal of the drop in subjective satisfaction with income from 2013 onwards (the recovery). Figure 5 above looks remarkably similar to the changes in satisfaction with one's income (the only subjective indicator of income satisfaction available for more than one year).

Figure 6 Average levels of satisfaction with income (Source: Authors' calculations using USoc 2010-2016)

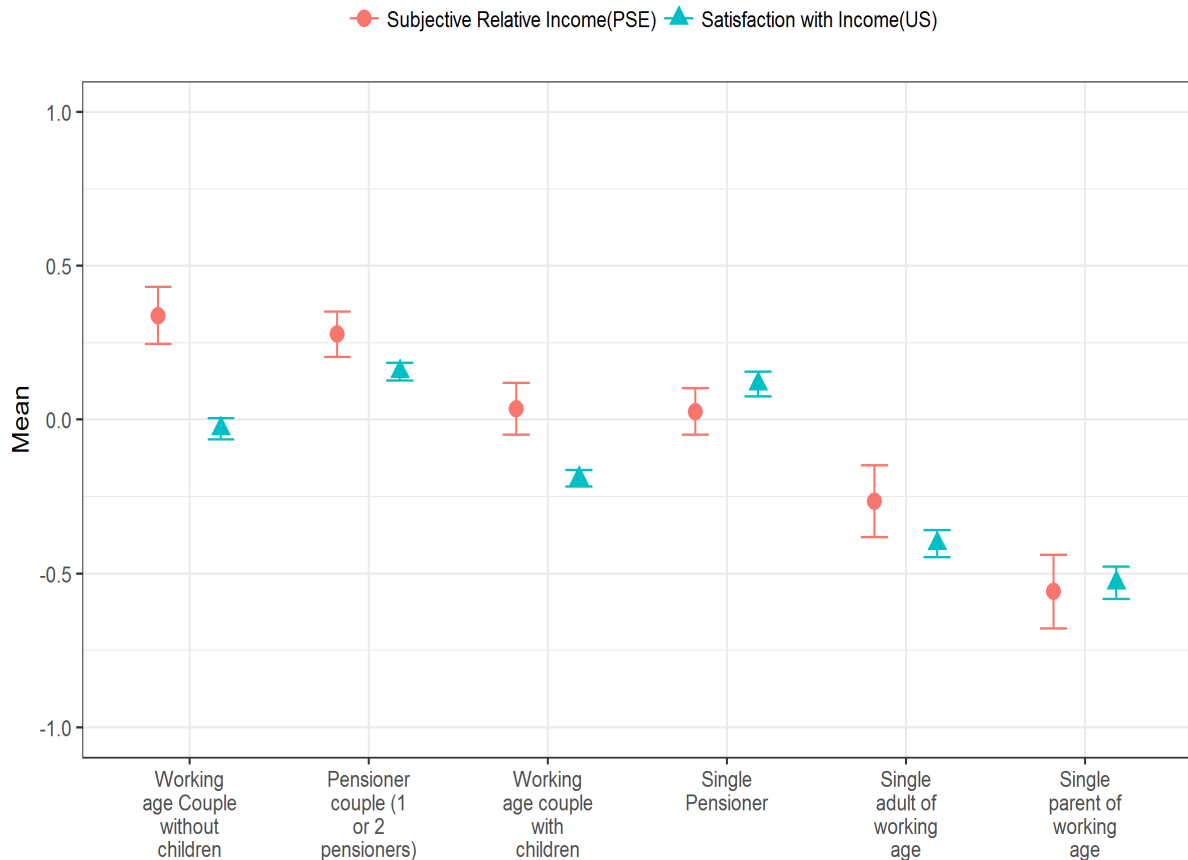


We also analysed a second subjective indicator of income available for the year 2012, which we name subjective relative income (see Methodology for more details). This also matches the position of different family types in the UK income distribution in 2012.

When we compared the two subjective indicators of income cross-sectionally in 2012 (using PSE and USoc), some similarities but also some differences emerged across family life-course types (see Figure 7 below). Single parents emerge as those with the lowest levels of

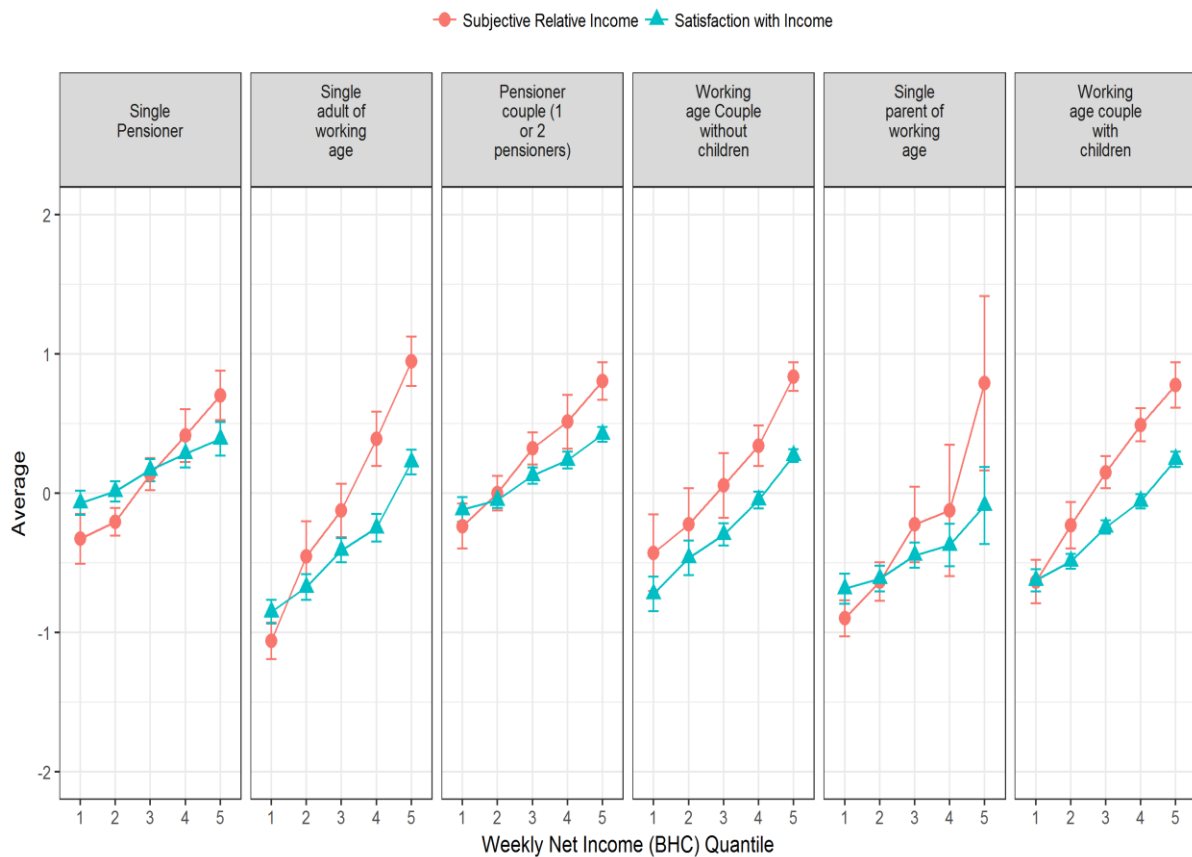
both subjective relative income and satisfaction with income, followed closely by single adults of working age. Pensioner couples show high levels according to both measures in 2012. The ranking for subjective relative income is slightly different, with for example working age couples without children having relatively higher levels than pensioner couples.

Figure 7 Average Subjective Relative income (PSE) and Satisfaction with income (USoc)
(Source: Authors' calculations using PSE 2012 and USoc 2012)



Both indicators display a relatively linear relationship with income quintile (see Figure 8 below), which confirms that these are valid indicators of economic resources, but as subjective relative income is only available for one year (2012) and as responses for the two indicators are not available for the same respondents, it is difficult to draw conclusions on the reasons behind the difference between these two indicators or in fact if/how they have evolved in different ways over the course of the recession.

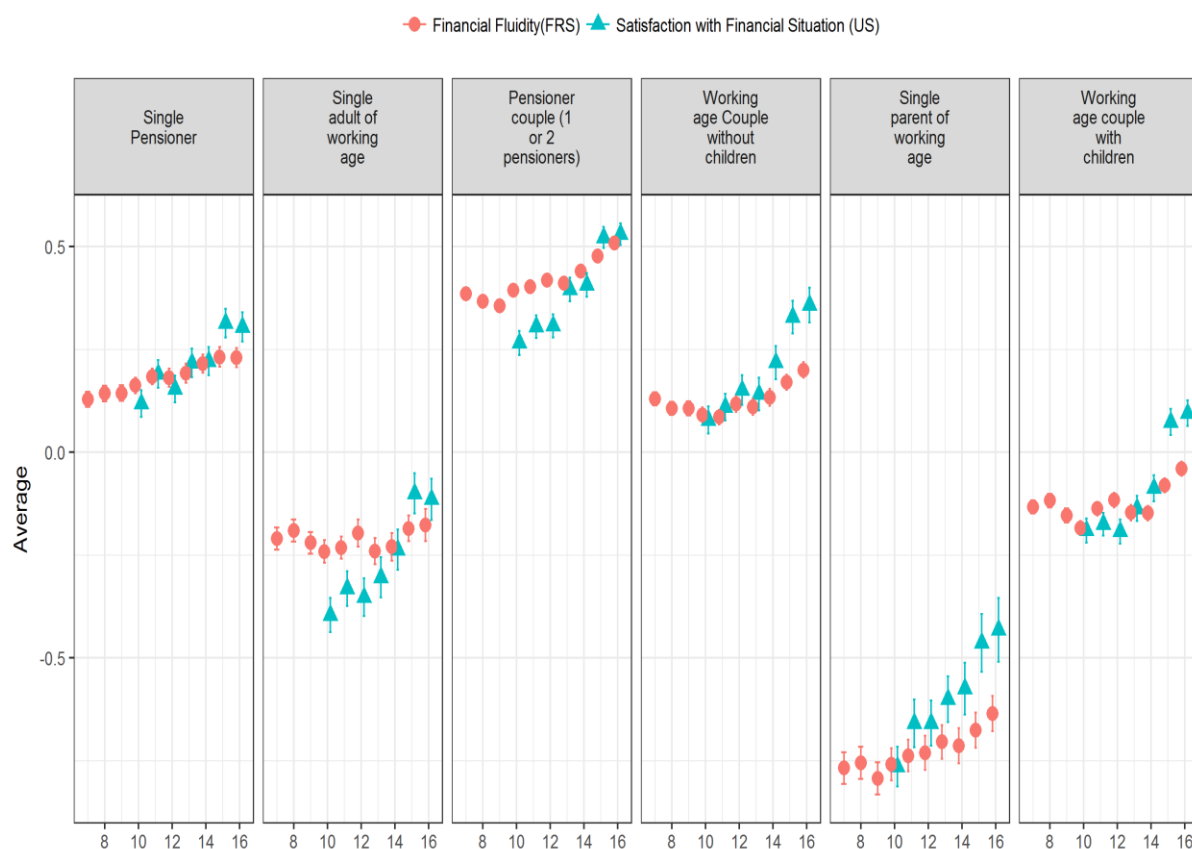
Figure 8 Average Subjective Relative income (PSE) and Satisfaction with Income (Understanding Society) by Income Quintile (Source: Authors' calculations using PSE 2012 and USoc 2012)



Financial Fluidity

For the purposes of this project we created a measure of Financial Fluidity, which measures savings and being behind on bills, both of which remained relatively stable during the economic downturn and then savings began to increase during the recovery period. This also matches the literature which finds a process of household debt deleveraging (in terms of the percentage of household debt to household disposable income), which began during the economic downturn and appears to have continued into the recovery (House of Commons Library, 2018a). Similar to income, this indicator shows that most groups are better off in 2016 than they were in 2007, with the exception of single adults of working age, whose level of financial fluidity is comparable to pre-recession levels (see Figure 9 below). All other groups have experienced an increase in financial fluidity, although differences across family life-course groups have been preserved. For example, pensioners and single parents have experienced an increase, but while the former have seen a rise in the percentage with savings of £40K or over, the latter have seen no substantial change in savings but an increase in the percentage who are not behind in bills.

Figure 9 Average trends in Financial Fluidity and Satisfaction with Current Financial Situation (Source: Authors' calculations using FRS 2007-16 and USoc 2010-16)



Focusing on the lack of change in financial fluidity for single adults of working age can help further explain the advantages and limitations of our measure of financial fluidity. Single adults of working age are the only group who have weekly net incomes lower than before the recession (see Figure 4). Further analysis of the components of the financial fluidity measure shows that this group is the only group for which neither savings nor debt (measured by reporting being behind bills such as Council Tax and electricity) have not changed substantially between 2007 and 2016. For example, although the percentage with less than £2,000 in savings has fluctuated up and down there has been very little change in their savings, meaning that contrary to most other groups, the percentage of those who have smaller (below £2,000) and larger amount of savings (e.g. above £2,000) has not increased significantly between 2007 and 2016 (see Figure D 1 in Appendix D for trends in savings across the life-course groups). The only group that has seen similar lack of change in savings levels are single parents, but their overall financial fluidity has increased (albeit from a low level) because their ability to pay bills (and therefore not fall behind with these) has increased. Further analysis not shown here shows that the percentage of single parents with lower incomes (bottom two quintiles) behind with electricity or gas bills has halved (from roughly 15% to 7%). In contrast single adults of working age have seen little change in their already low levels of debt. Indeed, when it comes to falling behind (the second component of financial fluidity) on bills, we see relatively little variation during the period 2007-2016 except for single parents.

Being behind in bills varies across the income quintiles: for example, whereas virtually no adult is behind with Council Tax bills in the 5th quintile, up to 6% of those in the bottom quintile are. However, overall more than 90% across all groups were keeping up with all bills. Although this finding may seem strange, the PSE asked a different question about keeping with bills and credit commitments in the last twelve months and found that although 40% of adults have been struggling to pay their bills (but have kept up with them) only a few have actually fallen behind (6%). However, the findings also reveal that single parents tend to be overrepresented in this group, which reiterates the importance of having a debt component within an overall measure of financial fluidity. It allows us to pick up changes among more vulnerable groups (e.g. single parents) and when combined with a measure of wealth (e.g. savings) it can also differentiate between groups with incomes and savings closer to or above the average.

The most important difference between changes in incomes and financial fluidity are that whereas incomes have seen a clear dip between 2010 and 2012 (followed by a sharp rise in the recovery period) financial fluidity seems to have remained relatively stable in the economic downturn and then increased after 2012 (the recovery period).

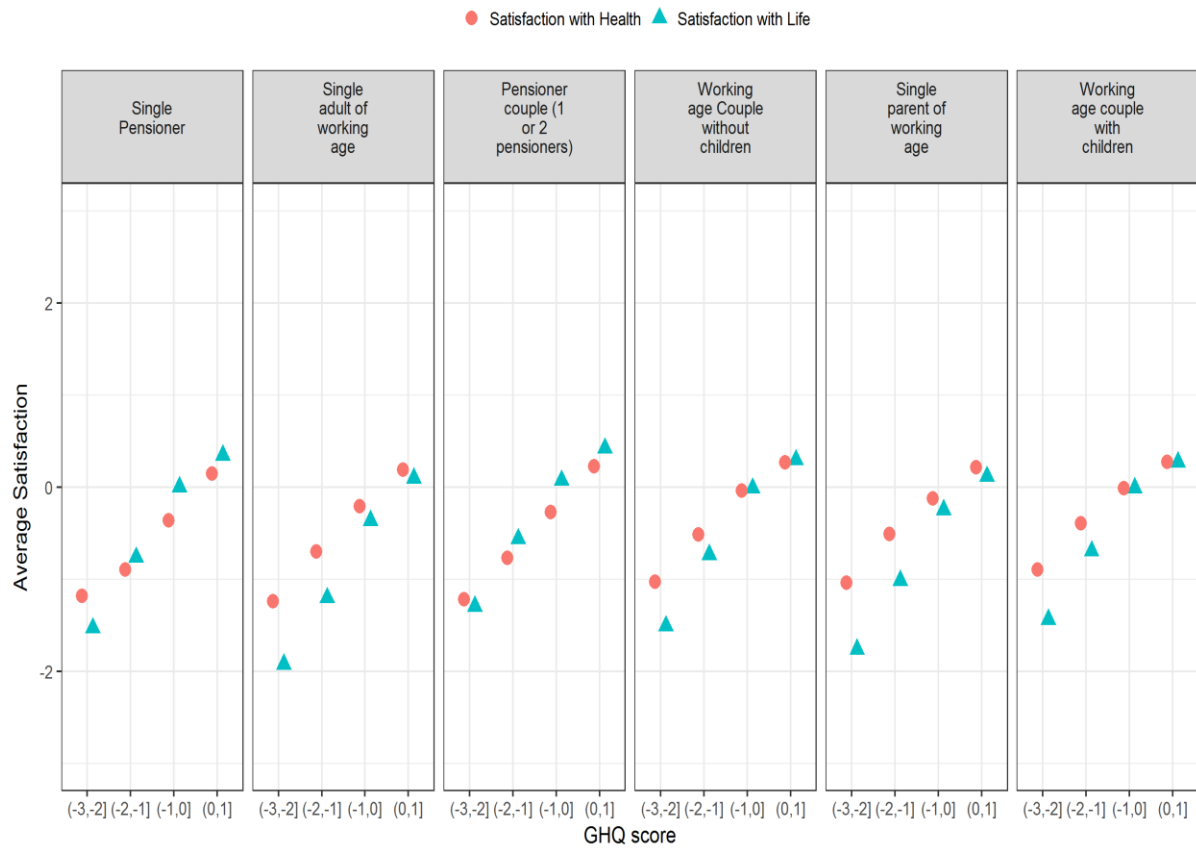
This is also reflected in the difference between the evolution of satisfaction with income (see Figure 6) and the subjective assessment of one's finances (satisfaction with financial situation) (see Figure 9) shown above. Subjective assessment of income shows the clear down-then-up trajectory, whereas subjective assessment of finances on average show a steady rise after 2012⁵.

