

Work and Wellbeing in Modern Britain:

An Application of the Capability Approach

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Declaration

I certify that the thesis I have presented for examination for the MPhil/PhD degree of the London School of Economics and Political Science is solely my own work.

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Abstract

This thesis proposes a new way of conceptualising work quality in modern societies. Using the Capability Approach (Paper 1), it argues the true impact that work has on people's wellbeing can only be captured if we consider three things: first, the impact work characteristics have on their wellbeing in terms of the achievement of valued "beings and doings" (Functionings); second, the choice workers have over Functionings outside their current work (the Capability Set); and third, their different rates of conversion of work into wellbeing based on their personal, family, and household circumstances (Conversion Factors).

Existing multidimensional indices of work quality capture the first of these but neglect the second and third – an omission which risks under-stating the impact low-quality work has on the most marginalised workers. Using data from Understanding Society, the thesis redresses this empirical gap, and discovers new inequalities in workers' wellbeing not apparent from their work quality alone.

First (Paper 2), I build an index of multidimensional Quality of Work (QoW) to capture the effect work has on peoples' Functioning achievement, and explore the impact of different weighting methods on findings.

Second (Paper 3), I introduce proxies for the Capability Set (CS scores) into the analysis, to understand the choices and constraints faced by workers in different-quality jobs. This finds a strong relationship between low QoW and constrained choices, with over one-in-ten UK workers identified as the most marginalised of all: scoring at the bottom of the distribution for both QoW and CS scores. However, consistent with predictions set out in Paper 1, it also finds relatively greater heterogeneity in the situation of workers lower in the QoW distribution, suggesting those with a wide range of choices may access low-quality work at points in their lives where it enhances their wellbeing.

Third (Paper 4), I introduce eight Conversion Factors (CFs) into the analysis: these measure any additional commitments workers have to manage alongside work, which reduce the rate of conversion of work into wellbeing – with higher CF scores equating to a lower rate of conversion. This paper finds that higher CF scores are associated with lower QoW: in other words, workers in the lowest-quality jobs tend to have greater commitments – such as more support needs for loved ones in the household, or more personal health issues and disabilities – than those in the highest-quality jobs. Constrained choices exacerbate this relationship, with those workers in both low QoW and with constrained choices having disproportionately lower rates of conversion. The paper explores ways to account for this through an equalisation approach, and finds labour market inequalities by gender and ethnicity are wider once womens' and ethnic minorities' disproportionately lower rates of conversion are accounted for.

Acknowledgements

This thesis would never have been started, let alone completed, without the help of numerous friends, colleagues, and mentors. First thanks must go to John Hills for inspiring me to embark on this thesis in the first place, during my MSc studies at LSE. It seems like an age ago now, but I can still remember going to his office in CASE to receive his feedback on an essay I had written about research on the impact of minimum wages. We got talking – his scrawny hand-written notes on my paper would have been indecipherable without asking a few questions! – and he was intrigued enough with my arguments to ask, "have you thought of doing a PhD?" The truth is that before he asked, I – as a first-generation university student – had not really considered it an option. His small piece of encouragement made me promise myself that I would eventually get round to doing one.

We stayed intermittently in touch and, several years later – in a shift from a rather different career path – I decided it was finally time to send in an application, combining two topics that most interested me during my Masters': the Capability Approach, and labour markets. Despite John's sad and untimely passing late in 2020, I hope his family and friends take some small solace that my positive experience of his teaching was far from unique. During the celebrations of his life and achievements held at LSE, I had the pleasure of meeting many people who felt the same way: he had an inclusive, open, and engaging style that inspired others to contribute their bit to the social sciences. This thesis stands as testament to that.

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Although this thesis is quantitative, I have been influenced throughout by the countless chance conversations I have had with people throughout my working life about the jobs they do (or want to do), and why they do them. During my original MSc studies I spent some spare time volunteering as a jobs coach at the Cardinal Hume Centre in Westminster. This was followed, some years later, by a brief stint as a Cabinet Member for Education, Employment and Skills in the London Borough of Brent. I have only realised in retrospect how much the discussions both those roles enabled - with practitioners and service users alike - have shaped my thinking about the complex reality of modern work. I thank all who shared their experiences with me.

Final thanks, as always, must go to my family - to my parents, Christopher and Shirley; to my sisters, Lucy and Sheree; and to my partner Szymon - not only for supporting me in realising the value of this thesis, but also the far greater value of a fulfilling life lived outside of it.

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List of Acronyms

In each individual section of this thesis, the first references to these terms are always spelled out in full. Subsequent references are abbreviated as follows:

ALMP – Active Labour Market Policy

ASHE – Annual Survey of Hours and Earnings

BHPS – British Household Panel Survey

CA – Capability Approach

CASE – Centre for Analysis of Social Exclusion (LSE)

DWP – Department for Work and Pensions (UK Govt)

EU – European Union

EWCS – European Working Conditions Survey

GDP/GNI – Gross Domestic Product / Gross National Income

HDCA – Human Development and Capabilities Association

HDI – Human Development Index

HMRC – His Majesty's Revenue & Customs

ILO – International Labour Organisation

JRF – Joseph Rowntree Foundation

LFS – Labour Force Survey

MICE – Multiple Imputation using Chained Equations

MIS – The Joseph Rowntree Foundation's Minimum Income Standard. Used for the cut-off thresholds for the Earnings Sufficiency indicator

OECD – Organisation for Economic Cooperation and Development

ONS – Office for National Statistics

OPHI – Oxford Poverty and Human Development Initiative

PCA – Principal Component Analysis

SIC – Standard Industrial Classification

SOC – Standard Occupational Classification

UKHLS – UK Household Longitudinal Study, also known as Understanding Society. Throughout this thesis, Understanding Society is used to refer to the UKHLS

UNDP – United Nations Development Programme

List of Tables and Figures

Throughout this thesis, tables and figures are prefixed by the section of the thesis they are in, with those in the papers prefixed with the *number* of the paper and those in the appendix prefixed with the *letter* of the appendix. For example, tables and figures in Paper 1 are prefixed 1.X, Paper 2 are 2.X, Appendix C are C.X, e.t.c.

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Introduction

Why does Paid Work Matter in Modern Societies?

The Importance of Paid Work to People and Society

Paid work is a ubiquitous and inescapable feature of modern societies. It takes up a considerable proportion of our time: the average working adult in the UK today spends almost a third (32%) of their waking hours in paid work – higher than any other activity, making work the predominant activity of workers’ waking lives.¹ Indeed, if we include unpaid household work, childcare, education and study, adult care, and volunteering, men spend on average 40.8%, and women 42.7%, of their waking hours in work. This makes work the single most common pursuit of the average adult, exceeding even the time spent in sleep and rest.² To put these figures into a life-course perspective, an individual spending today’s average full-time working hours in paid work from age 18 to 68, and passing away at today’s average life expectancy for their respective sex, would spend approaching a fifth – 17.9% for women, and 18.7% for men – of their total waking hours in paid work.³

These facts demonstrate the overwhelming *direct* importance of paid work. This makes it worthy of careful and in-depth study for its own sake. But it is also *indirectly* important: permeating our lives, impacting our relations with others, and shaping our role in society. Work that is over-bearing, intensive, or – worse – exploitative will invade every area of peoples’ lives, isolating them from their peers, inhibiting the development of family and social relations, and preventing them from becoming full and active participants in their communities (e.g. see Green, 2004; Sayer, 2012). The focus of this thesis is on paid work activity, since this clearly warrants study in and of itself, for its own distinct reasons – not least because most of us depend on

¹ Own calculations using the UK Time Use Survey, Table 1a, mean daily time (minutes) for UK adults, March 2024 (ONS, 2024f). Proportions taken by excluding time spent on “Sleep and rest” from the denominator. Paid work combines “Working away from home” and “Working from home.”

² Own calculations using UK Time Use Survey, Table 8a, Average daily time (minutes) spent doing specified activities, all adults: by labour market status, March 2024 (ONS, 2024f). Filtered only to adults in employment to April 2020 (column 1).

³ Own calculations based on ONS average weekly working hours of full-time workers, Jan-Mar 2024, which is 36.6 hours a week (ONS, 2024a); and ONS data on life expectancy at birth in 2022, which is 78.6 years for males and 82.6 years for females (ONS, 2024e). Calculation assumes workers take 5 weeks’ paid time off work each year, and sleep 8 hours a day.

remuneration from paid work to enjoy even a basic standard of living, with the average UK household receiving 73% of their income from labour earnings in the three years to March 2020.⁴ This is not, however, to detract from the impact that unpaid work has on peoples' lives, and the way the interaction of unpaid work and paid work can exacerbate the labour market inequalities of some of the most marginalised workers, especially women – something that will come into focus in later parts of this thesis.

Paid work is also crucial to insuring workers against risk: employee pension income earned whilst working is an increasingly necessary supplement to state-provided funded pensions in the UK (see Barr and Diamond, 2010); supplementary employer-given benefits may help provide a crucial safety net in the event of sickness or injury; and individual savings accrued from paid work help people safeguard themselves against unpredictable adversity in later life. Anyone affected by the labour market disruptions of the Covid-19 pandemic can attest to the vital importance of these aspects of work, with the self-employed, those who recently changed jobs, and those on insecure contracts much less able to insure themselves against the risk of the pandemic than those in more permanent, stable, and long-term forms of employment (e.g. see Blackburn et al., 2022; Blundell and Ventura, 2021).

The Changing Nature of Paid Work: Four Trends

Since the 1980s there has also been a transformation in modern labour markets which makes the study of paid work increasingly important. I will set out four trends in an international context, with a particular focus on trends in the Global North, before then outlining how these have played out in the UK. As will be seen, some of these trends are strongly inter-related, and some indeed have the same underlying causes, whilst others are opposing and have affected different groups of paid workers in different ways.

First, we have seen a rise in increasingly non-standard and precarious forms of employment relationships – with standard employment relationships defined here as full-time paid jobs, done by employees, and under a secure, permanent contract. Kalleberg (2011 p. 83) argues that this has occurred as a result of increasingly market-

⁴ Sourced from DWP analysis of the Family Resources Survey, Table 2.2a and 2.2b. Note this figure includes pensioners and not merely working adults, so the figure for working-age adults will be even higher (DWP, 2022b).

mediated forms of employment relations with the decline of state welfare provision and the collective bargaining power of trade unions, and elsewhere suggests that the effects of precarious work on peoples' wellbeing is more muted in countries with for example stronger social welfare safety nets and stronger trade unions (Kalleberg, 2018). Kalleberg's thesis is particularly widely discussed in sociological literature, and has proven itself applicable to many modern labour markets – with some employers increasingly exploiting modern technologies to develop an ever more informal and intermittently employed pool of labour, such as gig economy or platform labour workers (e.g. see Auguste et al., 2023; Wood et al., 2019).

Within the UK, this has manifested itself in particular in the considerable rise of self-employment: in the decade to 2020, the number of self-employed workers increased by almost 30% from an estimated 3.9 million in Sep-Nov 2009 to a peak of 5 million on the eve of the pandemic (Nov 2019 – Jan 2020), going from 13.4% to a record 15.3% of those in any paid employment over the same period.⁵ It is also reflected in the prevalence of gig economy and zero hours contracts work – with an estimated 2.8 million people having worked in the gig economy in 2017 (BEIS, 2018, p. 5); and 1 million using zero hours contracts in Q1 2024 (ONS, 2021a).

Second, workers today have experienced higher levels of underemployment and non-employment than those experienced in Western welfare states between the post-war years and the 1970s. This trend has particularly affected working-age men, and is associated with the end of full-employment and the mass structural unemployment as a result of deindustrialisation (e.g. for a discussion in the US context, see Eberstadt, 2016). This is inextricably linked to the growth of precarity, since those experiencing intermittent breaks in employment or struggling to obtain a desired full-time job will intersect with those in precarious work, but this trend is discussed in its own distinct strand of literature.

Within the UK, studies have found that Britain's former coalmining communities experienced a sharp rise in the proportion of the labour force in receipt of sickness

⁵ Own analysis of ONS dataset, "EMP01 SA: Full-time, part-time and temporary workers (seasonally adjusted)", Q2 1992 to Q2 2024. (ONS, 2024b)

benefits at the same time as the unemployment rate⁶ – now the official measure of worklessness – fell in these areas (Beatty, 1996). Over the same period, it was found workers in local labour markets with less availability of jobs were more likely to end up on sickness benefits or government training than meet the official definition of unemployment or claim unemployment benefits (MacKay, 1999). Research has continued to find the out-of-work population across UK regions is considerably higher than the official measure of unemployment suggests once one considers local levels of inactivity and incapacity benefits receipt (Beatty, 1996; Beatty *et al.*, 1997, 2002; Beatty, Fothergill and Macmillan, 2000; Beatty and Fothergill, 2011; Beatty *et al.*, 2022). Blanchflower (2019) has discussed the economic implications of this phenomenon, suggesting that the inverse link between the official unemployment rate and inflation (the so-called ‘Phillips Curve’) has now been broken as a result of the above changes – since a large proportion of those in work are under-employed, and many others out of work do not appear in official unemployment statistics.

Before the pandemic, the UK appeared to be close to shaking off these problems. In the quarter before the first lockdown (Dec 2019–Feb 2020), the UK achieved the highest employment rate since records began in the 1970s (ONS, 2024c), and the unemployment rate was down to levels not seen since 1974 (~3.9%) (ONS, 2024h). Yet the post-pandemic experience has reversed these trends, exposing key underlying weaknesses in the country’s labour market. Part-time employment and consequent low pay continue to be a problem: the proportion of self-employed workers working part-time has risen from 17.3% of workers when records began (Mar-May 1992) to 31.8% now (Mar-May 2024) – reaching a record-high 34.5% in Dec 2022–Feb 2023 (ONS, 2024b). Linked with this, the proportion of recipients of Universal Credit who are in paid employment in most recent figures (Mar 2024) is still higher than its pre-pandemic level, standing at 2.5 million people or 38% of all Universal Credit recipients

⁶ Note that to be officially unemployed, under the International Labour Organisation (ILO) definition, an adult has to be either (a) not in paid work in the reference week interviewed, have been actively seeking work in the past four weeks, and available to start work in the next two weeks or (b) not in paid work in the reference week interviewed, have found a job and waiting to start in the next two weeks. Those who do not meet either criteria – including those who have been seeking work but not available to start it, or who want work but have not been actively seeking it – are classed as inactive. Further note that the unemployment rate is reported as unemployment as a proportion of the labour force (those in paid work + the unemployed), and not as a proportion of all adults.

(DWP, 2024c). Since 2020, the employment rate has fallen and is yet to reach its high at the start of 2020, and the number of people economically inactive has risen by 9.7% since Dec 2019-Feb 2020 (ONS, 2024d). This has been accompanied by falls in self-reported self-employment (Brown, Welsby and Roberts, 2022), and increases in reported long-term sickness (ONS, 2023c). There is much we do not know about the implications of this change in self-employment for the UK labour market, or indeed whether they reflect the reality of work for previously self-employed workers or statistical under-reporting.⁷

Third, for other groups of workers, evidence suggests paid work has become more intense and dominating over peoples' lives, and work has increasingly conflicted with the care and life-related demands of modern families. Across modern societies, the female labour force participation rate, and female working hours, have risen considerably – with the consequence that most modern families collectively devote themselves more to paid work, outside of the home, than they ever did before. For example, Correll et al. (2014, p. 5) argues that “a mismatch persists between the needs of today’s labour force and the structure and expectations of today’s workplace.” This is echoed by Moen (2015, p. 176), who notes a “mismatch” between “existing work time, life course and career development policies and practices” and “transforming economies, technologies, households, work and workforces.” Both argue this has manifested itself in increasing work hours for higher-end, professional jobs – with greater expectations of worker engagement by employers – at the same time as workers at the low end of the labour force experience increased precarity and difficulty in accessing work. Over this same period, caregiving responsibilities have not been radically redistributed, meaning women have to manage care roles alongside more paid work.

In the UK, work intensity – defined as “the rate of physical and/or mental input to work tasks performed during the working day” (Green, 2001, p. 54) – has risen since the late 20th Century (Green *et al.*, 2022). This has occurred at the same time as the

⁷ There has, for example, been no change in the number of people registered as self-employed with His Majesty’s Revenue & Customs (HMRC). Further, administrative data on self-employed income submitted in self-assessment tax returns is also consistently lower than what self-employed workers report in surveys (ONS, 2021b).

country continues to under-perform its economic peers in terms of productivity (ONS, 2023a), and in a context where capital continues to take a high share of the returns from economic growth vis-à-vis employees, has it has since the 1980s (IMF, 2017, pp. 121–126). Task autonomy – defined as workers’ autonomy over job tasks, work pace, work manner, task order and work hours⁸ – has also previously been found to have declined in Britain (Gallie, Felstead and Green, 2004). Taken together, this data suggests British workers are working harder, and feel as such, but are not reaping the economic rewards in terms of higher productivity and/or a rising labour share of income. The UK has also experienced the same rises in female paid labour market participation seen in other countries, but without a shift towards an egalitarian distribution of caregiving or unpaid work: as highlighted in the first section of this introduction, this means that women on average work more hours than men once unpaid caregiving and housework is accounted for. More research needs to be done to understand the implications of this caregiving, and competing family and life demands, for workers’ wellbeing.

Fourth, all the above changes in work have implications for the sustainability of future welfare systems. Historically, the taxation of paid work – previously predominantly formal, full-time, permanent, and done largely by men – has been central to the funding of Western welfare states (Morel and Palme, 2013), whilst the availability of a pool of mostly female unpaid caregivers reduced the state welfare costs associated with childcare, elderly care, and disability below what they otherwise would have been (Lightman and Kevins, 2021, pp. 783–784). In turn, countries in the Global South have historically struggled to obtain anything close to the same levels of tax revenue from direct taxes such as income as countries in the Global North (Bird and Zolt, 2014; Prichard, Cobham and Goodall, 2014) – leading to calls for them to foster the development of formal employment relations to build sustainable modern welfare systems (OECD, 2023).

Within the UK, income tax from labour earnings is still the single largest source of government tax revenues (Hills, 2000, p. 12; Keep, 2024, pp. 12–14). Measured as a percentage of GDP, tax receipts from income tax, capital gains, and national insurance

⁸ For a fuller discussion and definition, see Appendix F.4.

contributions have also remained broadly steady over the past two decades (HMRC, 2024). This is consistent with the general experience of EU countries, where revenue from personal income taxation has also changed very little over the past decade (European Commission, 2024, p. 16). Nevertheless, there is concern that – given the importance of income tax to the revenues of the UK and other states – the foundations of welfare state financing risk being undermined by potential future changes in modern labour markets, for example if new technologies and demographic changes continue to increase the number of workers in non-standard work arrangements (for a discussion, see Barr, 2020). This makes the study of work important not just for its own ends, but to support the development of financially sustainable welfare systems around the world.

How Should we Study the Quality of Work?

As the preceding section demonstrates, work is important to many pressing issues in modern social policy. The work we do is of direct importance to us because of the sheer quantum of time we spend engaging in work activity, but also changes in the nature of work have implications for future human wellbeing and the sustainability of the welfare state. This means there is a need for researchers to study this phenomenon. Scholars across the social sciences need to ask ourselves what it means to do “good work”; and how we should foster the development of good-quality jobs.

Work Quality: Defining a Sub-Field in the Study of Work

Some research into work is interested in the *quality* of this paid work. I suggest that this research should be a sub-field within the broader field of the study of work. It warrants this status because it is making a distinct statement about work, and peoples’ wellbeing, which contrasts this sub-field with other research into work.

Research into work quality involves a distinct value judgement (also called a normative statement) about the effect that a set of job characteristics have on individual workers, usually defined in terms of their wellbeing.⁹ Quantitative studies

⁹ Throughout this thesis, I adopt the term “wellbeing” to describe the “good” outcome of interest related to work quality. Put another way, the quality of a job is determined by the amount of wellbeing the characteristics of that job create for the individual worker. This is the same term used by Muñoz de Bustillo et al. (2011) in their study of European job quality, and by Suppa (2019) in his conceptual account of work. In Section 1.5.2, I define wellbeing, using the Capability

of work quality usually limit themselves to the study of the effect paid work characteristics have on wellbeing, but conceptually I suggest there is no reason to limit work quality research solely to paid work.¹⁰

This sub-field is further distinguished by its focus on the effect work has on the *worker* and *their wellbeing*. Studies which are interested in the effects of characteristics of work on other actors – such as the impact of flexible working hours on firms’ productivity or profit margins; or the relationship between collective bargaining coverage and the achievement of specific public policy outcomes – are worthwhile sub-fields of the study of work in their own right, but do not belong to the sub-field of work quality.¹¹ It warrants a status as a distinct sub-field precisely *because* it enables us to focus on the effect that work has on workers, rather than being conflated with its effect on other actors. For this reason, I use the term “work quality” to define this sub-field, since a term like “job quality” or “quality of employment” risks implying the focus is the job itself rather than the individual worker.¹²

Measuring the Quality of Work: the Case for Synthetic Multidimensional Indices

The quality of work needs to be measured in order to be improved. Whilst researchers often disagree about which job characteristics determine work quality (Piasna, Burchell and Sehnbruch, 2019), literature frequently refers to the concept as “inherently multidimensional” (Gerstenberger, 2023; also OECD, 2017a, p. 98; Shahidi et al., 2023, p. 786). This suggests there is at least agreement that no single indicator defines work quality on its own. Nor can work quality be defined solely in terms of its pecuniary characteristics such as the hourly wage. This leaves researchers with only

Approach, in terms of the achievement of Functionings and Capabilities, but wider discussions of the concept can be found in McGillivray (2014). Competing perspectives on work do exist, however – such as accounts framing work as a human need (see especially Yeoman, 2013).

¹⁰ I discuss this in Paper 1, Section 1.5.1.

¹¹ Indeed, I would stress that many conceptual studies of work, including in the Capability Approach, do not have work quality as their main focus: many are interested in work in a much broader sense. I am thankful to Peter Bartelheimer and Nicolai Suppa for emphasising this point to me.

¹² There are of course many other terms used to describe job or work quality, such as “employment deprivation”, “the quality of working lives” and “employment quality”, but to minimise the use of different terms I use the term “work quality” in the introduction, Paper 4 and conclusion. I later introduce the additional term “work-related wellbeing” to describe the wellbeing the individual worker achieves from work, given their circumstances. In papers 1-3, however, I favour the term “job quality” instead of “work quality” purely because this aligns with the language used by the audience of these particular papers.

one option: to measure work quality multi-dimensionally by bringing together a set of individual indicators of work quality, identified according to the effect they have on workers' wellbeing (or some other 'good' outcome); aggregating similar indicators into a number of dimensions, with each indicator added into its dimension according to its weights; and then aggregating the dimensions into a single index, according to the weights of the dimensions.¹³ As will be demonstrated below, and as will emerge as a consistent argument throughout this thesis, there is an additional need for these multidimensional indices to be *synthetic*: rather than gathering indicators from several datasets together into a dashboard, all the indicators and dimensions of an index should come from a single dataset of a representative sample of workers¹⁴ so researchers can compare and contrast individuals' performance in different indicators and dimensions.¹⁵

It is important to build these multidimensional indices for three key reasons.

Firstly and most obviously, work quality is often uncorrelated – and sometimes negatively correlated – with other measures of human wellbeing or economic development. This means work quality cannot be inferred solely from other statistics, or assumed to naturally increase as economies develop. Measures of economic growth such as Gross Domestic Product (GDP) per capita still attract frequent headlines despite their widely-discussed limitations (e.g. see Stiglitz et al., 2009), yet there is strong evidence that economic growth alone does not necessarily lead to a corresponding improvement in many indicators of work quality: work intensity, for example, has been found to be higher in countries with higher GDP (Green, 2025, chap. 3). Likewise, measures of the quantity of employment, such as the unemployment rate, attract considerable media and public attention whenever they are released by national statistics authorities, yet some countries' unemployment rates appear to actually be *negatively* correlated with their work quality (Sehnbruch *et al.*, 2020, pp. 12–13). Nor can technological improvements necessarily be assumed to naturally lead to greater

¹³ For a discussion of the defining characteristics of work quality indices, including different methods of weighting and aggregation and some notation describing these approaches, refer to Section 2.2.1.

¹⁴ Or at least, they should be introduced into the dataset from other sources, using an imputation or matching technique. For an outline of one such technique I have used to introduce a Health and Safety dimension into Understanding Society, refer to Appendix D.

¹⁵ I expand on this argument in Section 3.2.1.

availability of good jobs – Acemoglu and Johnson (2023) argue that AI has the potential to deliver more “good jobs”, but this benefit can only be realised through state intervention. As Acemoglu (2019) elaborates elsewhere,

“Creating [good] jobs requires that technological innovation be directed toward boosting demand for workers. Good jobs do not emerge naturally from free markets. Rather, they require labour-market institutions that protect and empower workers, generously funded education systems, and effective social safety nets.”

These considerations highlight the need for trends in work quality to be widely published and carefully studied. Rather than assuming work quality will automatically improve as an economy grows, technology develops or unemployment falls, good work needs to be an intrinsic policy goal of governments and measured for its own sake. This requires statistics on good work: so that trends in work quality can be regularly tracked, and the factors and policies driving good work carefully studied.

Secondly, without synthetic indices of work quality, it is impossible to know which workers have experienced which of the transformative changes we have witnessed in modern labour markets since the 1980s. Some of the changes discussed in the previous section are opposing, yet have occurred simultaneously. At first sight, this appears contradictory; this contradiction is resolved by the fact these changes have affected different workers in different ways, and to different degrees. Some workers may have experienced many of these changes simultaneously, potentially even with people in the same household or family experiencing different issues – such as one household member stuck in a precarious or informal contract; another involuntarily under-employed; and another forced to work intensively whilst reconciling family commitments. The most advantaged workers, households or families may have been immune from them – instead continuing to work in permanent jobs, and taking advantage of employee-oriented flexible working opportunities. It is perhaps for this reason that Green (2007) describes the UK’s labour market experience of the 1990s-2000s as a “paradox”, reflected by increasing affluence accompanied by a range of opposing changes in work quality. It is only possible to get to grips with these changes, and to see how different individuals and families experience them, if we use synthetic indices: a dashboard of indicators drawn from separate surveys will merely tell us the

prevalence of these issues at labour market level, but not *who* experiences which issues, and how many experience several simultaneously.

Thirdly, synthetic indices enable us to study the relationship between work quality and other areas of interest. Such indices pave the way for a wide range of different avenues for research. For example, they enable us to investigate what public policy interventions lead to an improvement in these scores. They can identify inequalities by geography, ethnicity, sex, and other characteristics. They can explore the association between changes in work quality and other life outcomes – such as happiness, financial security, or family outcomes. Again, analysis such as this is only possible with synthetic indices: they enable the study of the relationship between work quality – or any indicators of the index – with any variables in the same survey.

Three Problems: the Unsettled Place of the Quality of Work Agenda

Given the above considerations, it is perhaps unsurprising that the past two-and-a-half decades have seen the proliferation research into work quality. International organisations kick-started this most recent spate of interest,¹⁶ spurred on initially by calls for the adoption of the “decent work” agenda by the International Labour Organisation (ILO) in the late-1990s (ILO, 1999a; see also Ahmed, 2003; Anker et al., 2003; Bescond et al., 2003; Bonnet et al., 2003; Sen, 2000). This was quickly followed by the adoption of the “more and better jobs” agenda in the European Union (EU) (European Commission, 2001, 2003, 2007), followed by the Organisation for Economic Cooperation and Development (OECD) (OECD, 2003; Cazes, Hijzen and Saint-Martin, 2016). The consequence is that work quality indices can now be found in a wide range of national and international contexts – including Latin America (Inter-American Development Bank, 2017; Sehnbruch *et al.*, 2020), Central America (González *et al.*, 2021), Europe (European Foundation, 2002; Leschke, Watt and Finn, 2008; Smith *et al.*, 2008; Muñoz de Bustillo, Fernandez-Macias, *et al.*, 2011; Leschke and Watt, 2014; Cascales Mira, 2021), at a global level (Hovhannishan *et al.*, 2022; Green, 2025), and,

¹⁶ As an aside, the 1960s and 1970s saw an earlier wave of interest in work quality as part of the “quality of working life” movement. The more recent engagement in the concept from the ILO and EU post-dates this, which triggered its own wave of research and engagement with the concept, has been criticised for the limited impact it has had on work quality measurement. For a discussion, see Burchell et al. (2014, pp. 461–463).

most recently, in the UK (Irvine, White and Diffley, 2018; ONS, 2019, 2022b; Dobbins, 2022). In short, work quality is now a rich and growing field of research: many people, across the social sciences, have a lot to say about the work we do and its effect on our wellbeing.

Despite these developments, I suggest the progress of this agenda has been hindered by three key limitations.

Problem 1: Disagreements over Conceptualisation and Measurement

There is still considerable conceptual confusion over what work quality is, and how it should be measured. Piasna et al. (2019, p. 176) describe the problem well, and highlight the particular role that confusion over the concept has played in stalling the agenda. This has been partly driven by the fact that many institutions have to reconcile competing agendas of different actors, who each view the concept from very different perspectives:

“[P]rogress ... has been hindered by conceptual confusion, the lack of a shared definition and disagreement on how to mould a multitude of work dimensions into a coherent comparative framework of indicators. Moreover, many labour market variables are contentious and their interpretation in terms of job quality depends on the perspective taken. The interests of workers, employers and public policy-makers often clash, as do the interests of individual human beings and free markets.”

In addition, there is a gap between conceptual vs. (quantitative) empirical applications of work quality in most literature.¹⁷ Conceptualisations of work tend to neglect measurement, and empirical research tends to prioritise measurement over theory. Conceptualisations of work have highlighted many important aspects of work quality which, to date, have not featured in multidimensional indices – such as the need for a life course perspective on work (Bartelheimer and Moncel, 2009; Belardi, Knox and Wright, 2021a); the importance of measuring worker freedoms and worker circumstances in addition to job characteristics (Suppa, 2019); the need for a broader conceptualisation of work to include unpaid as well as paid work (Budd, 2011); and the role of institutional factors such as a country’s welfare system or Active Labour Market Policy (ALMP) in determining workers’ wellbeing (Hobson, 2011; Laruffa, 2020; Fernandez-Urbano and Orton, 2021). Current work quality indices, mostly for reasons

¹⁷ I expand on these limitations in Section 1.4.

of poor data availability, have effectively inferred a given level of wellbeing from a given set of characteristics of paid jobs (and usually only the main job rather than multiple jobs) without considering the interaction of other factors and circumstances.¹⁸ Qualitative research has fared better, with some studies providing a much richer account of the complex relationship between paid and unpaid work and transitions into and out of different forms of work from a life course perspective, than has been achieved using quantitative work quality indices (see in particular Cooke et al., 2013). Others provide insight into the relationship between paid work and institutional policies such as ALMP, shedding new light on the effect these policies have on workers' wellbeing (e.g. see Jones et al., 2024; The Welfare Conditionality Project, 2018). There is a need to bring conceptual and empirical approaches together into a coherent whole: exploring how we can move quantitative research into work quality closer to these conceptualisations and capturing at least some of the richness of qualitative studies.