Mental health and Satisfaction with life

The key measure of objective mental health used in our research is the General Health Questionnaire (12-item version, GHQ-12) (Golderberg & Williams, 1988). Our analysis using the widely-used bi-modal scoring technique reveals remarkably consistent levels of mental health over the period of the recession. We carried out sensitivity analyses using only certain items and also used the full response scale and found consistent results. We also explored two potential measures of subjective mental health contained in USoc, satisfaction with health and satisfaction with life. We expected that satisfaction with life would be a better subjective counterpart to objective mental health (GHQ) but we also explored the measure of satisfaction with health for sensitivity analysis (we show the results of this analysis below). As shown in Figure 10, both potential subjective counterparts (y-axis) show a linear relationship with the General Health Questionnaire (x-axis).

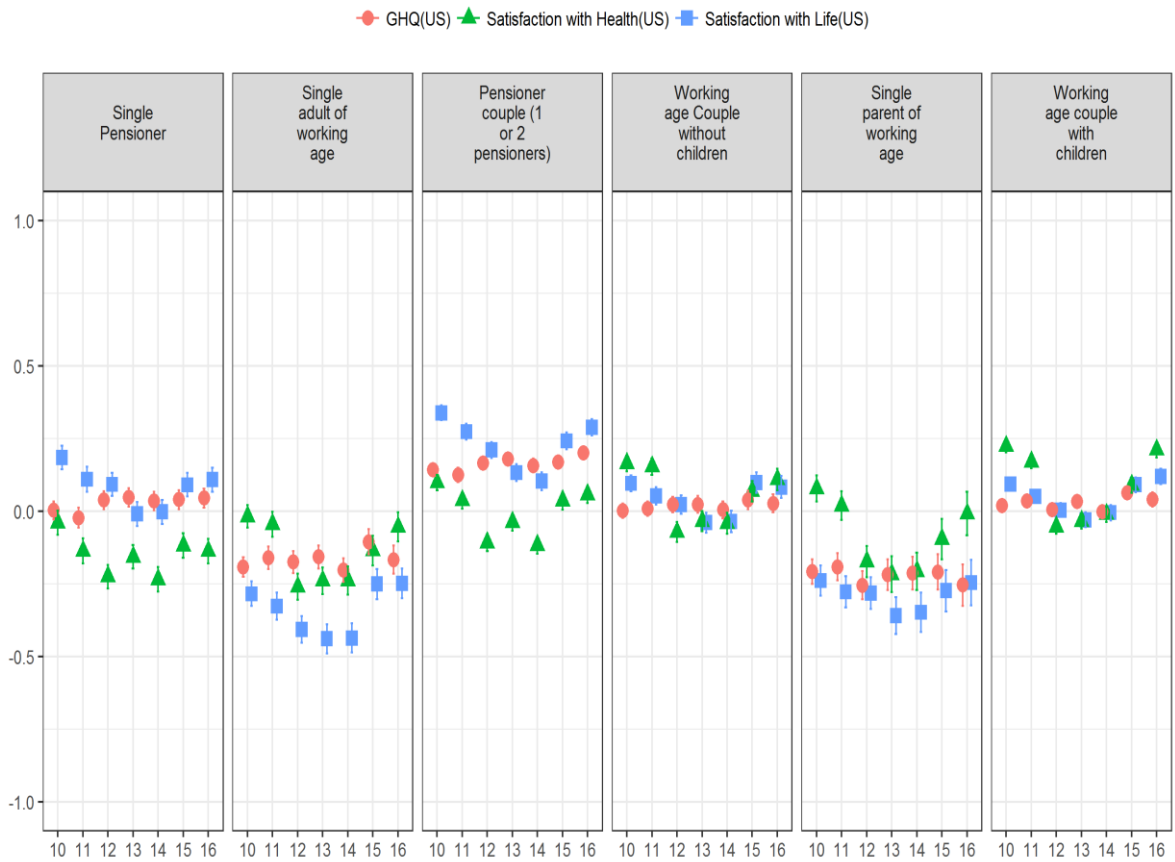
⁵ As objective and subjective indicators of financial fluidity are not available in the same dataset we are not able to show if there is a linear relationship between objective and subjective indicators as we did in Figure 8 and Figure 10.

Figure 10 Average Satisfaction with Health and Life by General Health Questionnaire (GHQ) levels across family life-course types (Source: Authors' calculations using USoc 2012)



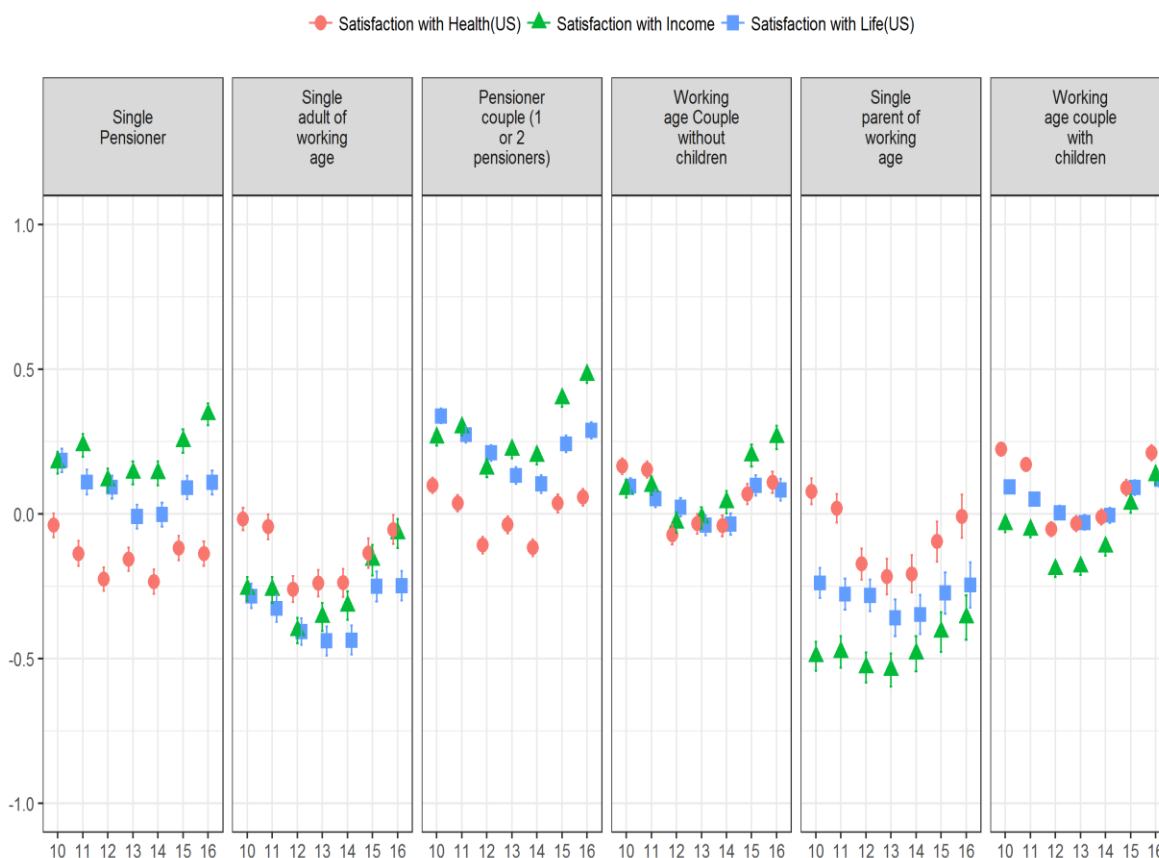
We also explored the trends in these two potential subjective counterparts to objective mental health (GHQ). As shown in Figure 11 below, the GHQ-12 does reveal the same family life-course type differences as the subjective indicators but the latter show much more variation between 2010 and 2016.

Figure 11 Trends in Mental Health (GHQ), Satisfaction with Health and Satisfaction with Life (Source: Authors' calculations using USoc 2010-16)



The trends in satisfaction with health and satisfaction with life are remarkably similar to the ones seen in the satisfaction with income (see Figure 12 below).

Figure 12 Trends in Satisfaction with Mental Health (GHQ), Satisfaction with Income and Satisfaction with Life (Source: Authors' calculations using USoc 2010-2016)



As we wanted to choose one subjective counterpart for each objective measure of What We Have, we decided to use the measure of life satisfaction as the subjective counterpart to the GHQ as we felt that satisfaction with health might match more closely physical health rather than mental health. In contrast, satisfaction with life may pick up on mental health issues. Further analysis using USoc not shown here suggests that the two indicators share a very similar relationship with GHQ, although GHQ score explains twice as much variation in the satisfaction with life ($R^2=20\%$, compared to 10% of the variation of satisfaction with health, that equates with a correlation of roughly 0.4 and 0.3 respectively).

Stage 2) What explains the variation in subjective indicators?

We modelled the variation in subjective indicators which had a clear objective indicator counterpart (see Table 9). We therefore analysed the variation in subjective relative income and satisfaction with income using net income and variation in satisfaction with life using mental health information from the GHQ. These baseline models were then expanded to include information on What We Do and Where We Live in the second stage of modelling.

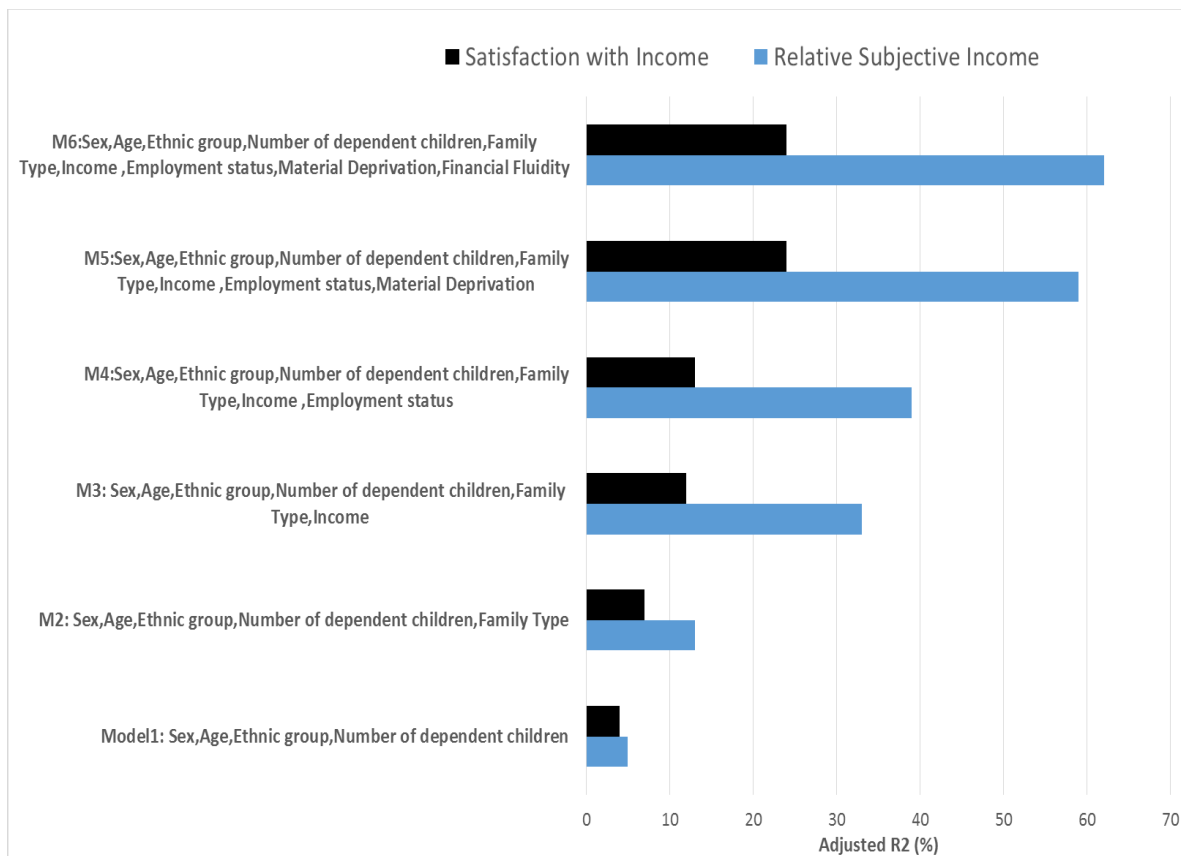
Table 9 Objective and subjective indicators of resources used in regression analysis

OBJECTIVE	SUBJECTIVE
Household net income After Housing Costs (PSE)	Subjective Relative Income (PSE)
Household net income Before Housing Costs (USoc)	Satisfaction with Income (USoc)
General Health Questionnaire (GHQ-12) (PSE)	Satisfaction with Life (PSE)

Subjective relative income and Satisfaction with income

In Figure 13 we present the results from our attempt to model satisfaction with income and subjective relative income. We focus on the adjusted R² to highlight the variables that explain variation in these two subjective measures. Figure 13 shows the explained variation by the first model, which includes sex, age, ethnic group and number of dependent children and how the adjusted R² changes as we introduce more variables. Our initial analysis suggests that income explained a large amount of variation in the two subjective indicators of income (subjective relative income and satisfaction with income).

Figure 13 Percentage of variation explained in Satisfaction with Income and Subjective relative Income by nested models for demographic characteristics and main resources (Authors' calculations using PSE 2012 and USoc 2013⁶)



More specifically we found that material deprivation explained a large amount of the variance in subjective relative income. Income and material deprivation explained over 50% of the variation in subjective relative income, whereas only over 10% was explained by the main demographic characteristics we considered (Model 2). Only 20% of the cross-sectional variation in satisfaction with income is explained by income, material deprivation and financial fluidity. This finding does substantiate the idea that satisfaction with income may be substantially different from subjective relative income as an indicator but as argued above this may need further research. These two subjective indicators do however share the same pattern in explained variability (as shown in

⁶ USoc 2013 was used as this was the only wave that contained information on savings. Income BHC was used for USoc and Income AHC was used for PSE.

Figure 13 above). Introducing income (Model 3) into a model with just information on sex, age, ethnic group, number of children in the household and family type (Model 2) brings a large increase in explained variation in both subjective relative income and satisfaction with income (from 10% to 29% and from 5% to 10% respectively). The next large increase in explained variance is brought about by introducing material deprivation (see Model 5). Introducing financial fluidity (Model 6, top of

Figure 13 above) does not seem to affect the predictive power of our models. Although employment status (Model 4) increases the amount of explained variance, the changes in explained variance are relatively small compared to the ones we see for income and material deprivation (Models 5 and 6 respectively). This does not mean that employment status is not a crucial part of living standards. Indeed, further analysis suggests that on its own employment status⁷ explains 15% and 6% of subjective relative income and satisfaction with income respectively, but its role in explaining higher levels of perceived resources overlaps heavily with income so that when we control for income we see a much more modest increase in explained variation.