There is also conceptual disagreement over which indicators should be selected to measure work quality. There is particular debate over whether subjective factors such as life- or job- satisfaction, or peoples' stated preferences about work, should be an indicator of work quality. Indeed there is in fact more agreement over other indicators than is sometimes assumed – with Gallie (2003, p. 65) arguing there is a “remarkable consensus” in terms of the importance of many indicators of work quality across widely divergent philosophical perspectives. As an illustration, an advocate of Marxist labour process theory (Braverman, 1974; Friedman, 1977; Gandini, 2019) might be able to build a strong case for the importance of workers' control over the nature, pace and manner of their work, with many Marxist critiques modern forms of non-standard employment founded on the control they give employers over these aspects of peoples' work (Wood *et al.*, 2019; Lefcoe, Connelly and Gellatly, 2023; Tarrabain and Thomas, 2024). A utilitarian might come to the same conclusion via a different route, based on the strong relationship between task autonomy and both life- and job- satisfaction.¹⁹

¹⁸ As will be seen, this emerges as a key criticism of work quality indices in my first paper. See in particular Section 1.5.4.

¹⁹ For empirical support, see the fixed effects regressions of changes in life- and job- satisfaction and job quality indicators in Appendix A, Tables A.1-A.2. As a caveat these two approaches might not, of course, agree on the relative *weight* to assign to task autonomy vis-à-vis other indicators in an index of job quality – a problem I engage with in Paper 2.

By contrast, there is not nearly the same agreement over whether these subjective indicators *in themselves* reflect worker wellbeing, with some researchers strongly advocating a more objective approach to work quality (Green, 2007; Muñoz de Bustillo, Fernandez-Macias, *et al.*, 2011; Felstead *et al.*, 2019) and others favouring a more subjective approach (Layard, 1999, 2004, 2011; Schokkaert, Verhofstadt and Ootegem, 2009).

This is far from a trivial debate, because peoples' subjective feelings about their jobs often do not align with the objective characteristics of these jobs (for wider discussions, see Brown *et al.*, 2012; Leßmann and Bonvin, 2011). For example, a study of low-waged ethnic minority workers in Austria, Italy, and Bulgaria found some such workers report high job satisfaction (Sardadvar, Markova and Poggi, 2017); French cleaners have been found to be relatively happy at work (Léné, 2019); cross-country European job satisfaction levels are often vastly divergent from what we know about their employment conditions (Muñoz de Bustillo, Fernández-Macías, *et al.*, 2011, pp. 450–453); and women report higher job satisfaction than men (Clark, 1997), are not significantly less satisfied than men about their pay despite the gender pay gap (Crosby, 1982; Davison, 2014), and, if their job- and hours- satisfaction data can be trusted, appear to prefer part-time work (Booth and Van Ours, 2008). This problem has also found its way into the public policy sphere. In the UK, industry groups have argued against the banning of zero hours contracts or platform work on the grounds that many workers gave positive accounts of these jobs (Taylor, 2017, p. 11), and said they were accessing them as a genuine choice (CIPD, 2017). This positive account of such work broadly chimes with how literature on the economics of entrepreneurship has tended to discuss the circumstances of the self-employed, sole traders, and other workers in non-permanent jobs (e.g. see Parker, 2018; Williams, 2007).

Even were settlement to be reached over which indicators to use, researchers also disagree over the more technical questions of indicator construction, weighting, and aggregation. This reflects a wider controversy over the role of multidimensional indices in social research. Since the publication of the first multidimensional Human Development Index (HDI) in 1990 (UNDP, 1990), we have seen a rise in the use of multidimensional indices – starting with human development (Qizilbash, 1996; Noorbakhsh, 1998) and then poverty (Deutsch and Silber, 2005; Alkire and Foster,

2011a, 2011a), but now spanning across the social sciences. These multidimensional indices are contentious. There is a tendency for these indices to equally weight each indicator, and then equally weight each dimension within the index. This approach has been criticised (Decancq and Lugo, 2013), with research suggesting that how indices are weighted can have a considerable impact on the findings of research using such indices (Greco, 2018). A range of alternative weighting approaches exist in the literature, such as weighting based on a Principal Component Analysis (PCA) of the indicators (Noorbakhsh, 1998; McGillivray, 2005; Cascales Mira, 2021); the inverse of the proportion of people deprived on each indicator (Cerioli and Zani, 1990; Cheli and Lemmi, 1995; Deutsch and Silber, 2005); or the effect of an indicator on some other outcome, such as subjective wellbeing (Schokkaert, 2007; Schokkaert et al., 2009). All have their own controversies, and I would suggest none can resolve the fundamental *normative* judgement involved in constructing indicators: extensive quantitative analysis and exploration of different weights is needed when constructing any indices, but must come alongside some deeper philosophical consideration of what indices are actually supposed to measure and how they relate to wellbeing.²⁰ There is much to be done to scrutinise these different weighting approaches more carefully, whilst considering the different normative principles underlying them. This may help resolve disagreements over the conceptualisation of work – or, at least, make the different conclusions arising from these disagreements more transparent than they currently are.

Problem 2: The Disconnect between Work Quality and the Wider Wellbeing and Poverty Agendas

Work quality has also had an uneasy, unsettled place in the wider field of human wellbeing and poverty²¹ research. The past forty years have witnessed a transformation in the way the social sciences understand wellbeing, led partly²² by a redefinition of

²⁰ For a discussion of a range of different weighting approaches, and their underlying normative assumptions, refer to Appendix A.

²¹ Throughout this thesis, I equate “poverty” with “deprivation.”

²² It has also been led by a shift in thinking amongst many economists, towards an acceptance that peoples’ utility can be calculated from subjective wellbeing and not merely revealed preferences (e.g. see Layard, 2011). Whilst I do not equate wellbeing with subjective wellbeing in this thesis, I nonetheless make use of subjective wellbeing data to investigate and test some of the findings of this paper.

what constitutes wellbeing by scholars of the Capability Approach (CA) (Nussbaum and Sen, 1993). Yet as will be seen later in this thesis, foundational scholars in the CA tended to neglect work – with for example little explicit discussion in Sen’s writings over the role work should play in this new philosophy of human wellbeing.²³ There is, partly in consequence, no employment dimension in the HDI (UNDP, 2024). The field of poverty research, in turn, has seen a range of applications based on the CA – most notably the Multidimensional Poverty Index (MPI), developed by the Oxford Poverty and Human Development Initiative (OPHI) as an application of a now widely-used method for measuring multidimensional poverty (Alkire and Foster, 2011a). However the MPI also lacks an indicator on work (OPHI and UNDP, 2023). This unsettled status of work in the poverty agenda has been recognised by OPHI themselves (see in particular Lugo, 2007). A sub-strand of scholarship on work quality has addressed this gap by applying the same method used to create the MPI to develop indices of “employment deprivation” (Sehnbruch, 2004; Sehnbruch *et al.*, 2020; González *et al.*, 2021), but this has yet to be incorporated into the MPI. There is similar neglect of work quality in UK national statistics. For example, the “employment deprivation” domain of the English Indices of Multiple Deprivation only includes indicators on the claimant count and incapacity benefits count, and none on work quality (MHCLG, 2019).

I suggest these issues reflect a deeper set of unresolved conceptual issues about the relationship between work quality, human wellbeing, and poverty. I propose there are in fact two ways of conceptualising work quality. The first associates work quality with human wellbeing and human development, seeing it as describing peoples’ wellbeing achievement. This lends itself towards a more continuous scale of work quality measurement, along a spectrum from low-quality to high-quality jobs, based on the role these job characteristics play in creating or impeding wellbeing. Advocates of such an approach would likely aspire to see a work quality dimension in the HDI, as part of a wider transformation in the availability of national statistics on the wellbeing of countries’ populations. The second associates work quality with poverty or deprivation. This likely lends itself to identifying a sub-set of the workforce, with people below a particular level of achievement in a sufficient number of work quality

²³ I discuss this in slightly more detail in Section 1.2, providing a brief account of how Sen and Nussbaum have discussed work in their previous writings.

indicators identified as in poverty or “employment deprivation.” Advocates of this approach would hope for a work quality dimension in the MPI, and for work quality indicators to feature in national poverty and deprivation statistics produced by the DWP or equivalent agencies. These two approaches can, should, and indeed do relate strongly to each other, and likely overlap considerably in terms of the indicators and dimensions and the people who perform poorly in them. However they involve very distinct judgments and considerations and have different underlying motivations.

For a wellbeing-based concept of work quality, a clear account needs to be provided of exactly how work relates to the given theory of wellbeing: is work constitutive of wellbeing in itself (intrinsic importance) or the means to the achievement of wellbeing (instrumental importance)? The index will also need to be on a continuous scale, with people exhibiting a wide spectrum of different scores, in the same way as countries do in the existing HDI. Poverty-based measures, by contrast, face a challenge in terms of how to reconcile what is usually a household-based concept (poverty) with an individual-level concept (work). For some indicators, such as earnings, they face an additional challenge over whether or how to equalise this based on the circumstances of other household members. Further obstacles will emerge over which indicators to select: the existing MPI exclusively contains indicators which, in themselves, no household would want to be deprived of – such as a lack of sanitation, a death of a child in the household in the last five years, or a lack of safe drinking water nearby. One can think of work quality indicators which would be inherent signals of deprivation, such as modern-day slavery or labour exploitation, but these are lacking in existing work quality indices, with indices tending instead to measure things that could be traded-off or exchanged as a free choice by workers who do not wish to have them – such as a flexible job, a job with excessive hours, or a job with low task autonomy. Many of these limitations are echoed in Lugo's (2007, pp. 6–7) aforementioned OPHI working paper. They highlight that many proposed indicators of work quality are not appropriate in developing country contexts, and are often derived from surveys which lack information on “the household and its members.” Indeed, it is telling that Lugo is circumspect about whether employment deprivation indicators should be included in the MPI. She signals in this direction by saying the indicators “*could* inform a richer portrait of poverty ... by permitting ‘employment

poverty' to be incorporated as a key facet of multidimensional poverty measures" (p. 13), but most of the discussion of the employment indicators she advances suggests they should be used alongside the MPI rather than integrated within it: she suggests that employment deprivation indicators are "crucial to a comprehensive understanding of *causes and implications* of poverty around the world" (p. 1); and "can be used to answer a number interesting research hypotheses related to individuals' well-being and their deprivations" (p. 13) [my emphasis in italics].

In order to better connect work quality to these wider fields of human wellbeing and poverty, much more needs to be done to develop these two distinct approaches to conceptualising work quality, before then operationalising them using multidimensional indices.

Problem 3: Limited Impact on Public Policymaking

Finally, despite the pronouncements of international organisations and the proliferation of multidimensional indices, the agenda has had a limited impact on public policymaking. Over the past decade, UK Governments have only employed a narrow spectrum of public policies in the labour market. Policy has been characterised by three things (McKnight and Cooper, 2020, pp. 93–94): improving hourly wages at the bottom of the pay distribution by setting higher statutory minimum wages (for a discussion, see Resolution Foundation, 2023); raising the proportion of people in paid employment; and narrowing inequalities in employment between different groups. The latter two have led to the pursuit of an increasingly conditional ALMP, manifested in the DWP's "ABC" approach to supporting people on Universal Credit into work – "Any job first, Better job next, and then into a Career" (DWP, 2022a). This approach, by its definition, prioritises raising employment above that of raising the quality of work; the implicit assumption is that *any* achieved paid employment will naturally improve work quality.

There has been a comparative lack of interventions in wider non-pecuniary areas of work quality,²⁴ such as on zero hours contracts or platform labour – with the most

²⁴ As an aside, the other key intervention in job quality in the UK has been the introduction of automatic enrolment into pensions for employees, but this came about as a result of legislation passed in the decade before the last one – the Pensions Act 2008. As will be seen in paper 2, this

important intervention in these areas being done through the courts, not as explicit Government interventions, in a UK Supreme Court judgement about the employment relationship of Uber drivers (Underhill and Bean, 2018). In 2017, the Taylor Review of Modern Working Practices – a wide-ranging review into UK work quality, commissioned by the then-Government – recommended in 2017 that Ministers “measure and publicise the levels of quality of work in the UK in much the same way as it does quantity” (Taylor, 2017, p. 11). As a result, the Office for National Statistics (ONS) has begun to publish outcomes on eight work quality indicators, (ONS, 2022b). Yet beyond calling for the measurement of work quality, its actual recommendations on work quality have been criticised for their lack of ambition (Briken and Taylor, 2018; Heyes *et al.*, 2018; McGaughey, 2018; Moore *et al.*, 2018; Nolan, 2018). Many of its recommendations have been watered down or not carried forward in subsequent years (for a discussion, see Dobbins, 2022).

This same picture can be observed in European public policymaking, where there has been limited engagement with the issue for most of the last two decades (Piasna, Burchell and Sehnbruch, 2019) – although this has recently changed with the implementation of “right to disconnect” legislation in some European countries (Regier, 2023). In their study of the effectiveness of the EU’s “more and better jobs” agenda, Bothfeld and Leschke (2012) attribute this limited policy impact partly to the absence of “powerful actors and affective and democratic procedures to develop and pursue activities in the social area” within EU institutions (p. 350) – meaning work quality has historically lost out to economic/financial issues, especially during crises. The same argument, I argue, applies within nation states such as the UK.

I suggest that one reason for this lack of interest, both in the UK and internationally, is the conceptual and empirical deficiencies outlined earlier in the introduction – that is, the “conceptual confusion” highlighted by Piasna *et al.* (2019, p. 176). Unless researchers are able to achieve closer consensus around what constitutes good work, are able to measure it, and are able to connect the study of work quality to the wider study of wellbeing, it will continue to have a limited effect on national and international policymaking.

legislation has had a significant impact on employee pension enrolment, but no such improvement for self-employed workers.

This Thesis

The Central Question: Work Quality and Work-Related Wellbeing

Each of the papers in this thesis contributes to addressing these three problems. My main motivation is to bridge the gap between conceptual and empirical research on work quality, exploring what can be done with new data to get us closer to understanding a concept which is so important to all our lives. I do so with an eye to the wider public policy context – particularly the pressing need to improve the way we measure work in national and international statistics in light of the rapid transformation of modern labour markets we are experiencing, and the corresponding implications for the sustainability of future welfare states.

My starting point is to define work quality in terms of wellbeing: when I talk about work quality throughout this thesis, I am referring to the way work characteristics – what, in Paper 1, I term “work resources”²⁵ – have on peoples’ wellbeing. When researchers measure work quality in multidimensional indices, we are making a statement about the effect work characteristics/resources have on wellbeing achievement for the average worker.²⁶ At the index-level, this can be measured on a continuous scale, with workers with the lowest work quality – possessing work characteristics associated with low wellbeing achievement for the average worker – scoring lowest and those with the highest work quality scoring highest. This is not to dismiss or discount employment deprivation or poverty-based conceptions of work quality described in the previous subsection. Indeed, many of the findings and data in this thesis could prove highly useful in developing such measures. It is simply that the motivations underlying them are rather different. My definition is compatible with the way most existing work quality indices measure work quality.

However, I then introduce an additional concept, which is related to but distinct from work quality: work-related wellbeing. Whereas work quality is about the possession of work characteristics associated with wellbeing achievement for *the*

²⁵ See Section 1.5.1. I use the term “work characteristics” and “work resources” interchangeably, using resources in Paper 1 but characteristics in subsequent papers. This is because different literature and sub-disciplines tend to use different terminology: I have found the term resources is more amenable to CA scholars, but the term characteristics often aligns best with work quality scholars.

²⁶ This focus on the average worker draws from how Green (2025) conceptualises work quality.

average worker, work-related wellbeing is about the actual wellbeing achieved by *the individual worker* being observed. This is determined by the interaction of work characteristics and the worker's circumstances. Work quality can tell us something of work-related wellbeing, but it is not the same as it: it is at best an approximation of a given worker's actual wellbeing, and at worst wholly misleading.²⁷ This distinction is perhaps best put by Budd and Spencer (2015, p. 182), in their discussion of what they term "worker wellbeing":

"[T]he quality of a job is clearly a significant determinant of worker well-being, but job quality measures are largely job-centric while conceptualisations of worker well-being should be worker-centric. We are asking not how 'good' or 'bad' a job is, but how well or badly off a worker is, in so far as he or she resides as a citizen in society ... A more complete approach to worker well-being needs to go beyond job quality to consider workers as fully-functioning citizens who derive and experience both public and private benefits and costs from working."

Bringing these two considerations – work quality, and work-related wellbeing – together, the central question of this thesis is therefore, quite simply: **How should (paid) work quality and work-related wellbeing be conceptualised and measured in modern Britain?**

The four papers in this thesis each unpack elements of this central question. The first does so conceptually, making a philosophical argument about how we should think about work quality and work-related wellbeing. This provides the motivation for my subsequent three empirical papers, which each address gaps in existing work quality indices to develop a more complete picture of workers' work quality and work-related wellbeing. I discuss each of these papers in turn below, but before this I provide a brief discussion of the main dataset and methodology.

Data and Methods

The empirical basis for the quantitative papers of this thesis is Understanding Society – a large-scale longitudinal survey of a representative sample of UK households, self-described as "the largest longitudinal panel survey of its kind."²⁸ It was started in 2009 as a replacement of its predecessor, the 1991-2008 British Household Panel Survey

²⁷ This distinction is visualised in Paper 1, Figure 1.1.

²⁸ See Understanding Society, 'About Us', accessed 22 July 2024, <https://www.understandingsociety.ac.uk/about/>

(BHPS). With the exception of Northern Ireland, respondents are interviewed on an annual basis over a 24-month period for each wave (UK Data Service, 2015).²⁹ The core dataset, which is used in all three empirical papers, is an index of work quality in the UK which I have constructed specifically for this thesis – the UK Quality of Work (QoW) index – comprising data from Waves 4 (2012-13), 6 (2014-15), 8 (2016-17), 10 (2018-19) and 12 (2020-21).³⁰ Although a household survey by design, the survey comes with weights which enable representative individual-level analysis, and correct for survey and non-response bias. The QoW index contains a large sample size consisting of an unweighted number of 108,973 non-independent respondents, ranging from 23,759 independent respondents in Wave 4 to 15,636 independent respondents in Wave 12. There is a particular focus on Wave 12 in Papers 3 and 4, since this contains the most recent data. I also impute missing values for most indicators of the QoW index, to reduce the number of missing cases in the data.³¹

The decision to use Understanding Society, rather than gathering my own survey or using an alternative survey, was driven by the particular advantages of the dataset. The analysis in Papers 3 and 4 in particular would have been difficult if not impossible with another UK survey. Unlike surveys more tailored to labour market research such as the Labour Force Survey (LFS) or European Working Conditions Survey (EWCS), Understanding Society contains detailed data on both the household of the worker and on the worker's wider circumstances – such as their socio-economic background, the number of children, any health issues they experience, their disabilities, and any caregiving responsibilities inside or outside the household. Unlike the LFS and Annual Survey of Hours and Earnings (ASHE), it also contains data on the earnings of self-employed workers as well as employees. The Skills and Employment Survey, the latest version of which is from 2017 (Felstead *et al.*, 2017), contains unparalleled data on the work quality of a representative sample of UK workers – including work intensity and

²⁹ That is, each household is interviewed roughly a year apart, but the survey period spans two years. This means that each wave overlaps with the waves immediately before and after in terms of time period covered (though because I use every *other* wave, there is little-to-no overlap in time).

³⁰ Note the choice of every other wave rather than every wave is dictated by the fact that those are the only waves where questions on job quality are asked; the choice to exclude Wave 2 is dictated by the fact that data from one of the indicators (Continuous Employment) was not available for that wave.

³¹ For further details of my imputation method, refer to Appendix C.

skill utilisation – and is inclusive of the self-employed, but is an individual-level survey by design³² and thus contains relatively more limited data on respondents’ family and household circumstances (UK Data Service, 2017; Glendinning, Young and Bogdan, 2018, pp. 20–208). Its sample size – 3,250 people (Glendinning, Young and Bogdan, 2018, p. 3) – would also have been too small to enable much of the analysis carried out in this thesis, particularly on labour market inequalities by ethnicity and for some types of employment relationship.

In short, the advantages of Understanding Society were deemed to outweigh its disadvantages, despite the survey not being designed exclusively for job quality or labour market analysis. In addition, it also proved possible to introduce four indicators into Understanding Society using data from the LFS, the Health and Safety Executive and Working Futures (DfE, 2020; Wilson *et al.*, 2020), as will be discussed later.³³ Because Understanding Society is a longitudinal survey, I have also been able to introduce novel indicators of job quality and worker circumstances – such as their length of continuous employment in the same job, and the highest work quality they had attained from all waves in the survey.

The latest wave used (Wave 12) intersects with the Covid-19 pandemic, with certain groups of respondents who would have otherwise been interviewed in-person instead interviewed online or by telephone during the first lockdown. However analysis by Understanding Society has found that, partly because the survey already had a mixed methods sample design, this has only led to a “very small” differences in the propensity to respond by certain sub-groups (Understanding Society, 2023b, pp. 2–3). In light of these changes Understanding Society has also amended its imputation approach for income data and adjusted its weights provided to survey users for data gathered during the lockdown period (Understanding Society, 2023b). This gave it further advantages over for example the LFS, which has had to set out plans to improve its non-response adjustments and survey methodology due to issues with its representatives since the pandemic (ONS, 2023b).

³² Respondents are sampled at the household level, but where more than one household member is identified in the sample only one is identified for interview (see Glendinning *et al.*, 2017, p. 6).

³³ See Appendix D for detail on the Health and Safety dimension, and Appendix E for a discussion of the Long-Term Prospects indicator produced using Working Futures data.

In addition, Understanding Society also contains a large enough sample size to yield some statistically significant results at a high level of granularity. Due to the introduction of an Immigration and Ethnic Minority boost to the sample in Wave 6, there is a sufficiently large sample of people from specific ethnic minorities which have hitherto not been studied in UK job quality research – such as the traveller, Pakistani, Indian, and Bangladeshi ethnic groups. For much subsequent analysis, it also proved possible to analyse different sub-sets of the working population – such as those in different parts of the QoW distribution, the self-employed, or those on zero hours contracts or platform labour jobs. This is not possible with surveys such as the EWCS due to the low sample size of the country-specific data. It would have also been impossible to get the same detailed data and large sample size by commissioning my own survey.

The decision to focus on the UK for this study, rather than opting for another country or a cross-country study, naturally flows from the above. Cross-country research proved impossible because of the issues with sample size with surveys such as the EWCS. In addition, because of the broad scope of this thesis, the use of cross-national panel survey data such as the Comparative Panel File was deemed too ambitious: it would have required the identification of a consistent set of indicators and dimensions of work quality, and of workers' circumstances, across all studies. For a study with the research aims I set out, this meant a single country of focus needed to be chosen. The UK was chosen partly because of the advantages of Understanding Society relative to other surveys of this kind, and partly because the UK has a unique public policy environment making it an interesting and informative country of focus for the study of job quality. I elaborate on these reasons in Paper 2.

The period of focus of this study – 2012-13 to 2020-21, with a particular focus in the later papers on 2020-21 – was driven by a desire to get the most up-to-date data as possible on the quality of work in modern Britain. Wave 12 is the latest wave in Understanding Society for which data on work quality is available (Wave 14 is due to be released in late 2024). The possibility of extending the QoW index backwards in time to incorporate BHPS years was also explored, but the lack of comparable work quality indicators in the BHPS for many of the indicators used in the index ruled out this possibility. Nevertheless, the work done in this thesis could aid future research in

addressing this problem, making compromises with BHPS data or imputing the data into the BHPS in order to build a longer time series spanning back to the 1990s.

A range of methods are used to analyse the data in this thesis. For the most part my thesis is not aimed at making any causal inference, except in a number of limited cases:³⁴ rather, my interest is in trends and inequalities in work quality and work-related wellbeing in modern Britain. Because the QoW index is a synthetic index, with data drawn from a single survey, there is a high degree of flexibility in the analysis possible. The three most common methods of analysis are as follows:

- **Comparison of the relationship between QoW index, indicator and dimension scores with variables of interest.** This includes regression analysis of the relationship between QoW and other variables, with various controls; analysis of the correlation between QoW scores and other variables, using PCA, correlation plots and other methods; and the comparison of weighted mean QoW scores by various sub-categories.
- **Comparison of workers' position in the distribution of QoW scores vs. other scores.** To ease intelligibility for analysis in the later papers, I split workers into quintiles based on their position in the distribution of QoW scores, to supplement other statistical analyses. This enables me to cross-tabulate workers' positions in the QoW distribution vs. other distributions, or to compare differences using boxplots.
- **Descriptive statistics of the proportion of workers achieving particular QoW scores.** This is particularly used when discussing trends in work quality over time at a more granular level. It is also used to identify and analyse sub-groups of the population scoring worst on QoW or other indicators.

Paper 1: A Capability Theory of the Quality of Work

My first, philosophical, paper investigates what is needed to capture the true impact work has on peoples' wellbeing. Although a conceptual paper, it is written with an eye to eventually applying this theory using the data and methods described in the previous subsection. The paper's starting point is to define wellbeing using the

³⁴ I identify a hedonic-based weight for QoW index scores using a first-differenced regression of the effect of changes in QoW on job- and life- satisfaction (Appendix A).

Capability Approach (CA), drawing particularly from Sen's (1999, 1992, 1987a) conceptualisation of the approach. This paper has already been published in the *Journal of Human Development and Capabilities* (Stephens, 2023c).

A wide range of applications of the CA to work exist, but this paper takes steps towards bringing these together into what Robeyns (2017) calls a "Capability Theory." Amongst other things, this involves making a clear statement as to the purpose of the application of the CA; and introducing additional normative judgements to apply the approach. This gives rise to two obvious questions: "why the CA?", and "what does this add to existing applications of the CA to work?"

The first and most obvious reason I choose the CA is because it offers a clear and coherent account of the role of objective vs. subjective factors in human wellbeing – thus directly resolving the first two problems in existing research into multidimensional work quality described earlier; and indirectly resolving the third by paving the way towards better data and research into the quality of work. The starting point for the CA is to define wellbeing in terms of the achievement of valued "beings and doings" (Functionings) – such as the Functioning to live healthily, to enjoy a life free from shame, or to have a family. When a capability scholar talks about the wellbeing people are currently achieving, they are talking about all the valued things they can do or be. These valued Functionings are identified by introducing an external standard of evaluation: either a process of participatory engagement with people about the Functionings they deem valuable (e.g. see Jaggard, 2006; Nussbaum, 2011); or philosophical deliberation over what Functionings best fulfil an external normative standard (e.g. see Burchardt and Vizard, 2011). Either process provides the basis for a more objective than subjective definition of work quality based on the valued Functionings people are able to achieve, because the vast majority of valued Functionings identified through any valuation process are objective beings and doings (for discussions of the content of different lists of valued Functionings, see Qizilbash, 1996). In consequence, someone who is happy about their life or job may achieve Functionings related to subjective wellbeing, but would nonetheless have low achieved wellbeing if they achieve few other Functionings. Building on this, Sen has shown consistent scepticism of subjective approaches to wellbeing, highlighting how even those in extreme destitution can sometimes report higher subjective wellbeing –

perhaps by being isolated from others in society who have more; or because they have resigned themselves to their lot (see especially Sen, 1987c, pp. 45–47).

It follows that any work quality index based on the CA must capture the objective characteristics of work based on the extent to which they enhance or impede the achievement of Functionings. Seen from this perspective, subjective wellbeing measures such as job- or life- satisfaction are best understood as *an effect* of the interaction of job characteristics with individual and external circumstances, and thus not a reliable reflection of the impact job characteristics have on peoples' Functioning achievement.³⁵ This does not, however, mean that subjective wellbeing is not worthy of analysis and study for other reasons, not least for predicting for example workers' labour market behaviour (Brown, Charlwood and Spencer, 2012).³⁶

Work is argued to be both intrinsically and instrumentally important to the achievement of these Functionings. Some elements of work are Functionings in themselves (intrinsically important), such as the Functionings both *to work* and to exercise *meaningful work*, whilst in other respects work affects the achievement of other Functionings such as having a family, participating in civil life, or using earnings from work to achieve a basic standard of living. To help resolve this debate further, I revisit Alkire's (2005, pp. 5–6) conditions for the identification of an important Functioning, based on a process of public deliberation. I tentatively suggest a number of conclusions that could be drawn from such a deliberation, but point to ways future research could reach more firm conclusions on this topic.

Paper 1 therefore provides a framework for understanding the relationship between work and Functioning achievement; and proposes a way to make normative judgements to identify important Functionings related to work. However, this is far from the main contribution of this thesis. Indeed a wide range of work quality indices based on the CA already exist, and share the common feature of focussing on objective

³⁵ For a fuller discussion, see in particular Section 1.5.3.

³⁶ Nor does this preclude the inclusion of subjective life- or job- satisfaction as a Functioning in itself, something which some scholars in the CA would argue for (see in particular Schokkaert, 2007; Schokkaert et al., 2009). Following other CA work quality scholars (Sehnbruch, 2004; Green, 2025) I do not include an indicator of job- or life- satisfaction in the QoW index. However Paper 2 presents results from weighting the QoW index according to their effect on subjective wellbeing, so that scholars sympathetic to this perspective can see how a more subjective approach impacts our assessment of trends and inequalities in work quality over the past decade.

rather than subjective characteristics of work (see in particular Green, 2009, 2007, forthcoming; Green et al., 2021; Sehnbruch, 2004; Soffia, 2018; Soffia et al., 2023). Indeed, the argument that work quality is an objective concept is not even unique to the CA. It featured heavily in debates about different measures of the quality of working life in the 1960s and 1970s, before the CA was even formulated (Burchell *et al.*, 2014). A range of other philosophies or heterodox approaches in economics support broadly the same conclusions as the CA, and could provide justification for similar measures of objective and non-pecuniary aspects of work. For example, a widely-cited philosophical paper arguing for the importance of various non-pecuniary “goods of work” notes that “several liberal egalitarian theories of distributive justice” – in other words, not solely the CA – “can accommodate the claims advanced in this paper.” (Gheaus and Herzog, 2016, p. 72).³⁷ Likewise, in his study of the political economy of work, Spencer (2010) – drawing from non-mainstream economic literature, largely pre-dating the CA – argues that the recent wave of interest in subjective aspects of work amongst mainstream economists “create[s] confusion by suggesting that wellbeing is a purely subjective construct”; it follows that “the equation of wellbeing with utility impedes rather than enhances the understanding of the quality of work life” (p. 6; see also chap. 7).

Instead, I suggest that the key added value of the CA lies in two further arguments it makes about human wellbeing. These two arguments are neglected in other theories of wellbeing, and therefore offer the key contribution of the CA to the study of work and wellbeing. This argument draws particularly from Suppa's (2019) discussion of the CA from an economic perspective and Bueno's (2021) freedom-focussed contribution from a labour rights perspective.

First, the CA makes a crucial distinction between two things: (a) achieved wellbeing, defined in terms of achieved Functionings in one's *current* state (the vector of achieved

³⁷ As a further illustration, someone agreeing with Rawls' (1971) conception of primary goods as the basis for discussion over the just allocation of resources could come to similar conclusions about the limitations of subjective wellbeing, and indeed of GDP itself, since primary goods extend well beyond monetary income to include rights and liberties, and all manner of material goods. This serves as just one illustration of how, although Sen famously disagreed with Rawls' focus on resources as constitutive of wellbeing, there are more commonalities between these two approaches in other respects – for example in Sen's emphasis on the need for democratic deliberation between individuals over which Functionings are important.

Functionings); and (b) *freedom* to achieve different states of wellbeing, defined in terms of the range of combinations of achievable Functionings in all *potential* states (the Capability Set). This distinction has been described as “virtually absent from the wellbeing literature” (Robeyns, 2017, p. 119). As will be shown, I consider this central to how we should conceptualise and measure work and wellbeing. To understand the true impact that work has on people, we need to consider the range of things people could do or be outside their current work activity. What other jobs are available to them? What activities could they undertake outside paid work? And most fundamentally, do they have the means – whether it be income, capital assets, social connections, or skills – to access a range of different opportunities inside and outside the labour market?