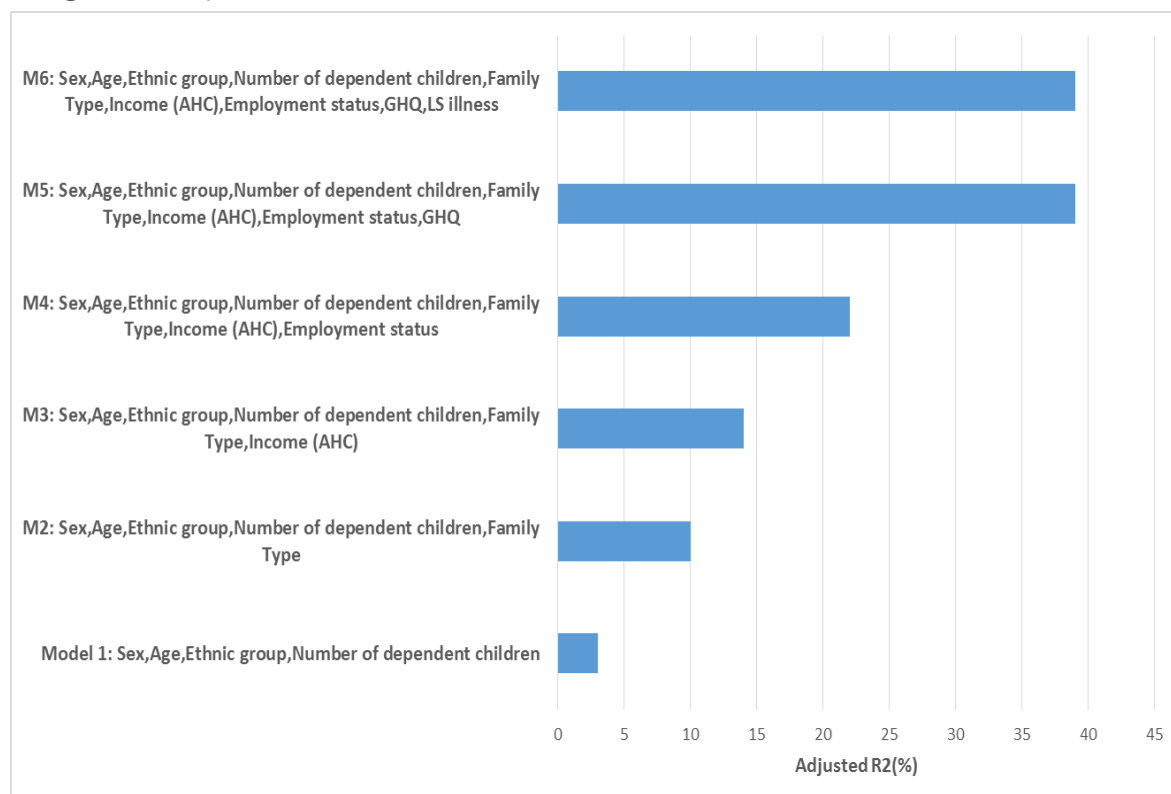
We also carried out further analysis on social class and education but found that once we controlled for sex, age, ethnic group, number of dependent children, family life-course type, income (BHC) and employment status (Model 4), these did not explain any further variation in the two subjective indicators.

Satisfaction with life

We then repeated the same modelling exercise on variation with life satisfaction (our subjective indicator of mental health), the results from which are shown in Figure 14. Twenty percent of the variation in satisfaction with life is explained by Model 4 (demographic characteristics + family life-course type + income + employment status). Adding mental health (GHQ) (Model 5) explains another 20% of variation, whereas adding longstanding illness information (Model 6) adds little to the variance explained in satisfaction with life. Taken together, just under 40% of the variance in this subjective indicator is explained. The fact that so much more variation is explained once GHQ added suggests that satisfaction with life is indeed a subjective assessment of personal well-being, only part of which is economic well-being (which is measured more effectively by subjective indicators of income).

⁷ Our variable of employment status identifies whether the respondent is: self-employed, in paid employment (full or part-time), unemployed, retired, looking after family/home', student', long-term sick or disabled, or other inactive.

Figure 14 Percentage of variation explained (adjusted R²) in Satisfaction with Life by nested models for demographic characteristics and main resources (Source: Authors' calculation using PSE 2012)



Taken together, the results suggest that the variables that explain the majority of the variation in the subjective indicators are their objective counterparts (i.e. income and material deprivation for subjective indicators of income and GHQ for satisfaction with life, see Table 9). To confirm this, we repeated the modelling using three simple nested models, as shown in Table 10. The results in Table 10 show that the main objective counterpart (income and material deprivation) of the two subjective income variables (subjective relative income and satisfaction with income) explain 56% and 21% of their respective variation. Here, our focus is on how explained variation changes as we introduce relevant variables but if comparing these two figures (56% and 21%) the reader should bear in mind that we are using Before Housing Costs for explaining satisfaction with income and After Housing Costs for subjective relative income because of differences in data availability in USoc and PSE respectively.

Adding demographic variables (that is sex, age, ethnicity, number of dependent children, employment status, family type) to this model leads to a minor increase in the proportion of variation explained (from 56% to 59% and from 21% to 24% respectively). We fitted a third model, in which on top of the main objective counterpart (income in this case) and demographics we introduced another measure of objective resources, in this case the GHQ. For the measures of subjective income this does not lead to substantial increase in the proportion of variation explained (ranging from 1 to 3 percentage points across all measures). It therefore confirms that once we control for demographic characteristics and household income, mental health plays a minor role in explaining variation in either subjective relative income or satisfaction with income. We then repeated the same exercise

with satisfaction with life, which we take (as argued above) as the subjective measure of mental health. Here the results are similar, although not as definitive: 28% of the variation is explained by the main objective counterpart (the GHQ), but demographics explain another 10%, showing substantially more predictive power than for income. However, similar to the results for subjective income we also see that adding other objective resources to the model (in this case income and material deprivation) does not lead to any major increase in variance explained (from 38% to 41%).

Table 10 Variation explained (Adjusted R²) in each of the three subjective indicators by the relevant nested models (Source: Authors' calculations using PSE 2012 and USoc 2015⁸)

	Subjective Relative Income (PSE)	Satisfaction with Income (USoc)	Satisfaction with Life (PSE)
Main Objective Counterpart	Income and MD 56	Income and MD. 21	GHQ ⁹ 28
Above + Demographics	Income and MD+ Demographics 59	Income and MD+ Demographics 24	GHQ+ Demographics 38
All Above + Non-counterpart objective Resources	Income and MD+ Demographics+ GHQ 60	Income and MD+ Demographics+ GHQ 27	GHQ+ Demographics+ Income and Mat Dep 41

Overall these results confirm our conceptual framework (see Table 9 above), yet it also presents interesting differences in the explanatory power of demographic characteristics, which seems greater for satisfaction with life than the subjective indicators of income (ie. subjective relative income and satisfaction with income). Further analysis not shown here shows that the ten percentage points difference in adjusted-R² in satisfaction with life is not caused by one particular characteristics but by the joint explanatory power of the demographic characteristics together.

Taken together, these findings suggest that if we take family types with similar levels of income and material deprivation the differences between family types in terms of their subjective satisfaction with income tend to shrink considerably. This may not be the case when it comes to satisfaction with life, although much more in-depth analysis would be required to fully understand this finding.

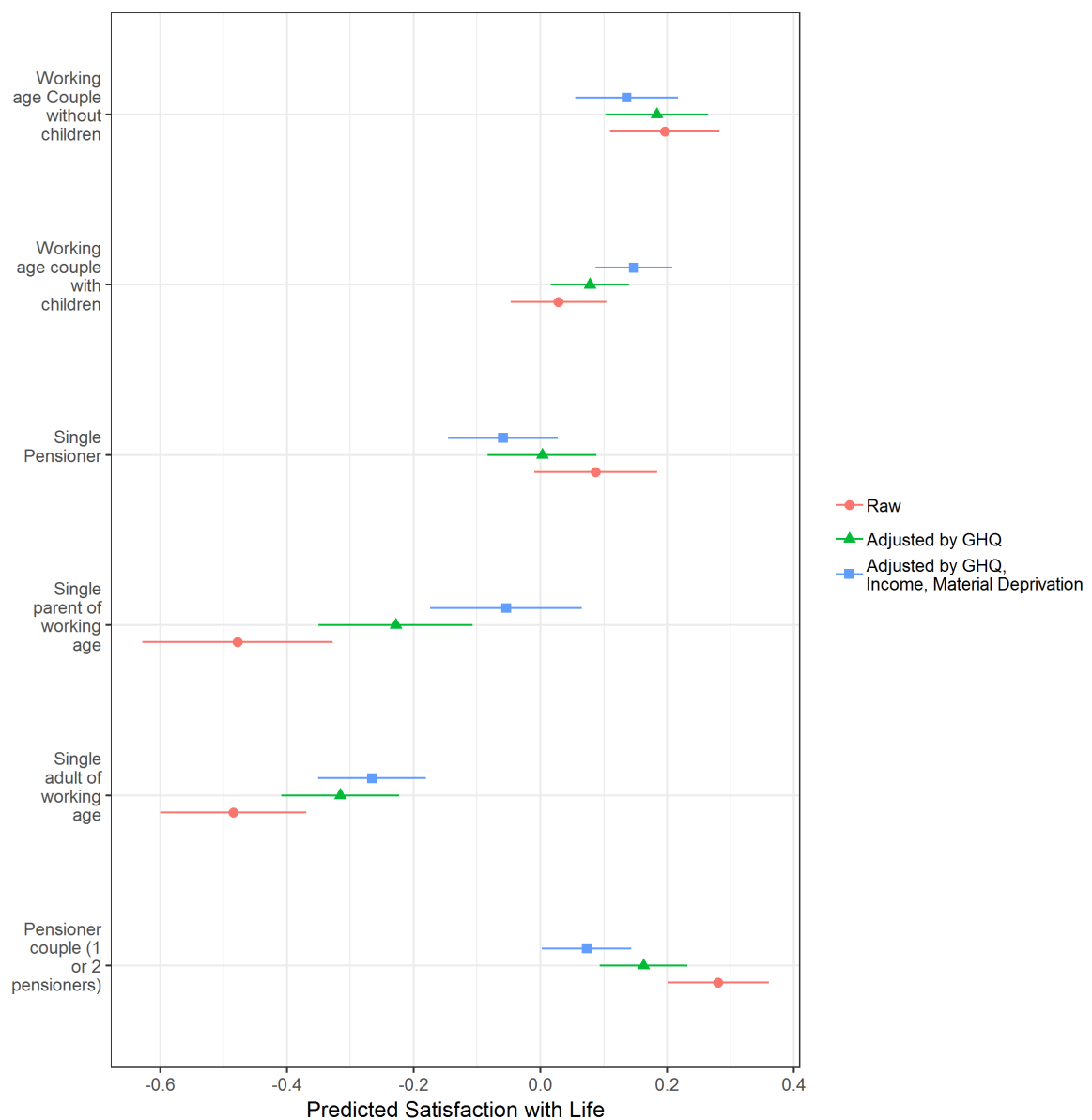
We began to unpack this finding by looking at differences in family types (the main household demographic characteristic we focus on in this report). Differences in satisfaction with life tend to shrink considerably when we control for GHQ, but the one group that stands out even when controlling for GHQ and economic resources is single adults of working age (see Figure 15), as they have levels of satisfaction with life which is roughly a third of a standard deviation lower (as indicated by the predicted score of -0.3) than the mean and compares poorly to couples, whether of working age or pensioners. Indeed, when

⁸ 2015 for USoc was used as this contained information on What We Do and where we live as well as material deprivation. 2012 for USoc contained information on What We Do and where we live, but not material deprivation.

⁹ We repeated the model using GHQ on its own and GHQ together with long-standing illness and did not find changes in adjusted R².

looking at simple average differences, Figure 15 shows that both single parents and single adults may have the lowest levels of mental health (GHQ) and satisfaction with life (this is also confirmed in the trend analysis in Figure 11 above). However, as shown in Figure 15, single parents' satisfaction with life seems to be partly explained by their lower levels of economic resources (as measured by income and material deprivation) and objective mental health (GHQ), whereas this does not seem to be case for single adults of working age. Further analysis not shown here confirms that indeed even after controlling for age, income, material deprivation, GHQ, and also employment status this group emerges as the one with lower satisfaction with life (we provide more analysis on this point in the next section).

Figure 15 Adjusted and non-adjusted (raw) average predicted Satisfaction with Life by Family life-course type (Source: Authors' calculations using PSE 2012)



What We Do and Where We Live

We applied the same approach to the modelling of variation in subjective indicators of What We Have. Table 11 shows the relevant results. The first three rows are the same as in Table 10 (Models 1 thru 3), and the last two rows show the effect in Adjusted R² obtained by introducing information on What We Do and Where We Live, which is not above 1%, suggesting very little if extra variation is explained in our three measures of subjective resources by information on What We Do and where live once we control for objective counterparts, demographics and material deprivation.

Table 11 Variation explained in each of the three subjective indicators by the relevant five nested models (Source: Authors' calculations using PSE 2012 and USoc 2015)

	Subjective Relative Income (PSE)	Satisfaction with Income (USoc)	Satisfaction with Life (PSE)
Main Objective Counterpart	56	21	28
Above + Demographics	59	24	38
All Above + Non-counterpart objective Resources	60	27	41
All Above + What We Do	61	27	42
All Above + Where We live	62	26	41

Overall the analysis showed that once material deprivation and income are introduced, information on what respondents do and where they live do not explain any further variation in subjective indicators of income. The same applies to satisfaction with life; in other words, once our objective indicator of mental health (GHQ) and the main demographic characteristics are taken into account information on social participation (What We Do) and housing and neighbourhood (Where We Live) do not explain any further variation in satisfaction with life. To provide sensitivity analysis for these findings, we also repeated this modelling by introducing information on What We Do and Where We Live after the second model (Main Objective Counterpart and demographics). In the case of the subjective indicators of income, we only used income and demographics and omitted variables on material deprivation. We did this to tackle the potential criticism that introducing information on What We Do and Where We Live after material deprivation may hide some of their explanatory power as material deprivation does include some information on social activities and housing/accommodation deprivation (see Methodology and Box 1 below for further information).

Box 1 Items, activities and household goods found in material deprivation measures

The PSE includes information on whether adults cannot afford a hobby or leisure activity, a holiday away from home for one week a year, not staying with relatives, friends or family round for a meal or drink at least once a month, going out socially once a fortnight, celebrations on special occasions such as Christmas, a meal out once a month, holidays abroad once a year, visits to friends or family in other parts of the country 4 times a year, going out for a drink once a fortnight, attending weddings, funerals and other such occasions, visiting friends or family in hospital or other institutions, attending church, mosque, synagogue or other places of worship, going to the cinema, theatre or music event

once a month, taking part in sport/exercise activities or classes. PSE also includes information on whether respondents have enough money to keep their home in a decent state of decoration, to replace worn-out furniture and to replace broken electrical goods, replace curtains or window-blinds, table with chairs where all family can eat, dishwasher, and whether the household has a second bathroom and/or bedrooms, home-security system and whether they have a damp-free home. In contrast, USoc's material deprivation measure is more limited and only includes being able to afford a hobby or leisure activity, a holiday away from home and friends or family around once a month. For housing/accommodation deprivation, USoc includes information on replacing any worn out furniture, replace or repair broken electrical goods such as refrigerator or washing machine.

Table 12 Variation explained in each of the three subjective indicators by the relevant four nested models (Source: Authors' calculations using PSE 2012 and USoc 2015)

	Subjective Relative Income (PSE)	Satisfaction with Income (USoc)	Satisfaction with Life (PSE)
Main Objective Counterpart (no MD) + Demographics	39	13	38
All Above + WWD	43	14	40
All Above + WWL	47	15	41
All Above + Material Deprivation	61	26	41

The results of the sensitivity analysis (summarised in Table 12 above) confirm that the explanatory power of the available information on What We Do (see Table 4 above) and Where We Live (see Table 5 above) remains limited once we control for income and GHQ for satisfaction with income and satisfaction with life respectively. Once we know about the main demographic characteristics and income we explain 13% of satisfaction with income and 38% of variation in satisfaction with life is explained by objective mental health (GHQ) and demographics (see the top row of Table 12). Adding a whole range of additional information on What We Do and Where We Live increases the variation explained by only a few percentage points (from 13% to 15% and from 38% to 41% respectively). Moreover, for both subjective indicators of income adding material deprivation still leads to a substantial increase in Adjusted R² (from 47 to 61 and from 15 to 26, see bottom two rows of Table 12) confirming the unique strength of material deprivation in gauging variation in subjective living standards.