In the CA, someone with a wide range of combinations of achievable Functionings available to them would be argued to have a *wide Capability Set*. Having a wide Capability Set can broadly be equated with having a wide range of *choices* or *freedoms* over things they could do or be.³⁸ In the CA, it is crucial to understand that such a person may or may not be someone with high Functioning *achievement* from work. Conversely, someone in a low-quality job, from which they achieve few Functionings in their current vector of achieved Functionings, may nonetheless have a wide range of achievable Functionings once their Capability Set is considered.

Working conditions themselves can of course play a key role in constraining these choices – with intense jobs, oppressive working environments, algorithmic control, or precarious contracts controlling workers in ways widely discussed in labour process theory literature (e.g. see Gandini, 2019). But it is important to understand that these are not the determinant of constrained Capabilities: the CA calls for a fuller investigation into the wider constraints workers face when accessing work, beyond simply the conditions of the job they are accessing. The two inevitably interact, and workers with constrained choices lack the power to negotiate access to work on their own terms, rather than on terms set by their employer – potentially leading to a downward spiral in terms of work quality, including in relation to employment conditions, contractual arrangements, and pay. However it is also possible to imagine someone in otherwise acceptable working conditions who accesses a job because they

³⁸ I briefly discuss synonyms to these terms in Section 3.1, and point to literature that discusses them in this way.

have few other opportunities, and lacks any other prospects in the event of the loss of this job. If we neglect this role of choice in labour markets – over the jobs we do, but also between work and other opportunities – we will fail to capture the impact of the worst forms of work, since as the above discussion shows this need not necessarily be correlated with the conditions of the job a worker is currently doing.

Second, the Capability Approach also argues that personal, social, and environmental factors (Conversion Factors) affect the rate at which any set of resources is converted into Functionings and, ultimately, Capabilities. An oft-cited example in the Capability literature is the additional food needed by a pregnant woman to achieve the Functioning of being well-nourished (Sen, 1994, p. 334). In this example, the Conversion Factor is the state of being pregnant, and would be considered an individual-level Conversion Factor. Another individual-level Conversion Factor could be being disabled, which often places considerably greater resource needs for the disabled person to achieve the same wellbeing as someone without those disabilities (Zaidi and Burchardt, 2005).

Conversion Factors have considerable implications for the way we understand work. The impact of poor work characteristics on workers may be exacerbated by Conversion Factors. For example, a worker with children or intensive caring responsibilities in the home will, all else held equal, achieve lower wellbeing from a lack of employee-oriented flexible working opportunities than a worker without these responsibilities. Someone in a precarious job will likely achieve higher wellbeing if working in a welfare system with a strong social safety net than if they do not. As also identified by Suppa (2019), the same work activity could have a radically different effect on workers' wellbeing depending on the circumstances under which the individual worker accesses it. In Paper 1, I use the example of an unpaid part-time volunteering role accessed by an older worker with a stable pension and long-term career who enters into the role as a supplemental meaningful work activity, versus the same role accessed by a younger worker with few other prospects – who is only taking the job because she has no other opportunities, and simply feels she has to gain some work experience. The key added value of the CA is that it allows us to distinguish between these two people, and gain a truer understanding of the effect work has on their wellbeing.

Taken together, the above arguments mark the key point of departure in this thesis from existing applications of the approach to multidimensional work quality. They lead to a distinction between work quality and work-related wellbeing. They provide the basis for my contributions in my empirical papers, particularly my third and fourth papers.

Each of the subsequent papers should therefore be read as taking up elements of this Capability Theory: the second paper uses the theory to build a work quality index based on the CA, capturing the objective effect characteristics of work have on peoples' Functioning achievement; the third introduces proxies for the Capability Set, to understand the choices and constraints faced by workers in different-quality jobs; and the fourth explores the relationship between work quality, proxies for the Capability Set, and Conversion Factors.

Paper 2: The UK Quality of Work Index: Implications of Different Weighting Approaches on Inequalities and Trends in Work Quality, 2012-2021

In my second paper, I set about operationalising this the first element of this theory for the UK by introducing an index of multidimensional work quality using the CA. A slightly amended version of this paper, more framed around the implications of different weighting methods for the index, has been accepted for publication in the journal *Social Indicators Research* (Stephens, 2024). An earlier version of the paper, with fewer indicators and no analysis of weighting methods, was published as a working paper by the Centre for Analysis of Social Exclusion (CASE) (Stephens, 2023a). I have also discussed findings from the earnings data of the index specifically in an article in the LSE British Politics and Policy blog (Stephens, 2023b).

This index introduced in this paper – the aforementioned QoW index – contains over a decade of data on multidimensional work quality. Its indicators and dimensions have been identified based on consideration of the characteristics of work which enhance or impede the fulfilment of valued Functionings. This index is designed to capture peoples' wellbeing achievement in their *current* state (their vector of achieved Functionings). The data from this index comes from Understanding Society. It is individual-level, synthetic, and is representative of the population of interest. As

discussed in the “data and methods” subsection earlier, this opens up a wide range of forms of analysis.

This paper is relatively unusual amongst studies of work quality indices in focusing on a single country. This goes against the current direction of travel, but was a deliberate decision necessitated by the motivations of my thesis and the available work quality data. I discuss the empirical reasons for my focus on the UK earlier, but the decision to focus on the UK was also driven by the distinct public policy environment for work quality in this country. As noted in a previous subsection, since the late-1990s UK governments have focussed largely on improving pay at those at the bottom of the pay distribution through successive increases in the National Minimum Wage and latterly the National Living Wage; and improving the employment rate both across the country and for particular sub-groups of workers. Over this same period there was relatively little intervention in improving work quality. As a result, as discussed in the second section of this introduction, the UK has not been immune to the considerable changes in modern labour markets which have occurred since the 1980s.

The main contribution of the index is practical: it provides future researchers with a vital synthetic index of multidimensional QoW in the UK, bringing together a wide range of indicators into a single survey. Most of these indicators are not readily-analysable in Understanding Society: their creation often required combining data from various indicators, often over different time periods of the longitudinal survey; making decisions as to the cut-offs of the data, based on the distribution of scores and findings from other literature; and, in some cases, introducing data from some other surveys into Understanding Society for the first time, to help bolster the survey with a wider range of indicators of work quality. The index also uses four alternative weighting principles for the QoW index: a default weighting method which equally weights all dimensions; a hedonic weighting method, informed by its association with job- and life- satisfaction; a frequency-based weighting method, based on the inverse of the proportion of people deprived in the index; and a data-driven weighting method informed by PCA of the indicators. This makes the index useful to any researcher interested in testing the robustness of synthetic indices, and means any trends or findings from the index come readily-testable with alternative methods of weighting. The weighting methodology introduced in this paper will also be useful for any future

research into multidimensional wellbeing: Appendix A provides guidance – backed up by a review of the wider social science literature – on how these broadly-used weighting methods could be applied in any multidimensional research to test the robustness of any wellbeing index.

In addition, a range of indicators in the index are novel, helping to operationalise important indicators of job quality which have hitherto been rarely measured in existing surveys. Amongst other things, the index draws a crucial distinction between Earnings Equity (one's position in the gross hourly wage distribution) and Earnings Sufficiency (whether net earnings enough to pay for a basic standard of living), and develops indicators for both. It uses longitudinal data to develop a new indicator on the length of continuous employment for workers. As mentioned earlier in the introduction it introduces three indicators of workplace health and safety into Understanding Society by cross-referencing it with data on recorded accidents and injuries from the Labour Force Survey, and on workplace fatalities reported to the Health and Safety Executive, by Standard Industrial Classifications (see Appendix D). It also develops a new indicator of workers' long-term job prospects by matching data on projections of jobs' future employment growth and replacement demand from the Department for Education's Working Futures surveys (Wilson *et al.*, 2020), broken down by Standard Occupational Classification (SOC) (Appendix E). This brings the QoW index closer to capturing important issues discussed widely in modern labour market policy, such as the impact of automation and AI on future demand for different occupations.³⁹ Finally, the index also applies a method for imputing missing data using Multivariate Imputation using Chained Equations (MICE), to help reduce further bias in the data (Appendix C). I hope even a researcher disagreeing with my wider arguments would still find much of use in the indicators introduced here, and could

³⁹ Of course, it only does so in a limited way, insofar as the DfE's own Working Futures data captures this presently. I discuss potential ways we could improve employment prospects data in the conclusion to this thesis. In addition, as I elaborate on in Appendix E and the conclusion, an often-overlooked fact is that in most occupations, the replacement demand – i.e. the projected exit rate of existing employees from the occupation – plays a much greater role in determining the long-term prospects of an occupation than the projected employment growth from technological change. In discussions of the impact of technological change, people need to be much more cognisant of this than they currently are.

use them for their own research into work quality and its associations with other variables of interest.

In addition to the above practical contributions, Paper 2 also makes a number of important empirical findings. The main finding is that many key conclusions about what has happened to UK work quality over the past decade are robust to a wide range of different weighting methods. This means that there should be broad agreement that work quality has polarised in the UK over the past decade – with rising inequalities in work quality between self-employed workers vs. employees; and between workers of many ethnic groups vs. White British workers. The sole exception is hedonic weighting – which weights according to the association between each indicator and life- or job-satisfaction – where both the inequalities and trends in work quality often go in the opposite direction to the other weighting methods (the self-employed, for example, score better on a hedonic weighting method than employees). This finding on hedonic weighting, in itself, provides evidence that this is a general outlier compared to other approaches to work quality. The paper suggests that, at least with respect to work quality in the UK, an approach based on equal weighting of the indicators and dimensions yields conclusions that are not dissimilar to other weighting approaches – this contrasts it with conclusions drawn in other areas of wellbeing research (e.g. Greco, 2018), but corresponds with the conclusions drawn from a recent academic review of the DWP’s material deprivation measures (DWP, 2024b). The paper also finds the indicators of the QoW index perform reasonably well in PCA, and are not simply correlates of some indicators such as earnings (see Appendix A).

Paper 3: Worker Choice and Constraint - Operationalising (proxies for) the Capability Set and their Relation to Forms of Capital

The results from the QoW index presented in Paper 2 tell us a great deal about the quality of paid work in the UK; how this differs by ethnicity, region of residence, and other circumstances; and how this has changed over time. In Paper 3, the data from this index is utilised for a different purpose: to gain an understanding of the choices available to different groups of workers in the UK labour market. This helps us get closer towards measuring work-related wellbeing, and not merely work quality. This

paper is currently undergoing peer review with the journal *Work, Employment and Society*.

As I argue in the paper, worker choice vs. constraint is a key undercurrent in many debates about work quality. Choice particularly features in accounts of new and more precarious forms of employment such as self-employment and zero hours contracts, with many qualitative studies highlighting how limited choices over alternative jobs play a key role in limiting the wellbeing of workers in these kinds of roles (Smeaton, 2003; Williams, 2007; Abada, Hou and Lu, 2014; Bales, Bogg and Novitz, 2018; Beck, 2018; Briken and Taylor, 2018). It also features in discussions of the negative impact of employment-focussed ALMP on unemployed people (Egdell and Beck, 2020; Fernandez-Urbano and Orton, 2021; Jones, Wright and Scullion, 2024). However, existing research engages with the question of choice in a relatively limited way. There is no shared conceptualisation of choice across the different approaches, which reflects the aforementioned neglect of choice in many theories of human wellbeing outside the CA (Robeyns, 2017, p. 119). This conceptual neglect of choice feeds into an even greater empirical issue: most studies are not carried out with the intention of assessing the general level of worker choice at the UK labour market level, tending instead to explore choices for just a sub-profession or sub-group of workers – often using a methodology which is not designed to be representative – rather than the population of workers as a whole.

The paper argues that the CA offers a way to navigate this debate. It then presents some of the first quantitative data on the choices, both inside and outside of the labour market, available to a representative sample of UK workers. It does this by developing a set of ten indicators which are identified as proxies for the Capability Set, using individual, household, and longitudinal data from the same survey as the QoW index (Understanding Society). Using Bourdieu's theory of capitals (Bourdieu, 1983), these are grouped into three sub-categories depending on their association with economic capital, social capital, and cultural & human capital, and are then in turn aggregated together into a single Capability Set score (CS score). This allows us to compare workers' scores on each indicator, each type of capital, and their CS scores as a whole with their scores on the QoW index.

The paper finds that there is a strong correlation between low QoW scores and low CS scores. Over one-in-ten workers in the UK labour market as of 2020-21 (12%) can be identified as in *both* low-quality jobs *and* with constrained choices about other opportunities inside or outside the labour market. This constitutes the majority of workers in these low-quality jobs. Further analysis shows this group of workers is disproportionately more likely to be female, of non-white UK ethnicity, work in the gig economy, be self-employed, or use a zero hours contract than workers in high-quality jobs with a wider range of choices.

However, the paper also finds considerable heterogeneity in the lower end of the labour market. Those in the lowest-quality jobs see much greater dispersion in their CS scores than those in the highest-quality jobs. This is also reflected in the data on workers' employment relationships, with those in the gig economy, those using zero hours contracts, and particularly the self-employed, showing a wide dispersion of these scores. This therefore finds some support for the literature suggesting workers in these jobs may access them as a genuine choice, in a context where they have many other opportunities inside and outside the labour market, whilst nonetheless supporting the general conclusion of qualitative research: that most workers who access bad jobs have constrained choices. Overall, this confirms the theoretical prediction set out in Paper 1, where I discussed the fact that for the most advantaged in society low-quality work may still be accessed, but only in a context of choice where it likely suits with their wider needs and aims. The distribution of the data is consistent with the theory advanced.

These findings illustrate the importance of measuring *both* worker choices *and* work quality, since the two are evidently not perfect correlates of each other. The analysis of both issues alongside each other helps identify an important sub-population of workers who are arguably the most disadvantaged in the labour market: those workers in low-quality jobs, with little choice about other things to do or be. These have hitherto not previously been identified in the working population, and have therefore not been the focus of public policy interventions.

Paper4: *Quantifying the “mismatch” between work quality and worker circumstances: The Conversion Factors of UK paid workers, 2020-21*

The final paper of this thesis completes the Capability Theory and provides important new data on work-related wellbeing, by introducing Conversion Factors into this analysis. It has been prepared for submission to the journal *Work and Occupations*.

There is currently a chasm between multidimensional work quality research, which views work quality from an exclusively individual-level perspective, and studies – particularly within sociology – which consider the interaction of work, family and caring responsibilities. Studies in the latter group highlight an aforementioned “mismatch” (Correll *et al.*, 2014, p. 3; Moen, 2015, p. 176) between the demands of caregiving and the increasing demands of paid work, because labour force participation and work intensity has risen at the same time as caregiving demands have remained the same or increased, in ways discussed in the second section of this introduction.

To resolve such issues, some studies propose measuring aspects of work quality such as working hours (Jacobs and Gerson, 2001) or job insecurity (Donnelly, Zajdel and Farina, 2022) from a household or family rather than an individual perspective. There is a need to bring these two strands of research together, towards an integrated understanding of the relationship between work quality and worker circumstances. We currently know little about whether those who access these opportunities are indeed those who need them most – i.e. those with the most life- and family-commitments – or whether they are the preserve of workers who have fewer such responsibilities in any event. Nor do we have a conceptual approach to quantifying the extent of the “mismatch” discussed in literature: what implications does any difference in work quality between workers with and without these responsibilities have for their work-related wellbeing?

This paper argues that the CA provides a framework for analysing the interaction between work quality and these circumstances through the concept of Conversion Factors: characteristics which affect the rate of conversion of resources into Functionings, and thus wellbeing. The paper identifies eight Conversion Factors using individual, family, and household-level data from Understanding Society. All the Conversion Factors introduced in this paper are *negative*: that is, a worker with *higher*

scores for Conversion Factors (CF scores), has a *lower* rate of conversion of work resources into wellbeing, and therefore requires a *higher-quality* job – i.e. higher indicator, dimension and index scores in the QoW index – to achieve a given level of wellbeing from work as someone with lower scores for Conversion Factors (and thus a higher rate of conversion).⁴⁰ They include for example the number of dependent children, the allocation of childcare within the family, the hours spent in unpaid caregiving, and recent work-limiting physical or mental health severity. A limitation of this study is that due to both data constraints and the single-country focus of this study, I do not include societal, institutional or environmental Conversion Factors which receive widespread discussion in Capability literature in work (see in particular Hobson, 2011). The focus of this paper is therefore on individual, family and household Conversion Factors.

Having identified these, the paper begins by exploring the general relationship between Conversion Factors, QoW, and Capability Set scores at an individual level. In line with what was hypothesised in Paper 1, the paper finds workers in the lowest-quality jobs tend to have slightly higher, rather than lower, CF scores with the exception of those related to children and childcare (where there is a ‘u’-shaped relationship). This relationship is exacerbated once one considers the interaction of proxies for the Capability Set: the sub-group of workers in *both* low-quality jobs *and* constrained choices are disproportionately more burdened by Conversion Factors than those workers in high-quality jobs with a range of choices.

The paper then explores the implications this has for labour market inequalities according to workers’ gender, ethnicity, and employment relationship. Drawing from other applications of the Capability Approach to disability research (Kuklys, 2004; Zaidi and Burchardt, 2005), it argues for a methodology of dividing the sum of workers’ QoW and CS scores by a Conversion Factor-based equivalence scale – with the scale effectively serving as a means to create a weighted sum of scores. However it identifies methodological issues with creating such a scale at present, and identifies issues that

⁴⁰ This is as opposed to positive Conversion Factors which, if possessed, would mean someone requires a *lower* QoW to achieve the same level of work-related wellbeing as someone without them. The CA literature discusses Conversion Factors both positively and negatively, and there is no issue with this, but to avoid confusion I strictly use negative Conversion Factors in my analysis for Paper 4. I also briefly discuss positive and negative Conversion Factors in Section 1.5.4.

future research would need to address. In the absence of such an equivalence scale, it explores the cumulative impact of dividing the sum of workers' QoW and CS scores by their scores on each individual Conversion Factor.

It finds that this process exacerbates labour market inequalities by gender and ethnicity, because women and non-white ethnic groups possess a disproportionately lower rate of conversion which is not compensated for by higher relative QoW or CS scores. However labour market inequalities by employment relationship are narrowed through this process, because the self-employed, gig economy workers and those on zero hours contracts have relatively higher rates of conversion than employees and have relatively better CS scores.

This paper makes significant inroads into what is an under-studied area of research in work quality, and in the Capability Approach more broadly. It reaches some conclusions which broadly support the original thesis I set out in Paper 1: that an important sub-group of workers in the lowest-quality jobs perform even worse once one considers both their constrained choices and their Conversion Factors. It also synthesises all of my papers by proposing that we sum QoW and CS scores and, in future, divide these by a Conversion Factor-based equivalence scale. Again consistent with my original thesis, it finds that labour market inequalities by gender and ethnicity are greater when we consider the disproportionate rates of conversion of women and certain ethnic groups.

The Structure of this Thesis

The rest of this thesis is structured sequentially, from Paper 1 to Paper 4. As should be apparent from the preceding sections, these papers are designed to naturally flow from the other, each developing elements of the argument and culminating in a more comprehensive account of not just work quality, but also work-related wellbeing. However the reader will nonetheless find a small amount of repetition of the literature review and arguments, particularly in my descriptions of the key principles of the CA. This was necessary so that readers of these papers in the journals would have an idea of the general concepts.

Throughout these papers, reference is given to appendices which support the conclusions of the papers and provide more descriptive statistics than could be

included in the papers themselves. Those interested in the methodology or wanting to use the data for their own analysis of UK work quality will hopefully find much of use in these appendices.

I conclude this thesis with a discussion of the implications of these findings for future research and policymaking. The findings from these papers suggest that over the past decade, policymakers have used too narrow a spectrum of policies to improve the quality of peoples' working lives – with UK policy characterised by a focus on employment-oriented ALMP and rising statutory minimum hourly wages. Yet as Paper 2 shows, there is no guarantee that a rise in hourly wages should lead to a corresponding improvement in earnings sufficiency; this depends on the interaction of wages, hours worked, pay deductions, and the price of achieving a minimum societally acceptable standard of living.

The thesis also highlights the need to consider not just the characteristics of jobs, but the circumstances of the individual worker, in work quality. Work is not done in a silo; to understand the effect any work has on people's wellbeing; we must ground it in the context in which people are working. At the point of negotiating access to work, the worker's bargaining power depends not only on their labour market position – such as their own skills or employment prospects, or the collective bargaining of terms and conditions – but on their broader circumstances. Workers' savings, the support from other family members, their social connections, their family – all these effect both the range of jobs they will be able to find, and their ability to 'hold out' for better terms and conditions at the point of negotiating access to work. There is no reason to assume that these are simply correlates of the quality of the job being accessed. Workers with greater freedoms over what they can do or be can, and will, freely choose lower-quality jobs at various points in their lives at points where this best suits them. Workers without these same freedoms lack the ability to do this, and this one of the things that makes the experience of work for these workers so bad.

I suggest this is potentially what has made some key debates in work quality so hard to resolve: there are indeed a minority of people in these lower-quality jobs who access them as a free and genuine choice. Their existence should not be used to make a false inference about the effect of these jobs, in general, on the wellbeing of the predominant number of workers who do not access these jobs under these same

circumstances. This calls for a more thorough reorientation of work quality-related public and social policy goals, towards enhancing the freedoms of individual workers – giving them the means to make more choices over the work they can do. This requires a broader range of policy interventions both inside and outside the labour market.

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Paper 1

The Quality of Work: Towards a Capability Theory

This paper introduces a comprehensive conceptual framework for measuring the Quality of Work (QoW) using the Capability Approach (CA). Drawing from Robeyns' (2017) modular framework for developing Capability Theories, it proposes we conceive of work as a body of resources existing in a 'space' of work. Dimensions of QoW can be identified based on how work resources enhance, or impede, the achievement of important 'beings and doings' (Functionings) both inside (intrinsic importance) or outside (instrumental) this space – such as intrinsic Functionings like meaningful work; or instrumental Functionings like family- and life-fulfilment. However, it further argues that many approaches to QoW are under-specified, since they neglect the crucial ways that peoples' wider circumstances, outside this space of work, determine peoples' overall work-related wellbeing. This calls for indices of multi-dimensional QoW to also measure (a) the range of wider Functionings people could achieve outside their current work activity (the Capability Set); and (b) personal, social, and environmental factors which affect how work resources are converted into Functionings (Conversion Factors). It is only by taking these circumstances into account that indices can capture the true impact of the worst forms of work, by understanding *who* is forced to engage in this work.

Keywords: Capability Approach, work, job quality, employment, platform labour, gig economy

1.1. Introduction

The Capability Approach (CA) has transformed our understanding of human wellbeing across philosophy and the social sciences. It rejects approaches which equate wellbeing with subjective wellbeing or happiness, gross national income, or indeed any set of resources (e.g. Rawlsian approaches). Instead, the starting point for conceptualising and measuring wellbeing should be to ask what people are able to do or be: what valued Functionings they are able to achieve. Resources are therefore

instrumentally rather than intrinsically important: the ‘means’ to achieving Functionings, rather than ‘ends’ in themselves. This contribution in itself has given rise to a considerable range of applications of the CA. However, the CA also makes two crucial additional contributions which have proved more elusive to conceptualisation and measurement. First, it defines our wellbeing not as Functioning achievement in our current state (described in the CA as our vector of achieved Functionings), but our freedom to achieve different states of wellbeing outside of this vector of achieved Functionings: it is the range of combinations of achievable Functionings available to an individual (the Capability Set), whether chosen or not. Second, it argues that the same set of resources do not create Functionings equally for all people: personal, social, and environmental factors (Conversion Factors) affect how these resources create Functionings. This means that because of their circumstances, some people will require more resources than others to attain the same achieved and achievable Functionings. In short, the CA calls for a holistic and person-centred assessment of wellbeing. The true impact that any set of resources have on peoples’ wellbeing can only be understood if we consider peoples’ wider circumstances: what they can do and be (Functionings); the range of combinations of achievable beings and doings (Capability Set); and the way that personal, social, and environmental factors affect their ability to convert resources into wellbeing (Conversion Factors).

Work is ubiquitous in our lives, and encompasses all forms of paid and unpaid productive activity (Budd 2011; Cooke et al 2013). It is therefore unsurprising that a considerable number of applications of the CA to job quality have been developed.⁴¹ These have emerged in tandem with a growing number of attempts to measure job quality by academics, public policymakers, and international institutions (e.g. see Hovhannishan et al. 2022; Muñoz de Bustillo 2011; Leschke and Watt 2014; ILO 1999;

⁴¹ In this particular paper, I use the term “work” to refer to paid and unpaid productive activity (see Section 5.1 for a fuller definition). “Job quality” is used in reference to literature which measures, using multi-dimensional indices and other approaches, the effect that at least some of this work (usually paid work) has on peoples’ wellbeing; to avoid confusion over multiple terms, it should be read as encompassing all the various synonyms for job quality which this research uses – whether it be “employment deprivation”, “quality of employment”, or otherwise. The term Quality of Work (QoW) is exclusively used to refer to the specific approach to conceptualising and measuring the wellbeing which people achieve from work which is being proposed in this paper. “Wellbeing” is defined in Section 5.1.

OECD 2003) – many of which already engage with the CA to at least some degree. However, there is still a lack of consensus about how to conceptualise and measure job quality, and this has impeded progress in improving job quality – not least in European public policymaking (Piasna et al, 2019). I also submit that there is a tendency across job quality research, including within CA-based approaches, to look at job quality through peoples’ Functioning achievement in their vector of achieved Functionings, neglecting the role of the aforementioned wider circumstances – the Capability Set and Conversion Factors – in determining peoples’ ultimate wellbeing. This, I suggest, is under-specified: it implies that a given set of work resources has the same fixed and time-static effect on the wellbeing of all individuals.

To redress this, this paper utilises Robeyns' (2017) modular framework on the development of applied approaches to the CA. She draws an important distinction between Capability *Theories* and applications of the Capability *Approach*. The CA is a deliberately “open-ended” and “under-specified” concept (Robeyns, 2017). A Capability *Theory* requires the CA to be “closed” and “specified”: used for a specific purpose and aim, with a set of normative principles external to the CA introduced. Building on Robeyns’ framework, this paper develops five requirements for a Capability Theory of Quality of Work (QoW). It argues that previous approaches lack elements necessary to fulfil these requirements. I then take the first steps towards building a Capability Theory of QoW which meets these five requirements. I address questions about exactly how work relates to Functionings in an attempt to build consensus around a clearer framework for measuring and conceptualising QoW. Crucially, I then propose a way in which the Capability Set and Conversion Factors could be incorporated into indices of QoW – outlining how they relate to wellbeing, and proposing potential indicators of them.

Without incorporating the Capability Set and Conversion Factors, I suggest it is not possible to correctly distinguish between advantaged people (ie people with high work-related wellbeing) and disadvantaged people (low work-related wellbeing). This is because the most disadvantaged people do not merely achieve few Functionings from work: they also, first, have few other achievable Functionings across their wider lives (a narrow Capability Set); and second, their personal, social, and environmental Conversion Factors prevent work from achieving the wellbeing which more

advantaged people can achieve from even the same (or similar) work. Put another way, they lack the power to force employers to build work around their lives, rather than around the needs of employers. Advantaged people in society, by contrast, negotiate access to forms of work which maximise their achievement of Functionings at various time intervals, because they have a wide range of achievable Functionings and can therefore build work around their own Conversion Factors. They may use poor jobs for their instrumental value earlier in life whilst undergoing training or education – for example by using the money from them to fund their studies or taking on unpaid internships to help them progress in their careers. This enables them to access better, more secure forms of work later in life.

It follows that at its most extreme, the exact same work could lead to high work-related wellbeing for some individuals, but not for others. An identical part-time unpaid volunteering role for a charity, for example, might enhance the wellbeing of an older worker with another paid job, a stable career and a good pension who regards it as a supplemental meaningful work activity, but not for a younger worker with no paid work prospects for whom it is the only slim route they have to a stable, paid job. Platform labour in the gig economy is characterised by some as a potentially wellbeing-enhancing job, but I suggest this rests on implicit ideal-typical assumptions about the circumstances of the people accessing these jobs: it may work for a single person in training for a permanent job later in life, but not for someone with a family, no other opportunities for life fulfilment, and thus no prospect of long-term security for them or their dependents. We risk under-stating the impact of the worst forms of work by making such ideal-typical assumptions about the circumstances of the worker. The reason these and other forms of work might be so damaging is not simply that the people doing them generally achieve few Functionings from work, but because of *who* is forced to do it. To measure multidimensional QoW, we therefore need to introduce indicators of these circumstances into existing indices.

This paper is split into four sections. In the first, I review how foundational literature in the CA has addressed the issue of work. Second, I set out the requirements for a Capability Theory of QoW, drawing on Robeyns' (2017) modular approach. Third, I review subsequent literature against these requirements. In the fourth, I set out my proposed Capability Theory. The theory proposed in this paper is

necessarily incomplete due to unresolved debates in the literature; I discuss these unresolved debates and chart potential answers to them in the succeeding sections.

1.2. Work in Foundational Literature in the Capability Approach

Work features throughout foundational literature in the CA. Sen wrote a dedicated study on employment and development earlier in his career (Sen 1975). *Poverty and Famines* (Sen 1981) was prepared for the International Labour Organisation's World Employment Programme, and contains frequent references to the role of work in causing and preventing famines. Both Sen and Nussbaum appear to endorse a broad view how work is important to human wellbeing, going beyond its mere pecuniary benefits. In *Poverty and Famines*, for example, Sen highlights that despite carrying out the same work activities for the same income, two groups of agricultural labourers – landless waged labourers; and share-croppers who received their income from the crop they owned and sold – fared very differently in the Great Bengal Famine (Sen 1981, 5): work can thus have a markedly different impact on the “exchange entitlement” of individuals, even for two jobs which have the exact same earnings. Both Sen and Nussbaum's writings also contain frequent references to the empowering role that the non-pecuniary aspects of work can play, particularly in liberating women from cycles of domestic abuse and oppression (Sen 1987; Nussbaum and Sen 1993; Nussbaum 2000; 2011).

Since formulating the CA, Sen has argued that unemployment needs to feature in our assessment of the “spaces of inequality”, suggesting that the lower wage inequality in continental Europe versus the United States may simply be due to higher unemployment in the former, with otherwise unemployed workers in the US being captured in the labour force and driving up wage inequality (Sen 1997, 159). Later, in the wake of newfound interest in job quality in the ILO in the late-1990s, he argued for the inclusion of informal and unpaid work in our assessment of peoples' work-related wellbeing (Sen 2000). In his earlier writings he also endorsed multi-dimensional approaches to understanding work (Sen 1975) and unemployment (Sen 1973).

Despite this, it is not possible to identify a clear way of measuring job quality from either Sen or Nussbaum's writings, since their research interests have lay elsewhere.

Sen's later articles do not attempt to rigorously apply the CA to job quality so much as make a series of observations about work from a CA-based perspective. Nussbaum's research has focussed more on specifying important Capabilities at a higher level of abstraction and on dedicated applications of the CA to other areas of research, notably women's empowerment and animal welfare. Nussbaum criticised human capital approaches (Nussbaum, 2019, p. 67) and as noted earlier, her writings on women's empowerment give a clear idea of the importance she attaches to the non-pecuniary aspects of work, but despite deriving her central capabilities from the early work of Marx (following Aristotle), she has been criticised for not including meaningful work as a Central Capability (Weidel, 2018).⁴² It has been left to subsequent scholars, to explore how the CA can be applied to job quality.