Beyond these general patterns it is worth noting that in some instances the Subjective Relative Income indicator behaves somewhat differently from the other two subjective indicators: the Adjusted R² increases from 39% when just using demographic characteristics and income to 47% after we include information on What We Do and Where We Live. This confirms that some of the indicators used in material deprivation do indeed overlap with information on social activities and accommodation/housing, and particularly in the PSE which contains a wide range of information on whether households can afford activities and housing deprivation (see Box 1 above). Nevertheless, we argue that the results still suggest that the most important variables for predicting these subjective indicators are their objective counterparts. This is because the social activities and accommodation/housing materials deprivations still relate to lack of income (they measure whether respondents

cannot afford certain things). The fact that once we control for these deprivations all the other information on social activities and accommodation/housing not strictly related to lack of resources seems to play no major role in explaining the variation in Subjective Relative Income (as shown in Table 11 above) suggests that this is indeed primarily a subjective assessment of one's level of income.

Critical life events

Lastly, we explored the extent to which information on whether critical life events that happened in the last 12 months (i.e. job loss, divorce/separation, starting a new job, having a baby, losing one's job, moving home, having a major health problem and retiring) explain any additional variation in subjective indicators. Our analysis, summarised in Table 13 below, suggests that they do not explain much additional variation in the three main subjective indicators used in our analysis (see Table 9). We carried out extensive analysis by applying critical life events to only relevant households (e.g. excluding single adults without children when looking at the effect of having a baby in the past 12 months) and found comparable results. The only exception remains satisfaction with life, which is slightly more influenced by having had a major health problem in the past 12 months, but the increases in Adjusted R² remain small (12% to 16%) (see Table 13 below).

This finding resonates with further analysis we carried out on the objective indicators of income, mental health and financial fluidity. Critical life events proved again to have a low explanatory power except for having had a major health problem in the past 12 months, which explains 4% of variation in objective mental health (as measured by the GHQ-12).

Table 13 Variation explained in each of the three subjective indicators by critical life events (Source: Authors' calculation using PSE 2012 and USoc 2015)

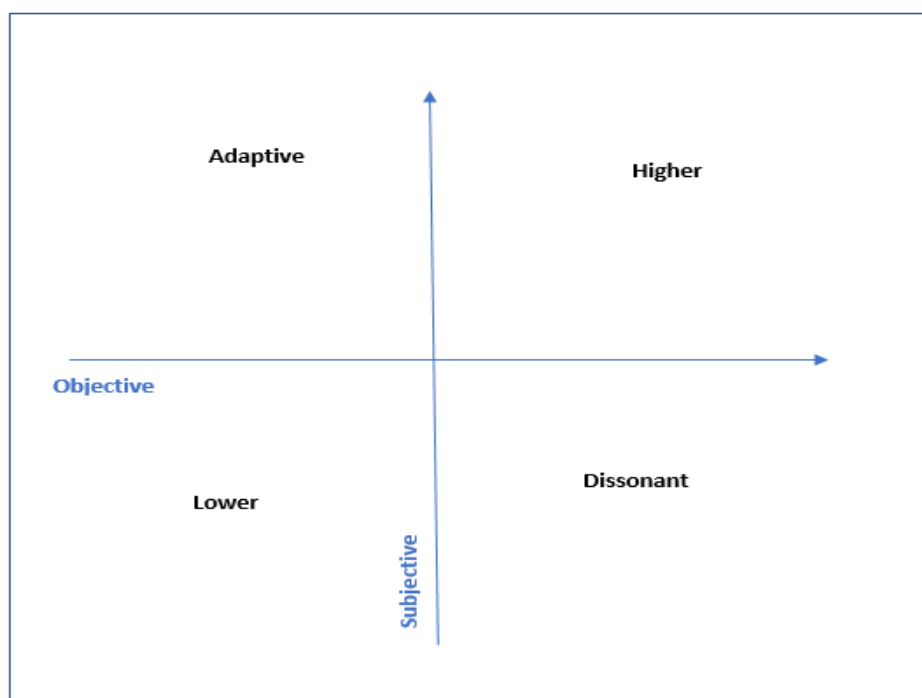
	Subjective relative Income (PSE)	Subjective Income Satisfaction (USoc)	Satisfaction with Life (PSE)
Model 1 - sex, age, family type and log of income	29	9	12
Model 2 - Model 1+ all critical life events	31	10	16

Stage 3) What is the distribution of welfare types across and family life-course types?

Welfare types and family life-course types

Here, we explore how we can locate individuals according to their objective resources and their subjective assessment of their objective resources (cf. Zapf, 1984). Using PSE and USoc data, we split respondents between those who have high levels of objective resources and subjective assessments ('Higher') and low levels of objective resources and subjective assessments ('Lower'). We define those who do not follow this pattern as 'Adaptive' (with low levels of objective resources yet high levels of satisfaction with these) and 'Dissonant' (with high levels of objective resources yet relatively low levels of satisfaction with these). Figure 16 provides a graphical representation of these four groups.

Figure 16 Welfare Types



We define higher and lower using the overall average for the objective and subjective indicators as explained in the Methodology.

Table 14 below shows a series of three heat maps of the of four different welfare types for the three key measures used in our analysis, presented for each family life-course type.

Table 14 Heat maps of four different welfare types for the key measure counterparts, by family life-course types (Source: (Source: Authors' calculations using PSE 2012 and USoc 2015)

Key Measure Counterparts	Welfare type	Single Pensioner	Single adult of working age	Pensioner couple (1 or 2 pensioners)	Working age Couple without children	Single parent of working age	Working age couple with children
Heat map A: Objective income/ Subjective relative income (PSE)	Higher	30	31	41	59	12	35
	Dissonant	8	12	11	16	9	13
	Adapting	27	12	26	10	11	17
	Lower	35	46	23	15	68	36
Heat map B: Objective income/ Satisfaction with income (USoc)	Higher	24	26	39	48	9	30
	Dissonant	9	19	14	27	12	20
	Adapting	39	16	28	10	24	19
	Lower	28	39	19	15	54	30
Heat map C: General Health Questionnaire/ Satisfaction with life (PSE)	Higher	46	24	54	40	20	37
	Dissonant	14	17	13	14	13	12
	Adapting	13	11	17	24	16	18
	Lower	26	47	16	22	51	32

Objective income/Subjective relative income (PSE)

The share of the four objective income/subjective relative income welfare types across the six main family groups used in our analysis (see Heat map A in Table 14) shows that there are differences across family life-course types, with a greater percentage of working age couples without children with higher welfare type (59%) compared to only 12% of single parents. Similarly, a smaller share (15%) of working age couples without children are located in the lower living standards welfare type, while 68% of single parents are in the lower type. Single adults of working age are also relatively more likely to fall into the lower category, compared with higher category (46% versus 31% respectively). Pensioners (single and couples) are also relatively more likely to fall into the adaptation category on this measure, whereas dissonance was relatively similar across all family life-course types.

Objective income/Satisfaction with income (USoc)

When we applied the same procedure to satisfaction with income using household income as its objective counterpart (see Heat map B in Table 14) a similar result as to that found for subjective relative income is found for satisfaction with income: working age couples without children and single parents are the groups with the most unequal profiles in terms of higher versus lower welfare types (48% versus 9% and 15% versus 54% respectively). Again, we find that single adults of working age are also relatively more likely to fall into the lower category, compared with higher (39% versus 26% respectively). As seen above with subjective relative income, pensioners (single and couples) are also relatively more likely to fall into the adaptation category on this measure. But unlike the findings above with respect to subjective relative income, working age couples without children are relatively more likely to fall into the dissonance category.

GHQ-12/Satisfaction with life (PSE)

Satisfaction with life (using the GHQ as its objective measure counterpart- see Heat map C in Table 14) showed dissimilar patterns of welfare types between family types, with pensioners (couples and single) more likely than the other groups to fall into the higher category. About one half of both single adults of working age and single parents fall into lower (47% and 51% respectively). The welfare types for mental health suggest that single adults of working age are more likely to be dissonant and working age couples without children are more likely to be adapting. There do not appear any differences in dissonance for this measure across family life-course types.

In summary, single adults (those of working age and single parents) are generally worse across all measures used in the analysis of welfare types. The findings also suggest other differences among the other family life-course groups in terms of in welfare types, with working age couples without children doing relatively better on the income-related measures and pensioners doing somewhat better in terms of the health measure. There is also some indication that pensioners are relatively more likely to fall into the adaptation category on both income-related measures, whereas working age couples without children show some dissonance in terms of satisfaction with income.

Interpretation/caveats when using welfare types

However, the evidence of welfare types presented here is far from conclusive and we refrain from reporting the extent to which some of the differences between family life-course types shown above are statistically significant on at least two grounds. Firstly, these differences could be caused by real differences between family life-course groups in levels

of resources (e.g. the precise level of income rather than simply whether its above or below an estimated poverty threshold, intra-household distribution of economic resources, past fluctuations in income etc.) which are not taken into account so we are most likely not comparing like with like (we provide a tentative solution in the section below). Secondly, it is important to reiterate that here lower and higher and most importantly adapting and dissonant are simply adjectives (or descriptors) in relation to the average of the objective and subjective measures and are not based on any informed and scientifically validated threshold.

These caveats aside for the moment, one of the advantages of creating welfare types is that we can model the probability of being in each of the four types among the relevant cases. This, combined with controlling for variables we know are both conceptually relevant and have shown to explain a substantial amount of variance in Stage 2 of the analysis may help tackle the first weakness of this methodology outlined above.

Modelling the probability of the distribution of family life-course types across welfare types

Here, we use welfare types as a provisional methodological tool to explore the intersection of objective and subjective living standards. We use this specifically to corroborate the finding from Stage 2 of the analysis, which suggested that single adults of working age (without children) were more likely to have lower levels of satisfaction with life, even when controlling for GHQ levels and a range of other characteristics.

In Figure 17 below, we show the results of modelling the four welfare types (Higher, Lower, Adaptive, Dissonant) for mental health. In the first (left-most) pane we model the probability of having higher living standards among those cases not identified as adaptive or dissonant (i.e. are located in the “lower” or “higher” welfare type positions for mental health). In the middle pane we model the probability of being adaptive among those with low (below average) mental health and in the third (right-most) pane the probability of being dissonant among cases with high living standards (above average mental health).

The distribution of different family life-course types across welfare types of life satisfaction, subjective relative income and satisfaction with income became more similar once income, material deprivation and objective mental health (GHQ) were controlled for, reiterating the findings from Stage 2 of the analysis. If we look at households with average material deprivation, income and mental health, there are roughly between 30% and 40% of either adaptive or dissonant in most family life-course type, with one main exception.

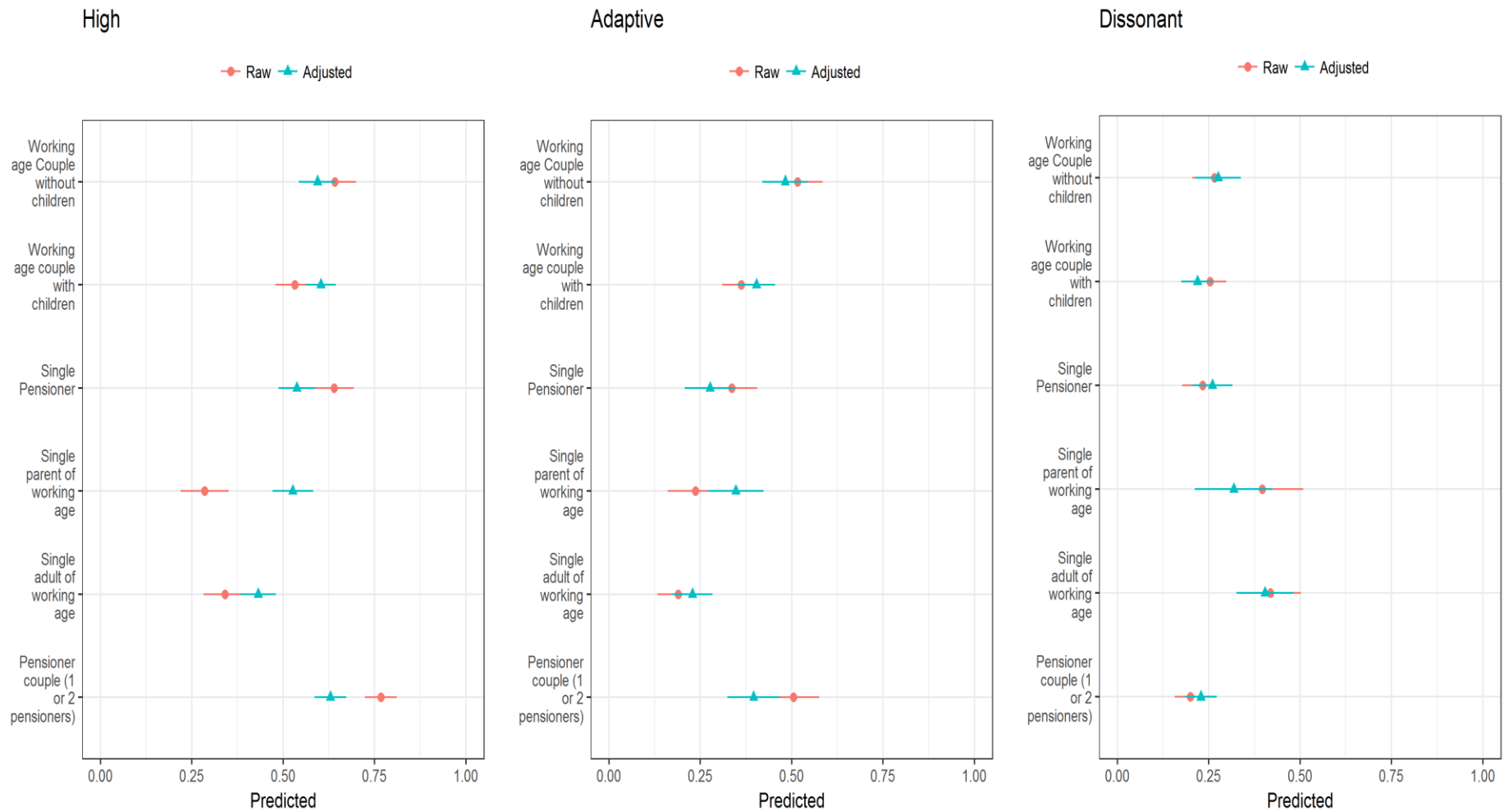
The analysis confirms that single adults of working age are less likely to have high satisfaction with life than other groups but differently from other groups with low satisfaction they are also less likely to adapt to it, even when controlling for material deprivation and income. They are less likely to be in the “higher” category (predicted probability lower than 50%, see first pane of Figure 17) and for those with low objective mental health they are less likely to be adaptive (predicted probability of 25%, see second pane of Figure 17).

Pensioner couples display (on average) the completely opposite pattern from single adults of working age, they have higher levels of objective mental health and are also less likely to be dissonant. We also repeated the analysis using more arbitrary cut-offs and they all revealed findings comparable to the ones above.

Although the main purpose of the welfare types analysis was to confirm the findings from Stage 2 analysis regarding mental health and satisfaction with life, we also repeated these models on the two welfare types of income (subjective relative income and satisfaction with income). The results shows that there are no major differences across family types in the probability of being in the four welfare type positions once the relevant variables (i.e. income, material deprivation) are taken into account (see Figure D 2 and Figure D 3 in Appendix D). Income, material deprivation and objective mental health are indeed the most important predictors of welfare types and once we take these into account we find no evidence that single or pensioner couples are more likely to adaptive or that working age couples without children are more likely to be dissonant. Overall the analysis confirms that findings from the Stage 2 analysis: satisfaction with life shows substantially more variation by demographic characteristics than subjective assessments of income once the relevant objective levels of resources are taken into account.