1.3. Five Requirements for a Capability Theory

Although a wide range of papers on processes for operationalising the CA and identifying Functionings were written in the decades since the CA was formulated (see in particular Clark 2013; Jaggard 2006; Robeyns 2003; Sen 2002), it was not until Robeyns' (2017) modular framework that scholars had a dedicated text on how to apply the CA. She argued that on its own, the CA is an open-ended and under-specified concept: it is, by its own definition, an *approach*. To properly apply the CA, scholars need to, amongst other things, be explicit about the purpose and aim of the application; and introduce external normative decisions to identify important Functionings. In doing this, we develop *Capability Theories*: these are closed and specified applications of the CA which contain all necessary modular elements. Whilst Robeyns allows for a diverse range of uses of the CA, she argues that "some ideas in this broad 'capabilities literature' do not survive careful analysis, and should be rejected" (Robeyns, 2017, p. 21). Building on Robeyns' modular framework, I propose five requirements for a Capability Theory of QoW. These requirements draw heavily from Robeyns (2017), but given the specific focus of this paper is the measurement of QoW using the CA, they also suggest ways to re-frame and add to her requirements where necessary for the specific purpose of measuring QoW.

⁴² Weidel's paper refers to a "*Central Capability*" for "*meaningful labour*", but to limit the use of terms in this paper I equate this with a *Functioning* for *meaningful work*.

Firstly, there is the “specification” requirement: we need to specify the space of interest and the research focus. This requires a clear definition of the set of resources within this space of interest which we are measuring, and the purpose for which the Capability Theory is being built. At this initial stage of building a theory, this body of resources will be extremely broad. The space of interest for CA-based research needs no more philosophical justification than for any other area of research, but it is important to be very clear which resources are and are not in scope.

Secondly, we must make normative decisions to “identify Functionings.” On their own, neither resources in our space of interest nor Functionings themselves are “important.” Work resources, for example, comprise every single measurable and even non-measurable aspect of work. Since Functionings are simply beings and doings, they encompass all trivial and non-trivial things we can do or be. In the space of work, for example, they would range from the Functioning to sit in a red office chair, to have a vending machine at the workplace, to work from home if desired, to have maternity and paternity leave, or to have impartial mechanisms for redress. Any Capability Theory needs a process to identify a list of *important* Functionings. This is an inherently normative process: a value judgment, external to the CA, needs to be introduced to identify them. There are two broad schools of thought as to how lists of such Functionings can be identified: philosophical deliberation; or democratic / participatory engagement. Advancing the latter approach, Alkire (2005, pp. 5–6), following Sen (2004), proposes that achieved Functionings must satisfy two criteria: (a) they must be “valued as being of special importance ... to a significant proportion of the relevant population” to which a given individual belongs; and (b) they must be “socially influenceable” Functionings “that social and economic policies have the possibility to influence directly.” I return to Alkire’s requirements in Section 5.3.

Thirdly, having identified the list, we need to “relate resources to Functionings.” Resources in our space of interest are only important to the extent that they affect Functionings within the space of interest (intrinsic importance), or are a means to the achievement of Functionings which are not in our space of interest (instrumental importance). The extent to which they are one or the other varies with the space of interest (“specification”) and any external normative theories applied (“identify Functionings”). For example, if we identify work as our space of interest and identify

important Functionings – like Nussbaum (2011) – based on consideration of what is necessary to live a life worthy of human dignity, then we need to establish how work resources relate to her list of Functionings.

Fourthly, we need to “introduce Conversion Factors and the Capability Set.” In the first three steps, we will have established an approach for assessing the impact that resources in our space of interest have on peoples’ Functionings in their current circumstances (their vector of achieved Functionings). However, it is an entirely distinct and separate exercise to conceptualise how Conversion Factors and the Capability Set affect peoples’ wellbeing. Conversion Factors are defined as any individual, social and environmental factors which affect how resources create Functionings and, ultimately, Capabilities. Existing literature would suggest that Conversion Factors can be positively- or negatively-framed. In the former case, an individual with the Conversion Factor requires *less* resources to achieve a given level of Functioning achievement. This appears to be the case for many social or “institutional” Conversion Factors discussed in the literature, such as the way institutions affect peoples’ sense of entitlement, and thus opportunities (Sen, 1999, p. 142; Hobson, 2018). The availability of paid parental leave in a society has also been framed in these terms (Browne, Deakin and Wilkenson, 2004). In the latter, an individual requires *more* resources to achieve Functionings, such as a pregnant woman for the achievement of the Functioning of being well-nourished. Which Conversion Factors there are, and whether they are positively or negatively framed, will depend on the purpose of the Capability Theory. The Capability Set, as discussed in the introduction, consists of the range of achievable combinations of Functionings outside of one’s vector of achieved Functionings. They thus have an inherent “counterfactual nature” (Comim, 2008, p. 173). There is detailed scholarly discussion about how they could be more directly measured using ranked opportunity sets (e.g. see Klemisch-Ahlert 1993; Pattanaik and Xu 1990), but as I will elaborate on later for the purposes of this Capability Theory there is also a case for more indirectly measuring them using proxies which would suggest an individual has a wide range of achievable Functionings. For both Conversion Factors and the Capability Set, a different set of factors need to be brought in at this stage. For the measurement of

QoW, this necessarily requires the consideration of factors outside the space of interest. I elaborate on this in Section 5.4.

Finally, there is the “operationalisation” requirement: we need to set out a process for measuring the wellbeing, in terms of Functionings and (ultimately) Capabilities, which people achieve from the resources in our space of interest. This can be either quantitative or qualitative, and will depend on the purpose of the Capability Theory. For the specific purpose of the *quantitative* measurement of QoW, the researcher will have ended this process with a set of indicators and dimensions of QoW. An account needs to be given of how these relate to achieved Functionings and, ultimately, Conversion Factors and the Capability Set. A process needs to be set out for which indicators to choose, how they form dimensions, and how dimensions determine any aggregation scores – as has received considerable attention in quantitative job quality literature (e.g. see Anker et al. 2003; Bescond, Chataignier, and Mehran 2003; Anand et al. 2009; Leschke and Watt 2014).

1.4. Literature on Work and the Capability Approach: A Critical Review

Applications of the CA to work span across all areas of the social sciences. They demonstrate varying degrees of engagement with the CA depending on the aims of the research, ranging from focussed applications by scholars dedicated to the CA to looser CA-informed research by the broader body of social scientists. Amongst other things, they encompass attempts to integrate the CA into a broader case for a heterodox economics of work (Muñoz de Bustillo 2011; Spencer 2015); a CA-based critique of employment-focussed Active Labour Market Policy and flexicurity (Orton, 2011; Lambert, Vero and Zimmermann, 2012; Lehweß-Litzmann, 2012; Vero *et al.*, 2012; Lambert and Vero, 2013; Laruffa, 2020; Fernandez-Urbano and Orton, 2021); the Capability Approach to Labour Law (Supiot and Meadows, 2001; Bueno, 2017, 2021, 2022; Deakin, 2019; Langille, 2019); research on agency and work-life balance (Hakim 2000; Hobson 2011; 2014; Pandolfini 2012); literature operationalising the CA to identify measures of multi-dimensional job quality (Green, 2001, 2004, 2007; Ruiz-Tagle and Sehnbruch, 2015; Abma *et al.*, 2016; Green *et al.*, 2022; Gürbüz *et al.*, 2022) or lack of work (Schokkaert and Van Ootegem, 1990; Bartelheimer *et al.*, 2012); and theoretical literature, which engages particularly on which aspects of work are

intrinsic Functionings in themselves (Bartelheimer, Leßmann and Matiaske, 2012; Suppa, 2019) – such as meaningful work (Yeoman, 2013; Veltman, 2016; Weidel, 2018; Yeoman *et al.*, 2019), the “Capability to Aspire” (Hobson and Zimmermann 2022; Lambert and Vero 2013), the “Capability for Voice” (Deakin and Koukiadaki, 2011; Bonvin, 2012; De Munck and Ferreras, 2013), or the instrumental role of job satisfaction (Leßmann and Bonvin, 2011).⁴³ This body of literature provides elements of a Capability Theory, but I suggest it contains no single unifying Capability Theory for measuring job quality which satisfies the five requirements. I will now review this literature against these five requirements.

With respect to requirement one (“specification”), much literature is not specific about the resources of interest. Any restriction to paid work activity is increasingly unsatisfactory in the context of significant developments in the research of unpaid and informal care work, particularly within feminist literature (Land, 1980; Barker and Kuiper, 2003; Lewis and Giullari, 2005), though not exclusively so (Budd, 2011). It is also at odds with foundational literature in the CA, since as noted earlier Sen (2000) himself argued that unpaid care work and informal work is a core element of job quality. Broader views of paid and unpaid work are specified in some conceptual literature, as in Weidel's (2018) case for a Functioning for meaningful work, and they are operationalised in some qualitative literature on work (Cooke, Donaghey and Zeytinoglu, 2013), but these do not make it into quantitative literature on job quality due to a considerable lack of data on the working conditions of unpaid workers. I will return to how future surveys could overcome this in Section 5.5.

Much of the existing literature is not clear on any external normative theories they use to derive Functionings (the “identify Functionings” requirement) and on how work-related resources relate to these Functionings (“relate resources to Functionings”). Some literature has argued for a number of important work-related

⁴³ The literature uses various terms to refer to Functionings, including “Capabilities”, “Central Capabilities”, “Capacities”, “External Capabilities”, e.t.c. Again to avoid use of multiple terms, in this paper I exclusively use the term Functionings to refer to these important “beings and doings.” “Capability Lists”, “Central Capabilities” or otherwise are here defined as lists of important Functionings, identified through a normative process – be it democratic or participatory engagement, or philosophical deliberation. The Capability Set is strictly used to refer to the range of combinations of important Functionings which are achievable for a person, outside of their current vector of achieved Functionings.

Functionings (which they variously term “capabilities” or “capacities”), with frequent references in this literature to a “capability / capacity” to aspire (Hobson and Zimmermann 2022; Lambert and Vero 2013), a “capability for voice”, and a “capability for work” (De Munck and Ferreras, 2013). But as highlighted by Goerne (2010, 10–11), they are not explicit on any external normative theories they use to identify these “capabilities” as important. This literature also focuses on a range of Functionings external to work which ALMP should foster, notably “active citizenship” (Laruffa, 2020, pp. 6–7), but it is unclear what role all other important Functionings outside the space of work should also play, such as any Functionings related to being healthy, having a family, e.t.c. In the Capability Approach to Labour Law literature, Bueno (2021) develops a more useful and comprehensive framework distinguishing between Capabilities *through* work, Capabilities *in* work and Capability *for* work. Through this, he captures work’s instrumental role as “a means to achieve an income in order to have capabilities” (Bueno, 2022, p. 5) whilst also arguing for “freedom to choose work as a capability in itself” (Bueno, 2022, pp. 6–7). Given the debate over how to derive important Functionings, it is therefore unsurprising that there continue to be significant unresolved conceptual debates about whether there are any intrinsic Functionings within the space of work itself. We therefore have a full spectrum of approaches, ranging from scholars who advance one or numerous intrinsic Functionings within the space of work (Bartelheimer, Leßmann and Matiaske, 2012; Weidel, 2018; Bueno, 2022) to those who view work as an instrumentally-important “characteristic-providing activity”, its quality assessed in terms of the impact it has on the achievement of “high-level” Functionings outside of this space (Suppa, 2019).

It is in respect of requirement four (“introduce Conversion Factors and the Capability Set”), however, that there is a particular gap in existing literature. Most CA research into job quality focuses solely on wellbeing in the vector of achieved Functionings and neglects the role of circumstances outside the space of work in determining work-related wellbeing. Some welcome exceptions are Bueno (2021) and Sayer (2012), who both highlight how the existence of a range of achievable work Functionings in-itself can significantly affect peoples’ wellbeing. The most dedicated conceptual attention of both Conversion Factors and the Capability Set is given by Suppa (2019). Conversion Factors, he highlights, could critically alter the wellbeing

created by work, turning a good job into a bad job simply because of the way it interacts with a set of other characteristics. In the same vein, the Capability Set is crucial for understanding the devastating effect which the worst forms of work have on wellbeing, such as the extreme deprivation of liberties associated with slavery (Suppa, 2019, p. 15).

Turning finally to requirement five (“operationalisation”), existing literature has varying degrees of engagement with this question. The CA-based critique of ALMP can be credited with spanning conceptualisation and operationalisation (e.g. see Bonvin and Orton 2009; Fernandez-Urbano and Orton 2021; Orton 2011), but the general picture is one of a gulf between operational and conceptual research, with conceptual approaches tending not to operationalise job quality (e.g. see Bueno 2021; Sayer 2012; Suppa 2019), and operational approaches tending to prioritise measurement over theory (Green, 2007; Abma *et al.*, 2016; Sehnbruch *et al.*, 2020; González *et al.*, 2021). This paper is an attempt to bridge both conceptual and operational debates.

1.5. Proposed Capability Theory for the Measurement of QoW

This section bridges these gaps by taking the first steps towards a Capability Theory of QoW, bringing together elements of existing research on work and the CA. Figure 1.1 outlines the various parts of the theory. I go through each element of the proposed theory in the succeeding pages, covering each of the five requirements.

1.5.1. Specification: Work Resources for the Purpose of Measuring QoW

Work is the space of interest in this Capability Theory. In line with Cooke et al (2013, 504), drawing from Budd (2011), I define work as much broader than paid employment alone:

“a purposeful human activity involving physical or mental exertion that is not undertaken solely for pleasure and has economic value[.] ... [I]t includes paid and unpaid tasks inside and outside the home, volunteering, and seeking employment.”

Work “resources” exist in this space of interest. In line with Robeyns (2005, 98–100), these resources can be conceptualised as conditions for the achievement of Functionings and Capabilities (see also Suppa's (2019) definition of work as a

"characteristic-providing activity").⁴⁴ Whereas general approaches to human wellbeing have a broad space of interest encompassing all resources, I suggest more applied approaches, such as job quality, can be distinguished by their focus on a narrower body of resources within their space of interest, and how the resources in this space affect wellbeing. Because no normative decision has yet been made on which aspects of work are important, at this stage of the theory work "resources" consist of all measurable and non-measurable aspects of work. A later, normative decision needs to be made to identify how these resources relate to Functionings; it is then that we identify indicators and dimensions of QoW.

All of these work resources exist at the individual level, since the CA is "individualistic" in the sense that it sees human welfare as individual-level (Robeyns, 2005; Stewart, 2005). However, individual-level work resources (and, ultimately, Functionings and Capabilities) can be collectively achieved. I agree that the role of groups and collective action has been neglected in previous literature on the CA (Ibrahim, 2006), and since so many characteristics of work are achieved through collective action (e.g. union activism) and held by collective groups, it will undoubtedly be critical to any Capability Theory of work. But I suggest Sen (2002, 85) is correct in arguing that this should not detract from the fact that resources, and thus Functionings and Capabilities, can only be individually-held.

Having identified the resources, I then specify the purpose of the Capability Theory. We need to consider whether we are interested in the worst forms of poor work, or a broader *qualitative* assessment of work. In line with most approaches to job quality, and in accordance with the Capability Approach to Labour Law, this theory proposes the latter approach: when we talk about work quality, we are interested not just in which aspects of work enable the fulfilment of minimum standards, but in how work enables (or inhibits) the ability to live a life of a certain quality by following one's own personal values. This is an important distinction, since

⁴⁴ To elaborate, work resources exist in a space of work. These resources affect the achievement of Functionings both inside this space of work (intrinsic effect) and outside this space of work (instrumental effect). This should not be confused with how resource-based philosophies, such as Rawlsian approaches, understand the term resources, since these philosophies see resources as having intrinsic value to human wellbeing: they do not draw a distinction between resources and wellbeing.

a Capability Theory for the purpose of measuring employment deprivation (e.g. see González et al. 2021) or poverty would give rise to different Functionings, indicators and dimensions at later stages.