Taken together, in the analysis presented in Stage 2 above, we found that neither life events nor objective indicators of What We Do and Where We Live are helpful in predicting subjective satisfaction with one's levels of income, subjective relative income and satisfaction with life and the analysis presented in this section confirms that they do not prove to be useful for predicting one's location in the four welfare types either. We also find that material deprivation can help explain variation in subjective assessment and welfare types even when we control for a range of different factors.

Figure 17 Adjusted and Unadjusted (Raw) Probability of being in each of the three welfare types for mental health (Source: Authors' calculations using PSE)



Section 4: Discussion of Key Findings

1) What happened to objective and subjective levels of resources over the recessionary period?

Income

Our findings show that the clearest pattern in the changes in objective economic resources is the persistently lower levels of income experienced by single parents and the clear decrease in incomes during the economic downturn (2008-2012), followed by increases during the recovery (2013-2016). This follows the general trend found in the Households Below Average Income (HBAI) series (Department for Work and Pensions, 2017a). We expanded on conventional HBAI analysis by looking at trends among single and couple pensioners as well as single and coupled working adults (with and without children) using the whole income distribution by adjusting income for inflation. This allowed us to show changes in the distribution of incomes in terms of pre-recession (2006) levels.

Our findings using a new family life-course type showed that most family types experienced a drop in their incomes between 2008 and 2012 followed by an increase between 2013 and 2016 after, exemplified in the “tick” shape of average income trajectories for working age couples with and without children (see Figure 5). Single and couple pensioners also saw a decrease in incomes between 2010 and 2012, but their incomes remained higher than the pre-recessionary levels, in contrast to other groups whose incomes dropped below their pre-recession levels (single adults of working age). Average, median, as well as 25th and 75th percentile analysis confirmed these trends.

Satisfaction with income and Subjective relative income

Changes in satisfaction with one’s income (the only subjective indicator of income satisfaction available for more than one year) were remarkably similar to 2010-2016 income trajectories (see Figure 6). Moreover, subjective relative income (ie. how participants feel their income compares to the average income and the poverty line) matched the ranking of different family types in the UK income distribution in 2012 (see Figure 7). In other words, those who had a higher score on subjective relative income also had higher average incomes. These findings confirm the importance of looking at perceptions of one’s income, as well as one’s actual income. It is their own perceptions of income that shapes how well off people consider themselves to be (Office for National Statistics, 2014a, p. 3).

For example, pensioner couples ranked higher than many other groups and single parents ranked lowest on both subjective relative income and satisfaction with income (followed closely by single adults of working age). However, there are also some differences in the ranking of families according to these two indicators. More data and further analysis are needed to further investigate the differences between these two indicators. We offer two potential hypothesis for further scrutiny in future research for the difference between these two indicators: 1) that subjective relative income simply reflects the relative position of the distribution of family life-course type incomes, whereas satisfaction with income might be closer the evolution of incomes found above (with some groups being less affected than others, e.g. pensioners), and 2) that the phrasing of the subjective relative income indicator is “relative” (ie. respondents are asked to compare their income to those on poor and average incomes), whereas the satisfaction with income indicator asks about one’s

satisfaction with their current level of income, which suggest they may take into account individual trajectories and expectations.

Financial Fluidity

A key finding of our research was that being behind with bills remained relatively stable during the economic downturn, but also that savings began to increase during the recovery. We combined this information into an overall measure we named Financial Fluidity. Similar to income (see Figure 4), this measure shows that most family life-course types were better off in 2016 than they were in 2007 (see Figure 9), with the exception of single adults of working age. And although incomes saw a clear dip between 2010 and 2012 (followed by a sharp rise in the recovery period) (see Figure 5), financial fluidity seems to have remained relatively stable, a trend which was mirrored by trends in satisfaction with one's income (see Figure 6) and satisfaction with one's financial situation (see Figure 9) respectively.

Our findings are in line with the analysis presented in the ONS' indicators of *Economic well-being*, which using the *Eurobarometer Consumer Survey* data shows that satisfaction with financial situation had a negative index during the economic downturn and a positive index during the recovery (Office for National Statistics, 2016a). What our study specifically adds to the ONS work is the extent to which economic sentiment (or economic wellbeing) has changed for specific family life-course types using micro-level analysis.

Possible explanation for the lack of widespread debt servicing problems over the recession

At first, we were surprised by the finding on the extent to which different family life-course types, particularly single parents or single adults of working age, did not report any widespread debt servicing problems over the recessionary period. To explain, during periods of low income (income fluctuations), households (particularly of those at the lower end of the income distribution) may maintain their economic standard of living by funding their expenditure from savings or borrowing, thereby adjusting their lifetime consumption (Office for National Statistics, 2017a, p. 26). Moreover, there was some concern about the rising levels of unsecured household debt or 'consumer credit' such as credit card debt, hire purchase agreements and unsecured loans over the course of the economic downturn and recovery (Harari, 2018; Whittaker, 2018; Hood, Joyce, & Sturrock, 2018a). Between Q1 2006 and Q2 2008, the total outstanding amounts of consumer credit lending to individuals in the UK increased from £191 billion to £203 billion (Bank of England, 2018). Following the onset of the recession, the levels of unsecured household debt or 'consumer credit' decreased rapidly reaching a low of £156 billion in Q2 2013 (the period we refer to as the recovery). Taken together, we would have expected to see a rise in some individuals/households reporting being behind in at least some bills or credit commitments in the period leading up to the recession and immediately after its onset, but this was not borne out in the analysis.

To help explain this finding, we took a closer look at the PSE question on debt servicing pressure. It showed that whereas more than four out of ten family life-course types in 2012 (again, this being the height of the economic downturn) were struggling to pay their bills (but have kept up with them), only a small minority (6%) actually report falling behind with any of bills or credit commitments. Lack of debt servicing problems or debt pressure is also tied to the percent of disposable income used for debt repayments (including mortgage principal), which shows that it decreased gradually from 12% at the start of 2008 to just over 7% in 2016 (Whittaker, 2018; Harari, 2018). Therefore, it appears that some individuals and households tightened their belts in order to deal with the ongoing financial crisis.

Nevertheless, findings from the PSE reveal that single parents tend to be overrepresented in the group which has actually fallen behind with any bills or credit commitments, confirming importance of having a debt component within an overall measure of financial fluidity. This would allow us to pick up changes among more vulnerable family life-course types groups (e.g. single parents) and when combined with a measure of wealth (e.g. savings) it can also differentiate between groups with incomes and savings closer to or above the average.

Mental health and Satisfaction with life

The General Health Questionnaire (12-item version, GHQ-12), which is the objective measure of mental health in our analysis, showed consistent levels of mental health across all family life-course types over the recession. This finding is in line with *ONS' Measuring National Wellbeing* programme, which show stable (or improving) mental health as measured by the General Health Questionnaire (GHQ) using British Household Panel Survey and UK Household Longitudinal Study data between 2008 and 2015-16 (Office for National Statistics, 2018e).

Our analysis of GHQ-12 shows family life-course type differences similar to the subjective indicators of mental health (satisfaction with health and satisfaction with life respectively), but the subjective indicators show much more variation between 2010 and 2016. In addition, trends in satisfaction with health and satisfaction with life (see Figure 11) are quite similar to the ones seen in the satisfaction with income (see Figure 6). Taken together, satisfaction with life (our subjective counterpart to objective mental health) and satisfaction with income exhibit similar trends over the recessionary period.

Subjective indicators and family life-course types

In summary, our analysis suggests that income, finance situation and health are different types of resources that vary across the different family life-course types, providing support for the usefulness of considering these three components separately and of analysing these through a life-course approach (i.e. dividing households according to number of dependents, partners and whether or not they are retired). Unsurprisingly, these life-course groups have different levels of objective resources as well as subjective assessments of these. Moreover, our findings suggest that much of the family life-course types ranking and the individual variation of subjective assessments varies according to their objective counterpart. For example, single parents have lower incomes and lower levels of financial fluidity as well as lower levels of mental health (*objectively* measured) and this is matched by their low levels of satisfaction with income, subjective relative income, satisfaction with financial situation and satisfaction with life (*subjectively* measured). Similarly, working couples without children have higher average levels of both objective and subjective indicators for income and finance situation.

We also find differences that relate to life-course stage at which adults are. For example, although single pensioners may have lower levels of income than single working adults, they have higher levels of satisfaction with their income. Similarly, although they have similar levels of mental health to single working adults they have higher levels of life satisfaction. This may be due to guaranteed regular incomes for pensioners through the “triple-lock” guarantee as well as the accumulation of various types of personal investments over their lifetime. Further, there is research that suggests economic and emotional resilience increases with age (Centre for Policy on Ageing, 2014). Similarly, pensioners have higher levels of financial fluidity due to lower levels of debt (Kneale & Walker, 2013) and higher

levels of savings (Crossley, Low, & O’Dea, 2012), but this is also likely the result of lower housing costs due to fact that a much larger share of them own outright rather than rent (Office for National Statistics, 2013). However, available data did not allow us to carry out analysis after housing costs (as Understanding Society lacks detailed information about the components of housing costs) but this could be the focus of further research.

2) What explains the most variation in subjective indicators

Economic resources and mental health

In this report, we have aimed to adopt a concise analytical framework to explain the variation in the selected subjective indicators. In short, we only chose subjective indicators for which there was a clear objective counterpart in the same dataset. Our hypothesis was that the majority of the variation in the subjective indicator would be explained by the objective counterpart (see Table 15 below).

Table 15 Objective and subjective indicators of resources used in regression analysis

OBJECTIVE	SUBJECTIVE
Household net income After Housing Costs (PSE)	Subjective Relative Income (PSE)
Household net income Before Housing Costs (USoc)	Satisfaction with Income (USoc)
General Health Questionnaire (GHQ-12) (PSE)	Satisfaction with Life (PSE)

In our research, we found a linear relationship between the subjective and objective counterparts across all family types (see Figure 8 and Figure 10) and overall we also found that the most important drivers of differences in subjective assessments of one’s income (subjective relative income and satisfaction with income) and subjective assessment of one’s life satisfaction are indeed income and mental health respectively (see Table 10 and Table 11). This confirms the utility of our conceptual and analytical frameworks and the validity of the selected objective indicators of economic resources and mental health.

Some of our results do, however, need further investigation. For example, the GHQ (our objective measure of mental health) appears to be the main driver of differences between adults’ satisfaction with life and adding income and material deprivation does not seem to increase the percentage of variation explained. And yet, average satisfaction with life has fluctuated much more than the GHQ and the trend observed is similar to the one for average income and average subjective income indicators. We argue that more research needs to be carried out to understand the complex relationships between mental health and economic resources.

Moreover, whereas the main objective counterpart for subjective relative income (household net income BHC) explains 60% of its variation, only 21% and 28% of the variation for satisfaction with income and satisfaction with life are explained by their objective counterpart (household net income BHC and GHQ-12 respectively). Coupled with the findings that showed that available information on What We Do, Where We Live and Critical Life Events does not explain any further variation in these subjective indicators, more needs to be understood about the remaining variation, particularly for satisfaction with income and satisfaction with life, whose 80% to 70% of variation remains unexplained. Indeed,

future research should consider both methodological reasons (phrasing and construction of the measures) as well as more complex explanatory models and more comprehensive information on resources not considered by this research (e.g. life-course transitions, expectations etc.).

Overall, our findings suggest that if subjective assessments of objective life circumstances are to be used in conjunction with each other, then there should be as clear a conceptual match and measurement operationalisation between the respective subjective and objective counterparts. We propose three subjective indicators (subjective relative income, satisfaction with income and satisfaction with life) and provided some evidence of these properties although, as explored above, further research needs to explore the relationship between objective and subjective indicators of living standards. We argue that testing these properties should be the starting point for proposing new subjective indicators. Otherwise, we run the risk of comparing subjective oranges with objective apples.

One specific area for future research could be examination of the cognitive properties of subjective versus measures of living standards available. For example, when a respondent reports that they are satisfied with their income, it might be helpful to explore through cognitive interviewing whether this pertains to their personal income, benefit unit or household income and which particular components of their income they are most or least satisfied with (e.g. someone whose income is made up mostly of employment versus who receive a greater proportion of their individual or benefit unit/family income from social security or welfare benefits).

Critical life events

The collection of information on critical life events is arguably important but our analysis shows that the presence of these events in the last 12 months actually account for very little variation in economic resources and mental health and people's subjective assessment of these. There are a wide range of reasons why no real effect is detected and more longitudinal analysis could be carried out, but the magnitude of the association between life events and lower living standards is so small that it is arguable that different questions could be collected. Currently, the information available on critical life events (e.g. moved house; had a baby or adopted a child; left the parental home (including going to university); got divorced, separated or ended an intimate relationship; got married, entered into a civil partnership or started cohabiting; widowed; experienced death of a close relative or friend; retired; lost or left your job (excluding retirement); started a new job; or had a major health problem) overlaps substantially with information on family life-course types. Thus, from a life-course perspective, having information on whether these events happened last year adds very little explanatory power as some of these already heavily characterise the different family life-course types.

Health problems and becoming unemployed (not related to retirement) are the two critical events which do not overlap clearly with the family life-course types. Previous research suggests that the impact of critical life events on subjective-wellbeing leads to individuals adapting to their current circumstances and that the effects of critical life events are short lived (Clark, Diener, Georgellis, & Lucas, 2008; Clark & Georgellis, 2013). There are however exceptions noted in terms of labour force attachment (notably, becoming unemployed) and health shocks, where subjective well-being does appear to be impacted on by critical life events. However, it is arguable that having valid and reliable measures to gauge the

magnitude of these changes is preferable to knowing simply whether these events have happened or not. In other words, knowing one's drop in income and financial fluidity and their subjective counterparts might be more insightful than knowing whether they have become unemployed. Similarly, having an accurate measurement of their physical and mental health might be more insightful than knowing whether they had a major health problem.

What We Do and Where We Live

As explained above, our working hypothesis is that the most important predictors of subjective indicators are their objective counterparts. We did find that overall this was indeed the case and that information on What We Do and Where We Live did not explain any further variation in our subjective measures. The only extra variation explained by measures of What We Do and Where We Live relates to aspects of material deprivation, specifically being unable to afford participation in some common social activities and the enforced lack of some basic household goods and keeping their home in a decent state of repair. In other words, once we control for material deprivation, additional information on What We Do and Where We Live explain very little variation in subjective indicators of income. Social activities and accommodation/housing deprivations relate to lack of income (they measure whether respondents cannot afford certain activities and or keep their house in a decent state). Therefore, the fact that all other information on social activities and housing not strictly related to lack of resources seems to play no major role in explaining the variation in subjective relative income, suggests that the subjective measures of income we analysed are indeed primarily subjective assessments of one's current level of objective resources (income).

Differences across family life-course types

One of the advantages of using a clear "objective-subjective counterpart" analytical framework is that it allows us to adjust observed differences in subjective indicators for levels of objective resources. We found that most of the observed average differences in subjective indicators across the family life-course types were accounted for by different levels of objective resources. The main exception to this was the relationship between subjective assessments of satisfaction with life and objective mental health (GHQ). Our analysis suggests that single adults of working age (without children) were more likely to have lower levels of satisfaction with life, even when controlling for GHQ levels and a range of other characteristics. This finding is discussed further in the next section.

3) What do welfare types add to our understanding of subjective versus objective living standards

In our analysis, a fourfold classification of welfare types was used, wherein respondents were split between those who have high levels of objective resources and subjective ('Higher') and low levels of objective resources and subjective ('Lower'). We define those who do not follow this pattern as 'Adaptive' (with low levels of objective resources yet high levels of satisfaction with these) and 'Dissonant' (with high levels of objective resources yet relatively low levels of satisfaction with these).

The distribution of welfare types across different family life-course types

Some interesting, albeit somewhat expected, findings emerged in the analysis of welfare types across family life-course types. For example, we find that single adults (those of

working age and single parents) are generally worse off (i.e. falling into the 'lower' category) across all measures used in the analysis of welfare types. This result is not surprising and matches not only the findings of the preliminary analysis carried in Stages 1 and 2 but also aligns with literature showing that young single adults of working age have not fared well during the recession (Hills J. , Cunliffe, Obolenskaya, & Karagiannaki, 2015). We also find that working age couples without children are doing relatively better on the income-related measures (ie. they fall into the 'higher' category), which has been shown by other research in the field (Corlett, Finch, & Whittaker, 2016). In terms of pensioners, the analysis of welfare types seems to suggest that they are relatively more likely to fall into the 'higher' health welfare type, which again is in line with existing research in the field that shows despite the increase in chronic conditions with age, personal well-being is consistently found to be higher in older adults than among young or middle aged adults (Department of Health, 2014; Office for National Statistics, 2018e). Furthermore, the extent to which some pensioners, particularly those whom are single, might have higher resilience and thereby better able to adapt to their existing economic situation is also a theme in past research (MacLeod, Musich, Hawkins, Alsgaard, & Wicker, 2016; Centre for Policy on Ageing, 2014; Windle, 2011).

The utility of welfare types in analysis of (or for) policy

Aside from being able to provide a descriptive account of the proportion of family life-course types falling into each objective-subjective category (ie. fourfold classification), we would caution against using these welfare types for anything more definitive in terms of the impact of the recession or the extent these welfare types might have changed over time. The reasons for this are two-fold: first, differences in welfare types could be caused by real differences between family life-course groups in levels of resources which are not captured accurately enough in data (e.g. intra-household distribution of resources and income fluctuations) and second, that welfare types are simply adjectives (or descriptors) in relation to the average of the objective and subjective measures and are not based on a scientifically validated threshold. This fourfold classification of welfare should therefore not be used to make definitive statements on living standards and the extent to which these change for family life-course types over time (and in particular over the course of the recession).

Additional critiques of using welfare types to establish differences in populations groups have been raised in the past. For example, Veenhoven (2006) states that,

"Though elegant, these distinctions have not proven particularly useful. The taxonomy does not explain much, mainly because the difference is more in observation than in substance. Objective health assessment aims at the same qualities as subjective appraisals, though by different means. Further, the labelling gives rise to misunderstanding. The word objective suggests indisputable truth, whereas the term subjective is easily interpreted as a matter of arbitrary taste. This suggestion is false: the fact that income can be measured objectively does not mean that its value is beyond question." (p. 75)

Using welfare types as a methodological (exploratory) tool

Bearing these caveats and previous criticisms in mind, we did examine the extent to which welfare types had potential utility in terms of confirming our analysis from Stage 2. They in fact did, and in particular they raised the need for further research into the satisfaction with

life of single adults of working age. Specifically, we found that single adults of working age (without children) were more likely to have lower levels of satisfaction with life, even when controlling for GHQ levels and a range of other characteristics. Furthermore, the analysis of welfare types confirms that single adults of working age are less likely to have high satisfaction with life (even when adjusting for objective mental health) and differently from other groups with low levels of mental health they are also less likely to adapt to it, even when controlling for income and material deprivation. Granted, both single parents and single adults of working age have the lowest levels of mental health (GHQ) and satisfaction with life. However, single parents' satisfaction with life seems to be partly explained by their lower levels of income and objective mental health (GHQ), whereas this does not seem to be case for single adults of working age. We find that these findings are consistent; even after controlling for sex, age, income, material deprivation, GHQ, longstanding illness and employment status, this group emerges as the one with substantially lower life satisfaction.

Section 5: Summary and conclusions

The analysis of the recessionary period using objective resources and subjective assessments of these resources has shown the importance of the specific measures and indicators used when trying to establish any changes in trends in both objective and subjective indicators as well as the relationship between them over time. As a prime example, when actual income is considered in relationship to satisfaction with income there are clear associations over time, ie. when average income rises, so does average satisfaction with income, which suggests that people are aware of their current level of economic resources and revise their subjective assessments when this fluctuates (in both the short and longer term). In contrast, when measures of more latent concepts such as quality of life (measured in our project as satisfaction with life), we find that there is much less consistency in the associations between objective resources and subjective assessments.

The findings of the current research also confirm to a great extent the importance of income as a key resource in living standards as well as the scientific validity of material deprivation items used in the PSE and FRS as well as USoc surveys. The findings of this research allow us to conclude that when looking at more subjective assessments of objective resources, income and material deprivation account for a large percentage of the variation among individuals. However, the findings also show that the associations between objective and subjective indicators of economic resources are most closely aligned when individual measures or indicators are congruent; in other words, there is a close match (in measurement and operationalisation) between both the objective and subjective measures, e.g. income and satisfaction with income. In contrast, we find greater disparity when specific measures are indicators of our different living standards dimensions are subjectively assessed using what are considered in the literature as (personal) subjective well-being or quality of life measures, e.g. when we compared income (or satisfaction with income) with satisfaction with life. This discrepancy is not altogether surprising and confirms what previous literature has shown; that latent concepts such as life satisfaction or happiness are based on a number of underlying causal factors, which are difficult to untangle and model, particularly when using cross-sectional data. The reason for this needs to be further explored and we argue that cognitive interviewing would be best placed to provide further information on this.

Our findings on welfare types reiterates that there are differences across family life-course types when subjective assessments of income (subjective relative income and satisfaction with income) and subjective assessment of health are considered. We argue that the utility of using welfare types as a policy-making research tool is limited. However, they may have some utility as a methodological (exploratory) tool.

In conclusion, we have shown that living standards can be measured using some specific subjective indicators because their variation is mostly explained by variation in objective living standards. Similarly, subjective indicators generally track trends in objective indicators across the recessionary period and the family life-course types. In other words, the same family life-course type differences and trends across the recessionary period are found in both objective and subjective indicators of resources.

Why then use both subjective and objective indicators to measure living standards?

First, we argue that subjective indicators can make up for the lack of objective indicators such as material deprivation, which are not collected consistently across surveys. They also can help track the evolution of living standards across time and across family life-course types because their variation is explained mostly by what people have rather than who they are, what they do and where they live. Subjective indicators have so far been neglected and often dismissed as unreliable in measuring (economic) living standards. In our research, we find evidence to the contrary and suggest the use of satisfaction with income, satisfaction with financial situation and satisfaction with life as subjective indicators for monitoring differences and changes in living standards. Our analysis did not allow us to provide the same recommendation for subjective relative income as we lack trend data for this measure.

Second, the government's emphasis on collecting information on personal subjective well-being and economic well-being is important. However, our findings have shown that more useful information might be gained by looking at additional subjective and objective indicators within key life dimensions such as satisfaction with income and financial fluidity. Moreover, we contend that the choice of specific subjective indicators needs to be carefully considered and their cognitive properties established.

Finally, our research has shown that several subjective indicators have been corroborated using a number of different micro-analysis techniques on three nationally representative datasets. In fact, the subjective measures used show hardly any contradictory or counterintuitive (save indebtedness over the recession, which we have attempted to explain above) results with respect to interpretation of the family life-course types whom are the worse off and best off in terms of objective and subjective indicators of living standards and how these have changed over the recession. As such, the subjective indicators are suitable to illustrate the living standards of family life-course types and are valid. Provided that short, easily applicable scales of subjective measures are available it would also seem useful to apply such scales to studies that do not mainly concentrate on 'economic' living standards.

Limitations

'Objectivity' versus 'Subjectivity'

The distinction between what is deemed objective and what is deemed subjective in measuring individual welfare can be contentious (Erikson, 1993). It can be argued that there are varying degrees of both subjectivity and objectivity in the indicators used. Schulz (2000), for example, has also suggested that welfare and quality of life studies usually employ variables along a continuum ranging from more objective to more subjective. Veenhoven (2004) goes further to suggest that "the reality of social indicators research is more complex than these two dichotomies suggest. The substance of indicators cannot always be classified as either 'objective' or 'subjective' and the methods of measurement do not always fit this dichotomy either" (p. 2) and recommends adding a third *mixed* category to this dichotomy. That our conceptual model and analytical strategy might be seen as creating an artificial division or dichotomy between objective and subjective indicators would not be an altogether unfair critique.

Housing costs

Housing costs were not strictly comparable across all datasets used in this analysis. Therefore, caution should be exercised when comparing regression results from Stages 2 and 3. Further work will explore the differences in explanatory power between income Before and After Housing Costs for different family life-course types.

Additional datasets

There are other datasets, which provide additional information on multidimensional indicators of living standards and that were not used as part of the current study. A key example is the Living Costs and Food Survey (LCF), which collects detailed information on individual and household spending (as well as subjective wellbeing). A decision was made not to include this dataset as it focuses chiefly on expenditure and includes little information on subjective indicators of expenditure. The Annual Population survey (APS) is another, but the focus on labour and employment covers only one life dimension in our conceptual framework of living standards.

Section 6: Implications and recommendations

Policy making

Inequalities in living standards between different family life-course types. The research has confirmed that some family life-course types, e.g. single adults of working age and single parents, had been affected more than others by the economic downturn and subsequent recovery. It found that these two groups appear to have been affected both objectively and subjectively, which suggests that overall the most disadvantaged groups are aware of their lower living standards and how these change across time as shown by their lower levels of satisfaction with income and life. Policy-makers need to be aware of inequalities across the life-course and that policies which affect people's personal resources (whether these are income, financial or mental health) will affect their subjective wellbeing. Single adults below retirement age and single parents are two groups which might warrant further policy attention, particularly during periods of economic downturn.

Research for policy

Social indicators – harmonised principles of multidimensional indicators of living standards. Government and policy makers' interest in quality of life and measures of subjective well-being can be enhanced by looking more closely at how the current basket of objective indicators of life circumstances matches the subjective assessment of these life circumstances in order for governments to have a clearer insight into which specific dimensions of life are improving or deteriorating over time and more importantly the reasons for this. As our research has shown, it is possible to produce family-level (micro) estimates to contextualise some of the trends over time identified through work on measuring national and personal well-being. However, we also find that the specific nature of measures/indicators available and applicable to such analyses varies greatly between datasets. As such, it might be helpful for the Government Statistical Service (GSS) to carry out a Harmonised Principles exercise on additional subjective indicators of living standards (e.g. satisfaction with income, satisfaction with accommodation/home, satisfaction with local area/neighbourhoods) similar to those already carried out on a number of related areas (e.g. personal well-being, general health, problems in local area), which are designed to provide approved harmonised questions, definitions and outputs for a variety of social and business-related topics (Government Statistical Service, 2018).

Data collection and measurement

Material Deprivation. At a minimum, the UK government should collect information on material deprivation indicators consistently. Many of the indicators originally collected by Townsend in the 1970s are still included in current indices of deprivation. The literature contains a wide range of material deprivation indicators which are used across the life-course to track material deprivation across time. Currently, the FRS contains discontinued series of material deprivation indicators which make it difficult to track the evolution of the same set of material deprivation items across time. It is also important to reconsider whether collecting different items for pensioners and adults (which results in non-comparable estimates of deprivation) is the most sensible option from a policy point of view. A simple compromise would be to expand the range of response options for not owning and participating in the adult material deprivation module so that pensioner and

adult questionnaires have exactly the same questions and response options. Furthermore, we recommend that these deprivation indicator questions are collected for each adult in the household so as to allow intra-household and where there are multiple benefit units, intra-family analysis.

Financial situation. We also recommend that most surveys collect information about savings and debt and possibly economising behaviours so that trends and patterns in financial fluidity can be further explored. Knowing the exact amount of debt would be beneficial but this it would most likely require a large set of questions so asking questions about whether respondents are behind with council tax, electricity, gas bills and fuel, insurance policies and telephone bills (including mobile), rent or mortgage and water rates and other loans as done in the FRS would lead to reliable scale of debt servicing pressure. Information contained in the PSE about whether respondents skimmed on food, continued to wear worn out clothes, cut back on hobbies, dentists and social activities and pension contributions (ie. economising behaviours) would further enhance this measure and make up for lack of exact information on amount of secured and unsecured debt (and consumer credit).

Mental Health. Given the current drive to measure (and improve) personal and national well-being we recommend that national surveys like the FRS include a reliable and highly validated mental health questionnaire like the General Health Questionnaire (GHQ).

Subjective Relative Income. We recommend that surveys that aim to measure living standards and inequality include questions about how respondents perceive their income in comparison with average income and income of those in poverty. This would allow policy makers to gauge the public understanding of current levels of inequality and perception of income adequacy.

Satisfaction with Income and Financial Situation. Our findings show that satisfaction with income and with finances follow different trajectories, which match the respective trends in net incomes and levels of debt and savings. In other words, despite reservations from many economists, these subjective indicators seem reliable and consistent over time. We therefore recommend that large annual surveys like the FRS collect these two simple questions yearly. Overall, it is arguable that just two simple questions on satisfaction with income and financial situation will cover two crucial areas of personal and family economic resources.

Smaller surveys which are not equipped to measure net income appropriately (e.g. because of lack of time or resources to ask all necessary questions) may also benefit from these simpler measures, which seem nevertheless to track average changes in real incomes before and after the recession. We recommend that these variables are collected alongside some information on at least gross household income.

Critical Life Events. Despite our analysis showing that these account for little variation in personal resources and people's subjective assessment of these, the collection of information on critical life events is arguably important. Health problems and becoming unemployed are the two critical events which do not overlap clearly with the family life-course types and that should be collected more widely and consistently. However, it is also arguable that having valid and reliable measures to gauge the magnitude of these changes is preferable to knowing simply whether these events have happened or not. In other words, knowing one's drop in income and financial fluidity and their subjective counterparts might

be more insightful than knowing simply whether they have become unemployed. Similarly, having an accurate measurement of their physical and mental health might be more insightful than knowing simply whether they had a major health problem. We therefore recommend that collection of information on critical life events should always be carried out alongside the measurement of valid and reliable indicator of living standards, and if resources are limited the latter should be prioritised.

Further Research and Analysis

Family life-course types. There should be further research on the overlap between household and benefit unit family types. Currently, some information is available at the benefit unit level (e.g. material deprivation), whereas other information is available at the household level (e.g. housing conditions). Although households containing more than one benefit unit are a minority (albeit sizeable, see Table 8) there is increasing interest in intergenerational households (e.g. single parents living with parents). The composition of these households needs to be further explored using Census data and the appropriate weighting needs to be provided. Following this, the assumption that living standards of such households can be measured and analysed separately (i.e. for each benefit unit) should be further investigated.

Post-recovery changes. The Bank of England recently announced a rise of the base lending rate. According to the Resolution Foundation, this will likely result in their being some winners (savers) and losers (borrowers) in the period ahead (Whittaker, 2018, p. 4). Moreover, the impact of a rise in the lending (borrowing) rate is likely to be amplified as consumer credit levels have returned to those last recorded just before the financial crisis and lifted overall household debt (secured and unsecured) towards the £1.9 trillion mark (Whittaker, 2018, p. 4). Most importantly, the freezing of working-age benefits, the cap on the number of children allowed to claim benefits, the withdrawal of the family element of support for new tax credit and universal credit claimant and the rollout of universal credit will affect low and middle-income families. It will be important to monitor the effect of these on living standards.

Final remarks

At the time of writing this report, over ten years have passed since the Great Recession of 2008. A lot has happened in terms of the economic and social advantage (and disadvantage) of different household family types during this period in the UK. The findings from this research have confirmed much of the existing research findings on who lost out (and who was not affected as much) during the economic downturn. The research has also provided an innovative and we contend a timely source of information on the commonalities and divergences between subjective and objective indicators of living standards. We set out to understand what has driven changes to economic advantage and disadvantage measured through objective and subjective multidimensional indicator of living standards. As a standalone piece of policy research, we have met the goals and aims of the project, but there is still much to do to convince policy makers, policy researchers, key stakeholders and the public that living standards are more than just about income.

Stakeholder Consultations and our response to feedback

Following completion of this report, we undertook two stakeholder consultations with the aim of informing and influencing wider debate on what should be considered as key multidimensional indicators of living standards. The stakeholder consultations gave us an initial sense about whether our conceptual model on measuring living standards using both objective and subjective indicators is congruent with current academic thinking in the field and to what extent non-academic stakeholders feel they are able to use the findings of our research to influence policy and practice.

There was general agreement that using both objective and subjective indicators to measure living standards could lead to improvements in the measurement of non-income based living standards. However, strong caution was raised that the political take-up of subjective measures of living standards may be difficult to achieve in practice without also showing the extent to which there are inequalities in multidimensional indicators of living standards at the regional and local authority level. We will address the feasibility of producing such estimates in further work.

Finally, there was also general agreement that although our research may show an overall increase in average objective and subjective living standards in the recovery period (2013-2016), adult and child poverty (measured using DWP HBAI 60% of median income) increased. Before and After Housing Costs relative poverty has increased from 15% to 16% and 21% to 22% respectively between 2012/13 and 2015/16 (JRF Analysis Unit, 2017). In fact, After Housing Costs poverty in this period increased slightly for working age adults with children and pensioners. Rates for working age adults without children have remained relatively similar. Specifically, After Housing Costs relative poverty among adults with children has increased from 24.6% in 2012/13 to 25.4% in 2015/16. Rates for pensioners have increased from 13.2% to 15.6% trends (JRF Analysis Unit, 2017). This highlights the importance of being clear about the meaning of the measures used when disseminating our work on multidimensional indicators of living standards. In our research, we have focused on trends in average living standards rather than trends in poverty. We do not expect similar trends between a relative measure of low living standards (e.g. 60% of the median income) and average living standards (e.g. mean income, mean satisfaction with income).

What will happen next...

We will now disseminate the final report, summary findings and recommendations more widely, aiming to convince public, charitable and voluntary sector organisations to consider further the take-up in their national surveys of a small subset (or suite) of multidimensional indicators of living standards.

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Appendix A

Table A 1 Dimensions in different models of objective individual welfare (revised based on Brand, 2007)

Generic Categories	Welfare Outcomes		Welfare Resources (in terms of their empirical evidence)				Welfare Resources & Outcomes		Human Needs	
	NL Social & Cultural Planning Office	ONS Measuring National Well-being	Habich's 'Lebenslagen' Index	Hradil's Theoretical 'Soziale Lagen' model	Schwenk's empirical 'Soziale Lagen' model	Swedish Level of Living surveys (ULF system)	Bristol Social Exclusion Matrix (B-SEM)	PSEUK 'Living Standards' (UK-LS)	Allardt's 'Having, Loving, Being' model	Max-Neef's basic human needs
Social Integration	Social Participation (social isolation)	Our relationships - Satisfaction with family life, Satisfaction with social life, Potential social support	Social & Political participation	Social Relations Social Roles	Social Integration	Family & Social integration	Social resources	Social resources & Social relations and integration	Family attachment Friendship patterns	Affection Identity
Economic Resources	Purchasing Power	Personal finance	Social situation of household Consumption	Money Poverty Risks Social Security	Income	Economic resources	Material/ economic resources	Materials goods and services & Economic resources & Financial situation	Income	Subsistence
Housing	Housing	Where We Live - Satisfaction with accommodation	Housing conditions	Housing Environment	Housing Amenities & Space	Housing	Living environment	Housing and accommodation	Housing	Subsistence
Neighbourhood	Housing (neighbourhood quality)	Where We Live - Neighbourhood attachment	—	Housing Environment (neighbourhood quality)	(natural) Environment	Housing (neighbourhood quality)		Local area/ Neighbourhood	—	—
Physical Health	Health	Health - Long-term illness/disability, Self-rated health	Health	Social Security (= access to health care)	*	Health & access to health care	Health and well-being	Physical and mental health	Health	Subsistence
Psychological Health	Health (psychosomatic conditions)	Personal well-being - Satisfaction with lives overall, How worthwhile things they do are, Happiness yesterday, Anxiety yesterday	SWB in separate index	'Negative conditions' (poor SWB)	Anomie (or 'anomic' depression)	Health (psychosomatic conditions)		Physical and mental health	Alienation	possibly Affection/Identity

	Welfare Outcomes		Welfare Resources (in terms of their empirical evidence)				Welfare Resources & Outcomes		Human Needs	
		Health - Depression/anxiety (GHQ)								
Work and Productive Activity	*	What We Do - Satisfaction with job, Volunteered	Elements of the social structure (employment)	Formal Power Working Conditions	*	Employment & working conditions	Economic participation	Paid and unpaid work	Employment Doing interesting things	Creation
Community	Social Participation	Governance - Voter turnout, Trust in government	Social & political participation	Democratic institutions Prestige	Participation	Political resources	Social participation Access to public and private services Political and civic participation	Social and political participation	Political resources Community attachment Personal prestige	Participation
Personal Safety	Housing (neighbourhood quality)	Where We Live - Personal crime, Safe walking home after dark	—	Housing Environment (neighbourhood quality)	—	Security of life & property	Crime, harm and criminalisation	Local area/ Neighbourhood - Crime and safety	Community attachment	Protection
Education	*	Education and skills	Elements of the social structure (Education)	Education	Education	Education & Skills	Culture, education and skills	Personal resources - Education and skills	Education	Understanding
Leisure	Leisure activities Sport activity holiday	What We Do - Satisfaction with leisure time, Engaged in arts/cultural activity, Exercise	—	Leisure Conditions	Leisure conditions	Recreation & culture		Social and political participation [Participation in common social activities]	Doing interesting things	Idleness
Extra	Mobility	The economy The natural environment	—	Discrimination/ Privileges	Discrimination Privileges	—	Exposure to bullying and harassment/ Discrimination	—	—	Freedom

* specific theoretical reasons for omission cited or implied. SWB = subjective well-being

Source: Brand (2007) Table 4.4.1.a (p.145). Author's permission to revise original table granted June 2016.

Table A 2 PSE2012 Conceptual framework of Living Standards: Domains, Dimensions, Indicators

Domain / Dimension	Objective	Subjective
(A) What We Have		
1. Economic resources	<ul style="list-style-type: none"> Income Benefits (type/income) Wealth (home equity, savings, other assets) 	<ul style="list-style-type: none"> Subjective assessment of one's economic resources
2. Material goods	<ul style="list-style-type: none"> Consumer durables/ household goods Material consumption items 	<ul style="list-style-type: none"> Quality of Goods
3. Financial situation	<ul style="list-style-type: none"> Financial commitments (debt and arrears) Borrowing (loans) Economising behaviours 	<ul style="list-style-type: none"> Financial difficulties (keeping up with bills) Ability to pay unexpected expense Spot purchases
4. Personal and social resources	<ul style="list-style-type: none"> Education and skills Financial & other types of assistance 'given to' friends/family Perceived social support 	<ul style="list-style-type: none"> Impact on standard of living of receiving/ giving financial & other types of assistance Quality of social support
5. Physical and mental health	<ul style="list-style-type: none"> Physical health Mental health 	<ul style="list-style-type: none"> Self-rated health Satisfaction with health Health affects poverty Time stress (crunch) Satisfaction with life
(B) What We Do		
6. Paid and unpaid work	<ul style="list-style-type: none"> Paid work Unpaid work Unpaid care 	<ul style="list-style-type: none"> Quality of work (number of positive aspects of work) Satisfaction with job
7. Social and political participation	<ul style="list-style-type: none"> Participation in common social activities Social and Political engagement Political participation 	<ul style="list-style-type: none"> Satisfaction with day-to-day activities Satisfaction with feeling part of a community Political efficacy
8. Social relations and integration	<ul style="list-style-type: none"> Social networks 	<ul style="list-style-type: none"> Satisfaction with personal relationships Reasons for not seeing family/friends more often
(C) Where We Live		
9. Housing and accommodation	<ul style="list-style-type: none"> General information (tenure, type of accommodation) Problems with housing/ accommodation 	<ul style="list-style-type: none"> Satisfaction with housing State of repair of home

	<ul style="list-style-type: none"> • Fuel poverty 	<ul style="list-style-type: none"> • Level of warmth in accommodation (comfort)
10. Local area/Neighbourhood	<ul style="list-style-type: none"> • Problems in local area • Crime and personal safety 	<ul style="list-style-type: none"> • Satisfaction with local area • Perceptions of crime/safety
11. Local services	<ul style="list-style-type: none"> • Public and private services 	<ul style="list-style-type: none"> • Concern about losing public service

Source: Adapted from Patsios, Pomati and Hillyard (2018) 'Living Standards in the UK'. In Glen Bramley; Nick Bailey (eds.) *Poverty and Social Exclusion in the UK: Volume 2 - The dimensions of disadvantage*. Bristol: Policy Press.

Table A 3 Donor surveys used to locate the variables needed for the harmonisation, validation and analysis, by samples available at individual (adult), benefit unit, and household levels (unweighted)

Dataset #	Name of survey in crosswalk (Survey number & hyperlink to UK Data Archive)	Number of adults (16+/18+)	Number of benefit units	Number of households
1	FRS10/11 (SN 7085 Family Resources Survey, 2010-2011)	44,176	29,639	25,350
2	HBAI10/11 (SN 5828 Households Below Average Income, 1994/95-2015/16)	n/a	29,552	n/a
3	PSE2012 (SN 7879 Poverty and Social Exclusion Living Standards Survey, 2012)	8,494	n/a	5192
4	FRS06/07 (SN 6079 Family Resources Survey, 2006-2007)	45,133	30,266	25,792
5	HBAI 0607 (SN 5828 Households Below Average Income, 1994/95-2016/17)	n/a	30,112	n/a
6	FRS07/08 (SN 6252 Family Resources Survey, 2007-2008)	43,428	29,315	24,977
7	HBAI 0708 (SN 5828 Households Below Average Income, 1994/95-2016/17)	n/a	29,212	n/a
8	FRS08/09 (SN 6523 Family Resources Survey, 2008-2009)	43,598	23,392	25,088
9	HBAI 0809 (SN 5828 Households Below Average Income, 1994/95-2016/17)	n/a	29,269	n/a
10	FRS09/10 (SN 6886 Family Resources Survey, 2009-2010)	43,756	29,464	25,200
11	HBAI 0910 (SN 5828 Households Below Average Income, 1994/95-2016/17)	n/a	29,238	n/a
12	FRS10/11 (SN 7085 Family Resources Survey, 2010-2011)	44,176	29,639	25,350
13	HBAI 1011 (SN 5828 Households Below Average Income, 1994/95-2016/17)	n/a	29,552	n/a
14	FRS11/12 (SN 7368 Family Resources Survey, 2011-2012)	36,342	24,442	20,759
15	HBAI 1112 (SN 5828 Households Below Average Income, 1994/95-2016/17)	n/a	24,334	n/a
16	FRS12/13 (SN 7556 Family Resources Survey, 2012-2013)	35,207	23,697	20,196
17	HBAI 1213 (SN 5828 Households Below Average Income, 1994/95-2016/17)	n/a	23,603	n/a
18	FRS13/14 (SN 7753 Family Resources Survey, 2013-2014)	35,134	23,635	20,137
19	HBAI 1314 (SN 5828 Households Below Average Income, 1994/95-2016/17)	n/a	23,527	n/a
20	FRS14/15 (SN 8013 Family Resources Survey, 2014-2015)	34,305	23,030	19,535
21	HBAI 1415 (SN 5828 Households Below Average Income, 1994/95-2016/17)	n/a	22,942	n/a
22	FRS15/16 (SN 8171 Family Resources Survey, 2015-2016)	33,346	22,540	19,322
23	HBAI 1516 (SN 5828 Households Below Average Income, 1994/95-2016/17)	n/a	22,429	n/a
24	US08-09 'Wave 1 (a)' (SN 6614 Understanding Society: Waves 1-7, 2009-2016)	50,994	n/a	30,169
25	US09-10 'Wave 2 (b)' (SN 6614 Understanding Society: Waves 1-7, 2009-2016)	54,597	n/a	30,508
26	US10-11 'Wave 3 (c)' (SN 6614 Understanding Society: Waves 1-7, 2009-2016)	49,739	n/a	27,782
27	US11-12 'Wave 4 (d)' (SN 6614 Understanding Society: Waves 1-7, 2009-2016)	47,157	n/a	25,875
28	US12-13 'Wave 5 (e)' (SN 6614 Understanding Society: Waves 1-7, 2009-2016)	44,903	n/a	24,369
29	US14-15 'Wave 6 (f)' (SN 6614 Understanding Society: Waves 1-7, 2009-2016)	45,290	n/a	24,517
30	US15-16 'Wave 7 (g)' (SN 6614 Understanding Society: Waves 1-7, 2009-2016)	42,217	n/a	23,603

Source: UK Data Service, <https://www.ukdataservice.ac.uk/>

Table A 4 PSE2012: Sample sizes – number of adults and households (unweighted and weighted)

Unit	Unweighted N	Weighted N
Adults	8,494	49,698,603
Household	5,192	26,561,518

Table A 5 FRS 2006/7 - 2015/16: Sample sizes – number of adults and households (unweighted and weighted)

	2006/ 07	2007/ 08	2008/ 09	2009/ 10	2010/ 11	2011/ 12	2012/ 13	2013/ 14	2014/ 15	2015/ 16	Total
Adults											
Unweighted	45,133	43,428	43,598	43,756	44,176	36,342	35,207	35,134	34,305	33,346	394,425
Weighted (gross4)	46,774,281	47,205,213	47,673,218	47,934,884	48,352,237	49,172,785	49,490,964	49,526,283	49,941,219	50,363,583	264,658,254
Households											
Unweighted	25,792	24,977	25,088	25,200	25,350	20,759	20,196	20,137	19,535	19,322	226,356
Weighted (gross4)	25,453,622	25,677,804	25,896,812	26,094,575	26,318,883	26,558,666	26,807,774	27,057,703	27,243,989	27,548,426	25,453,622

Table A 6 USoc Waves 1 – 7: Sample sizes – number of adults and households (unweighted and weighted)

	USoc Year							w1-7 Total
	w1 2010*	w2 2011	w3 2012	w4 2013	w5 2014	w6 2015	w7 2016	
Adults								
Unweighted	50,994	54,597	49,739	47,157	44,903	45,290	42,217	334,897
Weighted	50,295	53,460	46,466	42,604	39,764	35,107	32,101	299,798
Households								
Unweighted	30,035	30,476	27,735	25,831	24,332	24,876	23,188	186,473
Weighted	30,066	29,911	25,885	23,302	21,512	18,975	17,449	167,100

Appendix B

Table B 1 PSE2012 - validation of 'What We Have' indicators

Domain, dimensions and indicators	#items	Alpha (reliability)	Satisfaction with standard of living	Social Class (3 categories)	Equivalised Net Income	General Household Questionnaire	Happiness (ONS measure)	Social Support	Lack of obstacles to part. in soc. activities
<i>What We Have - objective</i>									
<u>Economic resources - Objective</u>									
Income									
PSE income quintile (AHC) – 'Top two'	1		+	+			+		
Wealth	5								
Housing tenure 'Own it outright'	1		+	0	+				
Has second home 'Yes'	1		+	+	+				
Total savings '£8,000 or more'	1		+	+	+				
Has assets (Stocks, shares, bonds etc) 'Yes'	1		0	+	+				
Value of other assets '£3,500 or more'	1		0	0	0				
<u>Material goods and services - Objective</u>	37								
Consumer durables/goods '13-15'	15	.722	+	+	+				
Consumption items '20-22'	22	.861	+	+	+				
<u>Personal and Social Resources - Objective</u>									
Education and skills									
Highest level of education (FRS) 'Higher/Degree'	1		+	+	+				
Financial and other types of assistance ('received from'/ 'given to' friends and family)									
Given to - All items (incl. 'other')	11	.777	+	+	+				
Given to - Financial help/gifts	6	.671	+	+	+				
Given to - Practical help	4	.669	+	+	+				
Received from - All items (incl. 'other')	11	.767	-	-	-				
Received from - Financial help/gifts	6	.673	-	-	-				
Received from - Practical help	4	.635	-	-	-				
<u>Financial situation - Objective</u>									

Finances (and debts)	28								
Debts/Arrears 'No debt/arrears'	13	.772	+	+	+				
Borrow 'Did not borrow'	7	.525	+	+	+				
Economising behaviours 'Did not economise'	8	.846	+	+	+				
<u>Physical and mental health - Objective</u>									
Health - Physical 'No LSI/LSI no limit to activities'	1		+	0	+				
Health - Mental (GHQ-12) 'Below threshold (4+)'	12	.894	+	0	+				
<i>What We Have - subjective</i>									
<u>Economic resources - Subjective</u>									
Subjective poverty 'A Lot Above poverty line'			+	+	+		+		
<u>Material goods and services - Subjective</u>									
Quality of goods '4-7 items Top/good quality'	7	.765	+	+	+				
<u>Personal and Social Resources - Subjective</u>									
Impact on standard of living - Help given	1		nu	nu	nu				
Impact on standard of living - Help received	1		nu	nu	nu				
Perceived social support - Practical & Emotional	7	.871	+	0	+	+			
Perceived social support - Practical 'A lot' in all 4	4	.785	+	+	+	+			
Perceived social support - Emotional 'A lot' in all 3	3	.808	+	+	+	+			
<u>Financial situation – Subjective</u>	3								
Financial difficulties 'Keeping up with bills'	1		+	+	+				
Ability to pay unexpected expense of £500 'Yes'	1		+	+	+				
Spot purchases – Not restricted buying £150 item	1		+	+	+				
<u>Physical and mental health - Subjective</u>	5								
Self-rated general health 'Very good'	1		+	+	+				
Health affected financial situation - 'Not at all'	1		+	+	+				
Lack of money affected health - 'Not at all'	1		+	+	+				
Health limited participation in society - 'Not at all'	1		+	+	+				
Time crunch 'None of the items mentioned'	10	.647	+	-	0	+			

Note: nu= filter for survey questions prevents validation, na= not applicable to validation measure. '+' = positive association; '-' = negative association; '0' = no association

Table B 2 PSE2012 - validation of 'What We Do' indicators

Domain, dimensions and indicators	#items	Alpha (reliability)	Satisfaction with standard of living	Social Class (3 categories)	Equivalent Net Income	General Household Questionnaire	Happiness (ONS measure)	Social Support	Lack of obstacles to part. in soc. activities
What We Do - objective									
Social and political participation - Objective									
Participation in common social activities '7-12'	12	.796	+	+	+		+		+
Social and political engagement 'Member 1+ org.'	13	.368	+	+	+		+		+
Political participation - '2+ political engagements'	9	.691	+	+	+		+		+
Paid and unpaid work - Objective									
Employment status 'Employee or self-employed'	1		+	na	+				
Unpaid work									
Voluntary work or charitable activity 'Yes'	1		+	+	+		+		0
Provide informal care to adults 'No'	1		0	0	0		0		+
Provide child care 'No'	1		0	0	+		0		+
Social relations and integration - Objective									
Social networks	5								
Speaks to relatives 'At least weekly'	1		0	0	0		+	+	+
Sees/speaks to 3+ relatives at least once a month	1		0	0	0		+	+	+
Speaks to friends 'At least weekly'	1		0	0	0		+	+	+
Sees/speaks to 3+ friends at least once a month	1		0	0	0		+	+	+
Text contact with friends/family 'At least weekly'	1		0	0	0		+	+	+
What We Do - subjective									
Social and political participation - Subjective									
Satisfaction - Feeling part of a community '7-10'	1		+	+	+	+	+		
Political efficacy – 'At least one positive attitude'	3		+	+	+		+		
Paid and unpaid work - Subjective									
Satisfaction with day-to-day activities '8-10'	1		+	+	+	+	+		
Quality of work – 'At least one positive aspect'	13	.620	+	+	+	+	+		
Satisfied with job 'Strongly agree/Agree'	1		+	+	+	+	+		
Social relations and integration - Subjective									
See family and friends as often as I want to	1		+	-	0		+	+	+
Reasons preventing meeting family/friends 'None'	9	.379	+	-	0		+	+	+
Satisfaction with personal relationships 'Very'			+	0	+	+	+	+	+

Note: **nu**= filter for survey questions prevents validation, **na**= not applicable to validation measure. Note: '+' = positive association; '-' = negative association; '0' = no association

Table B 3 PSE2012 - validation of 'Where We Live' indicators

Domain, dimensions and indicators	#items	Alpha (reliability)	Satisfaction with standard of living	Social Class (3 categories)	Equivalised Net Income	General Household Questionnaire	Happiness (ONS measure)	Social Support	Lack of obstacles to part. in soc. activities
Where We Live - objective									
Housing and accommodation - Objective									
General information	4		+	+	+				
Type of accommodation 'Whole house/bungalow/detached'	1		+	+	+				
Number of bedrooms per person '2,3 or more'	1		+	0	+				
Council tax/NI rates 'GB Bands 5-8/NI 5-7'	1		+	+	+				
Years lived at address '10 or more years'	1		+	-	0				
Physical barriers to access property 'At least one'	1		0	0	-				
Problems with accommodation 'None'	12	.635	+	0	+				
Problems with accommodation 'None (excl other)'	11	.640	+	0	+				
Fuel poverty 'No methods used cut back fuel use'	7	.761	+	+	+				
Local area/Neighbourhood - Objective									
Problems in Local Area 'None of these'	16	.699	+	0	+				
Home broken into and something stolen 'No'	1		+	0	0				
Local services (public and private) - Objective									
Public services 'Used adequate/Not wanted'	7	.599	+	+	0				
Private services 'Used adequate/Not wanted'	10	.638	+	+	0				
Services for adults/older people with disabilities	5	.715	nu	nu	nu				
Loss of a public service 'Did not happen'	1		+	-	0				
Where We Live - subjective									
Housing and accommodation - Subjective									
State of repair of home 'Good'	1		+	+	+				
Level of warmth in accommodation 'About right'	1		+	+	+				
Satisfaction with housing 'Very satisfied'	1		+	+	+				
Local area/Neighbourhood - Subjective									
Satisfaction with local area 'Very satisfied'	1		+	+	+				
Worry - Home broken into 'Not very/Not at all'	1		+	+	+				
Local services (public and private) - Subjective									
Worry - Losing public service 'Not very/Not at all'	1		+	+	+				

Note: nu= filter for survey questions prevents validation, na= not applicable to validation measure. '+' = positive association; '-' = negative association; '0' = no association

Appendix C

Measurement models for latent variables

Latent models generally start from the assumption that observed variables are a manifestation of a latent concept, combined with an error¹⁰. This concept and the related formula

$$y_{ji} = \eta_i + \delta_{ji} \quad \text{C.1}$$

(where y is the j th variable value of the i th case and η and δ are the true score and error) are the foundation of classical test theory (CTT) (Novick, 1966), which is an extremely popular framework among researchers. If we assume that the errors are uncorrelated with the true score η then we can calculate the extent to which a given number of variables measure an underlying construct (a non-directly observable concept) consistently, or more technically the proportion of observed score variance attributable to true score variance (reliability)

$$\rho = \frac{Var(\eta_i)}{Var(\eta_i) + Var(\delta_{ji})} \quad \text{C.2}$$

Equation C.1 can also be expanded to incorporate a loading λ , or the correlation between the observed variable y and the latent variable, plus a constant β and an error: $y_{ji} = \beta_j + \lambda_j \eta_i + \delta_{ji}$. This is known as the linear factor model. The general assumption is that the items used to create the factor follow a normal distribution, although tetrachoric correlations and standard error adjustment can be used to accommodate binary variables (Muthen, 1978) and the results are mathematically equivalent to Item Response Theory (Muthén, 1978; Takane and de Leeuw, 1987; Skrondal and Rabe-Hesketh, 2004) which is used throughout this report because of its ability to easily accommodate a range of levels of measurement.

Table C 1 below presents the Classical Test Theory reliability (specifically, Cronbach's alpha) for each measure. It also presents the maximum change in Cronbach's alpha after each of the relevant items are removed. Moreover, it presents the fit of the latent model by detailing the range of standardised loadings (which like correlation range from -1 to 1) as well as three measures of fit RMSEA, CFI and TLI. All models were estimated using the software MPLUS and show high levels of reliability (Alpha>0.7), high loadings and good fit (e.g. RMSEA<0.08, CFI>0.9).

¹⁰ Often phrased in non-technical texts as $X = \text{True score} + \text{error}$.

Table C 1 Latent score measures of resources (What We Have)

	RMSEA	CFI	TLI	Chi2	Alpha	Largest Alpha if one item is removed	Loadings range
Subjective Relative Income (PSE)	0	1	1	0	0.8	0.8	0.8-0.9
Financial Fluidity (FRS)	0.02	0.978	0.974	401.023	0.7	0.8	0.6-0.9
GHQ (PSE)	0.05	0.987	0.985	1094.816	0.9	0.9	0.7-0.9
GHQ (USoc)	0.05	0.989	0.986	30380.829	0.9	0.9	0.8-0.9
Material Deprivation (PSE)	0.04	0.943	0.94	19208	0.9	0.9	0.6-0.9
Material Deprivation (USoc)	0.04	0.997	0.995	2786.808	0.8	0.8	0.8-0.9

Appendix references

Muthén, B. (1978) 'Contributions to factor analysis of dichotomous variables', *Psychometrika*, 43(4), pp. 551–560.

Skrondal, A. and Rabe-Hesketh, S. (2004) *Generalized Latent Variable Modeling: Multilevel, Longitudinal, & Structural Equation Models: Multilevel, Longitudinal, and Structural Equation Models*. 1st edn. London: Chapman and Hall/CRC.

Takane, Y. and de Leeuw, J. (1987) 'On the relationship between item response theory and factor analysis of discretized variables', *Psychometrika*, 52(3), pp. 393–408.

Appendix D

Figure D 1 Percentage with different levels of savings (Source: Authors' calculations using FRS)

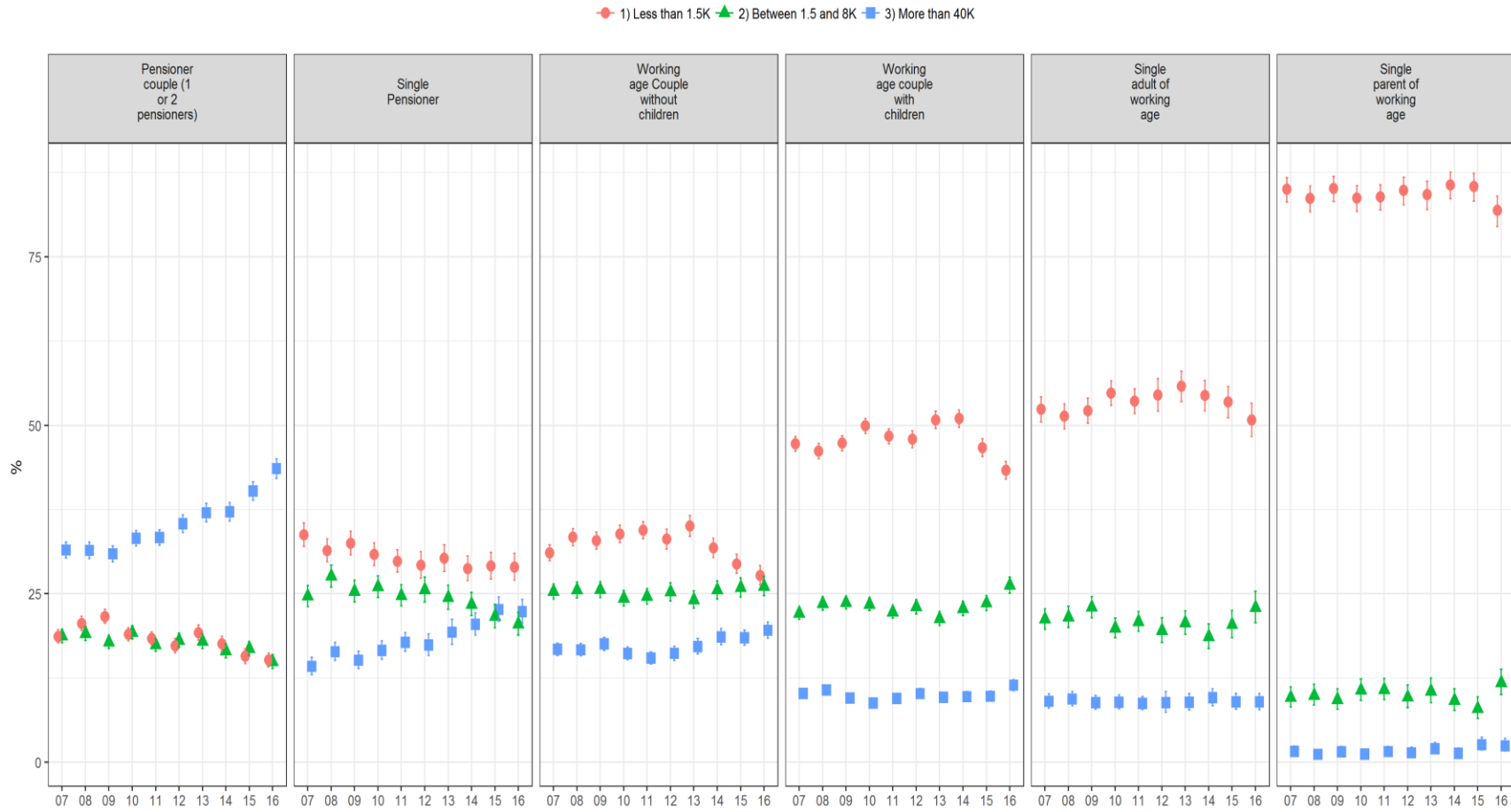


Figure D 2 Adjusted and Unadjusted (Raw) Probability of being in each of the three welfare types for subjective relative income (Source: Authors' calculations using PSE)

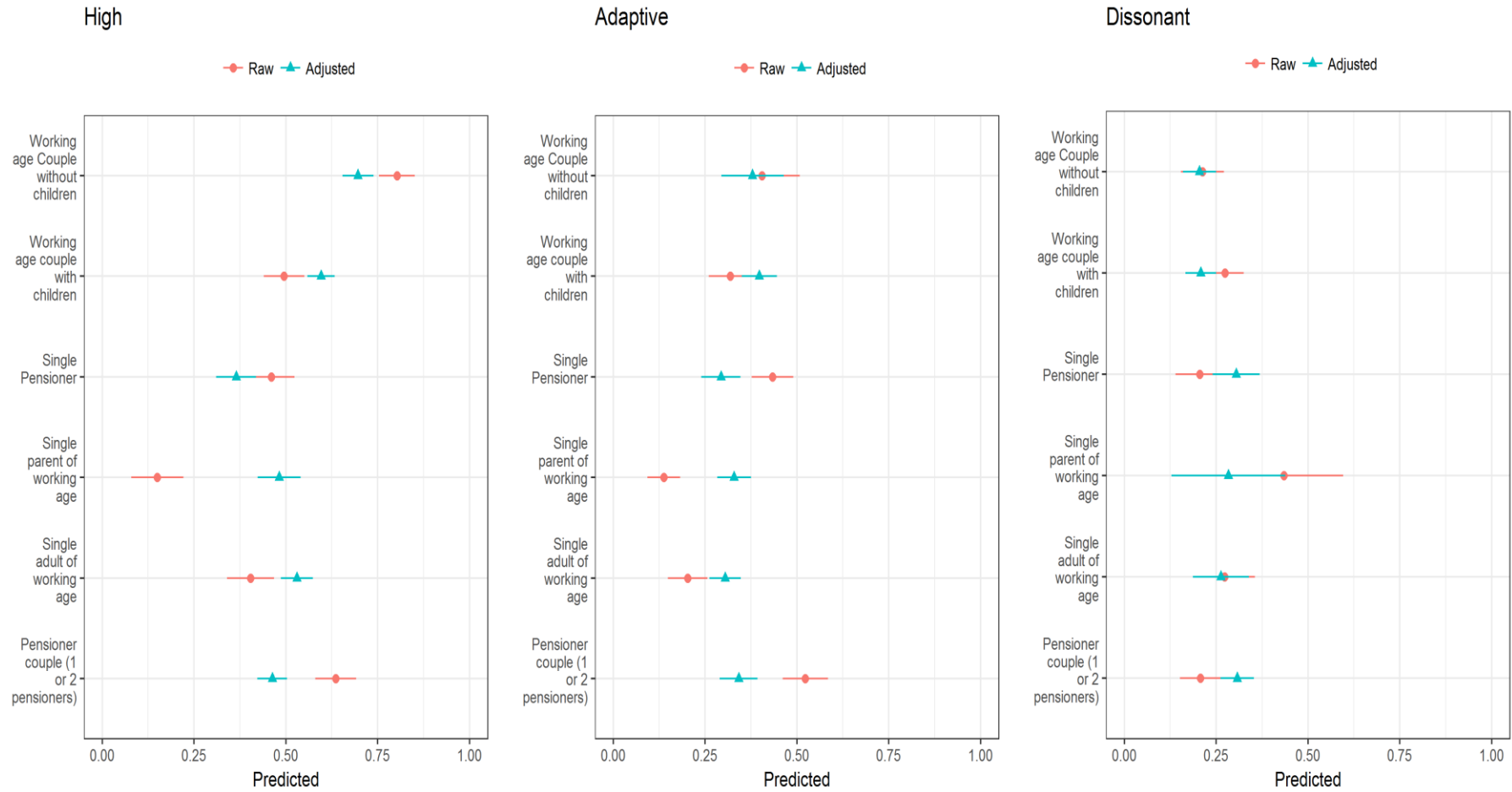


Figure D 3 Adjusted and Unadjusted (Raw) Probability of being in each of the three welfare types for satisfaction with income (Source: Authors' calculations using USoc)