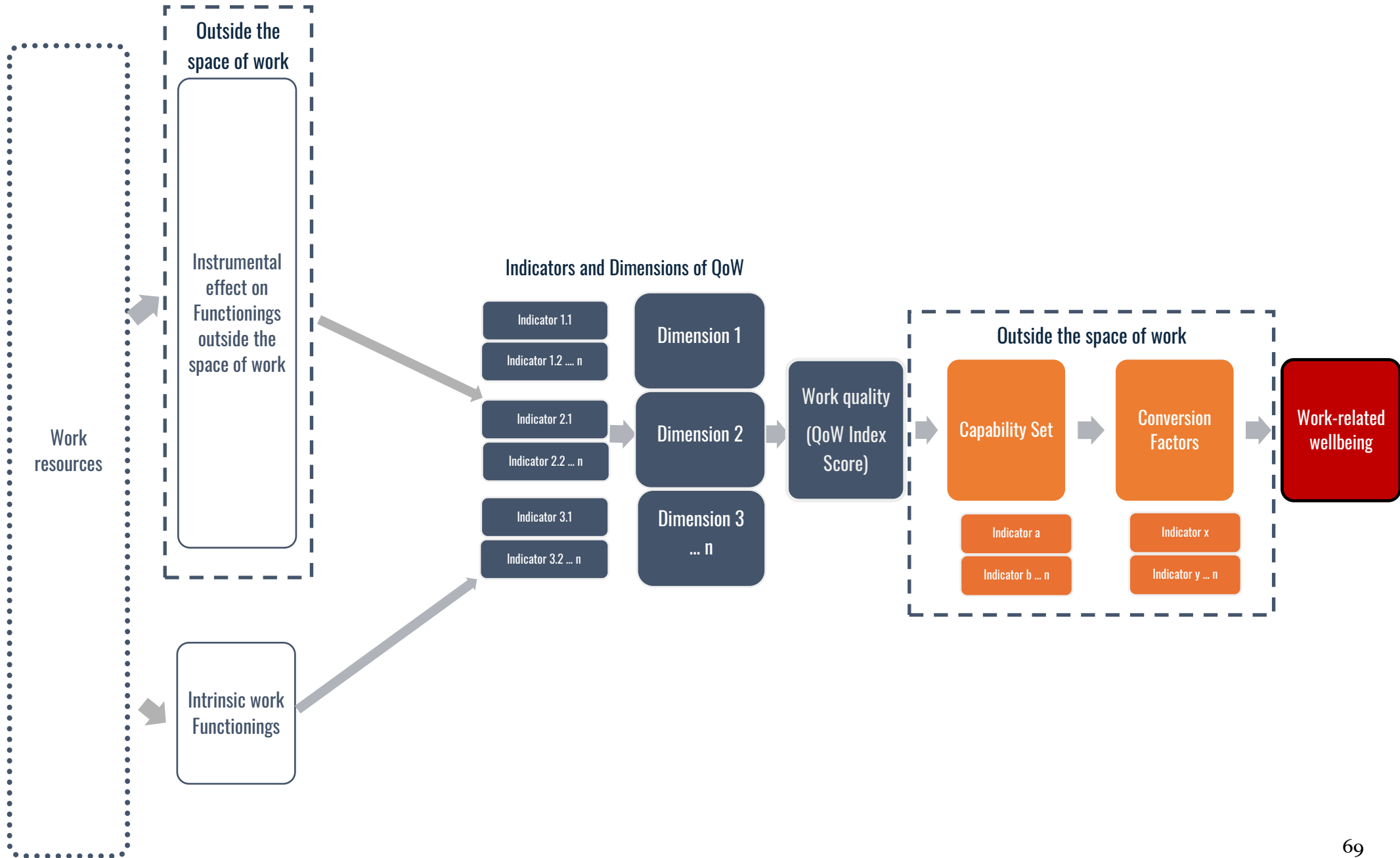
1.5.2. Identify Functionings

At this second stage, I introduce normative decisions to identify Functionings. I start by introducing “wellbeing” as the over-arching “good” outcome of interest, in line with other applications of the CA (e.g. see Robeyns 2017; Suppa 2019). Wellbeing is sufficiently broad to encompass both subjective and objective forms of wellbeing and is adaptive enough to allow for the distinction between achieved wellbeing (Functionings) and the freedom to achieve wellbeing (Capabilities). However, the choice to identify wellbeing vs. other over-arching principles, such as a “thick” conception of human need (Dean, 2009; Yeoman, 2013), needs further discussion and debate in future research.

Agreeing with Sen (2004), I suggest that lists of important Functionings should be identified through a democratic and participatory process of public engagement. Through this process, people could themselves be asked to agree a list for the purpose of measuring the wellbeing people get from work resources (i.e. QoW). Although research to develop such a list through engagement with platform labour workers is being carried out (Ghirlanda, 2022), no such list exists at present. We are therefore left with lists developed for different purposes, and based on different normative considerations – such as philosophical deliberation on the Functionings or Capabilities necessary to live a life worthy of human dignity (Nussbaum, 2011, pp. 125–131); or participatory engagement to derive a list for the purposes of equality and human rights monitoring (Burchardt and Vizard, 2011). Because of the different purposes of these lists, they inevitably specify Functionings at a higher level of abstraction: these lists thus contain general Functionings outside the space of work. They do not contain intrinsic work Functionings within the space of work which have received considerable discussion in the literature, such as meaningful work (Weidel, 2018) or the capability for work (Bueno, 2022) – an issue I will return to in Section 1.5.3.

Nonetheless, due to a high degree of overlap between the elements of these lists (Qizilbash, 1996), pre-existing lists will suffice in identifying a range of important work resources for the measurement of QoW. For example, if a Capability Theory adopts Nussbaum's approach, important work resources could be identified based on the extent to which they instrumentally affect Central Capabilities. A low-paid job with long and unsociable hours, low levels of autonomy and no task discretion would prevent an individual from building a family (impeding the Central Capability of life), engaging in civic and political life (affiliation) and socialising with their peers (play). Based on this, these would be identified as important indicators of QoW, based on their instrumental effect on these Functionings. This process is along the lines proposed by (Suppa, 2019, p. 10) to identify important work resources based on the effect on Functionings specified at what he terms "a higher level of abstraction." However, I suggest this is an unsatisfactory compromise: future research needs to develop a list of Functionings for the specific purpose of measuring QoW. This list would have the advantage of containing at least some Functionings within the space of work itself, in addition to Functionings outside the space of work. I develop this further in Section 1.5.3 below.

Figure 1.1. Conceptual framework for a Capability Theory for measuring the Quality of Work (QoW).



1.5.3 *Relate Resources to Functionings: Intrinsic and Instrumental Importance*

There are two particular challenges with relating resources to Functionings for QoW. First, as discussed earlier there is debate over whether there are any Functionings within the space of work itself – with different scholars advancing various intrinsic work Functionings (e.g. for work, for meaningful work, for voice, to aspire) or none at all (e.g. Suppa 2019). This gives work a distinct status in the CA, contrasting with some other areas of applied CA research where there appears to be greater agreement that many Functionings exist within the space of interest itself: in the space of education, for example, it can be agreed that many resources are intrinsic Functionings in themselves (e.g. see Robeyns 2006), in addition to enabling non-educational Functionings in peoples’ wider lives. Second, it is hard to see how the work Functionings which have been identified in some literature in any way relate to existing lists of Functionings, because the normative process used to identify the former is often not made clear.

How should we address this challenge? I disagree with approaches which view work exclusively as an instrumental “characteristic-providing activity” based on its effect on high-level Functionings (Suppa, 2019). This would mean that no intrinsic Functioning could exist within the space of work itself. In turn, there would therefore be no Capability for work, since the Capability Set can only comprise the range of combinations of *Functionings*. A number of significant conceptualisations of work have come from viewing work as a Functioning in itself, as part of a Capability Set – notably Bueno's (2022) discussion of a Capability *for* work. However, it is conversely the case that an approach to job quality which saw work as purely providing intrinsic work Functionings would not capture the considerable (instrumental) effect work resources have on Functionings outside the space of work. This too is an unsustainable position, since work self-evidently has an all-pervasive impact on all areas of our wider lives: as highlighted by Sayer (2012), work impacts every aspect of our lives, including our cognitive development in our earliest years.

It follows that the effect of the worst forms of work on peoples’ Functionings can only be appreciated if we consider the impact work has on a wide range of Functionings – both inside (intrinsic) and outside (instrumental) the space of work.

However, I would suggest the instrumental impact it has on Functionings outside the space of work is greater than any impact it has on intrinsic work Functionings. As argued in Section 1.5.2, existing lists of Functionings are useful for identifying the instrumental effect work has, but not the intrinsic effect. No specific list for the measurement of QoW exists. In the absence of such a list, I turn to the democratic conditions set by Alkire (2005), following Sen (2004): that *important* Functionings should (a) be of special importance to a population and (b) socially influenceable Functionings.

Many Functionings within the space of work satisfy Alkire's second condition, since public policies self-evidently have a major influence on many work characteristics. However, I suggest many fail to satisfy the first condition. This is because people appear to have widely divergent views of what "good work" is, with even those in the same jobs disagreeing on whether they are good or bad. This was highlighted in a recent Government-commissioned review into good work in the UK, where people reported opposing views of the quality of the exact same work activity (Taylor, 2017, p. 11):

"We were ... taken by some of the diametrically opposed views of the same job presented to the Work and Pensions Select Committee[.] ... Hearing one person describe a job as the best they have had followed by another person describing the same job as highly stressful or exploitative highlights the challenge for policymakers in seeking to promote better work for all."

This heterogeneity of peoples' views about work is also reflected in statistics on subjective job satisfaction, which often show that people in jobs with objectively bad characteristics report high subjective job satisfaction (e.g. see Brown et al, 2012; Léné 2019). This poses a challenge for any Capability Theory seeking to identify intrinsic Functionings within the space of work.

Bringing this together, I tentatively suggest that agreement could be reached that (a) *carrying out work* in itself (Bueno, 2022), and within this (b) *meaningful* work (Veltman, 2016; Weidel, 2018; Yeoman *et al.*, 2019) are Functionings within the space of work. I suggest that one core part of peoples' wellbeing is our opportunity to carry out paid or unpaid productive activity, and, distinct from this, meaningful productive activity. It follows that our freedom to achieve this activity – the range of productive

activities and meaningful productive activities which we can devote ourselves to – is part of our wellbeing, alongside our freedom to achieve other Functionings outside the space of work. This in turn would mean that an individual's Capability Set would comprise not just Functionings outside the space of work, but work Functionings: the range of work opportunities, and within this the range of meaningful work opportunities, available to people. I further suggest that the Capabilities to Aspire and for Voice have a case to be viewed as intrinsic work Functionings, but they may best be understood as process freedoms necessary for the existence of any Functioning.⁴⁵ Beyond this, I would challenge whether many other Functionings within the space of work could be agreed upon – either due to public disagreement over their value due to how their effect varies across individuals within societies (job characteristics such as hours, flexibility, voice, e.t.c.); or because they do not fit within a CA-based framework.

In this section and the previous section, I have arrived at a means through which the effect of work on Functionings both inside and outside the space of work can be captured using the CA. I have however done this based on two separate and very different sets of normative principles: one based on the instrumental effect of work on pre-existing lists of Functionings (e.g. Central Capabilities); and another considering what Functionings within the space of work people would democratically agree existed, *if* they were asked to deliberate. Future research needs to investigate the potential for bringing these together into a unifying normative theory. I suggest that this could be done through a two-stage democratic and deliberative process: first,

⁴⁵ As Sen has highlighted (Sen, 2002a, p. 10), the CA is interested not just in opportunity freedoms (the availability of genuine choices) but also in process freedoms (someone's agency/capacity to control their choices). There is not the space to do justice to this in this paper, but what are often termed "Capabilities" or "Capacities" for voice and to aspire appear to strongly relate to the notion of process freedoms. They also appear to have a distinct status as preconditions for the exercise of Functionings: for someone to have *any* given Functioning as part of their Capability set, they necessarily require the exercise of voice and the ability to aspire for (and thus knowledge of the availability of) the Functioning. Dimensions and indices of QoW could then be identified based on the work resources which enable, or impede the enablement of, these and other process freedoms, since these in turn determine the achievement of Functionings important to QoW. An alternative approach might be to treat them as what have recently been termed "agentic Capabilities" (Dold and Lewis, 2023), but this may add confusion – adding a further term to a field already heavily-laden with prefixes and suffixes to the word "Capabilities" – and give the impression that they are less important than they in fact are. This is, however, an incomplete treatment of an issue which warrants considerable further dedicated attention.

engaging with workers to develop lists of Functionings for the specific purpose of measuring QoW (“identify Functionings”); and second, agreeing with them how work resources relate to these lists of Functionings (“relate resources to Functionings”).

1.5.4. Introduce the Capability Set and Conversion Factors

For the Capability Set, I suggest that there are broad or narrow ways of conceptualising it for QoW. A narrow conception would only consider the range of combinations of Functionings within the space of work which an individual can achieve. If we accept work and meaningful work as Functionings (see Section 5.3), this would consist of the range of combinations of work and meaningful work Functionings available to people, and would be broadly consistent with Bueno's (2021) articulation of a Capability for Work. A broad conception would go further, looking at all the Functionings inside *and outside* the space of work achievable for each individual worker. This would in effect consist of the overall wellbeing of all workers: their achieved work-related wellbeing, but also their freedom to achieve all forms of wellbeing, whether work-related or not.

For the purposes of this Capability Theory, I advance a broad approach. Adopting a broad approach necessarily requires the measurement of circumstances outside the space of work: incorporating indicators of the wider wellbeing of people, outside their vector of achieved Functionings in the space of work. I suggest this is useful because it gives us an assessment of the power of these workers to build work around their own lives. Since this power is determined by the freedom to achieve *all* combinations of Functionings, and not merely work-related Functionings, there is a strong case for adopting a broad approach. I suggest Hirschman's (1970) conceptualisation of Exit, Voice and Loyalty is a useful way of understanding this: someone with a wide range of Functionings inside and outside the space of work can refuse work when it is not satisfactory for them, since they have other opportunities (Exit). This, in turn, gives them greater power within the workplace (Voice) and greater returns to engaging with their employer (Loyalty), since an employer knows they have genuine alternatives.

Since there is no direct measure of the Capability Set, I suggest the use of less direct indicators which capture the broader skills, work opportunities, other earnings and

assets of both the individual and other household members – since these suggest that someone has a wider range of achievable Functionings outside of their chosen work activity. This would potentially include:

- Any income they receive other than earnings, including welfare support, capital gains, pension, e.t.c.;
- The work history, work opportunities, skills and qualifications of the worker, as a signifier of the range of alternative work and meaningful work Functionings available to them;
- The value of physical and financial assets they hold; and,
- The wealth, earnings, and other income of all other household members.

For measuring QoW, I define Conversion Factors as personal, social and environmental characteristics which, if possessed, mean that an individual needs a different amount of work resources to achieve a given level of QoW. As discussed in Section 3, these can be negatively-framed or positively-framed. For example, an individual with dependents would require work to be more flexible, and would need more earnings from work, in order to achieve the same Functionings through work as someone who did not have these Conversion Factors (negatively-framed). Conversely, living in a welfare state with a strong social security safety net would lessen the impact of a precarious job on earnings, family- and life-fulfilment (positively-framed). By definition, Conversion Factors include circumstances outside the space of work. For the measurement of QoW, they could comprise a mix of positively- and negatively-framed Conversion Factors, including:

- Personal Conversion Factors such as the number of dependents an individual has, whether they have disabilities, or any caring responsibilities;
- Social Conversion Factors such as the social context in which they work, including attitudes to women's place in the labour market, their legal rights in work, the level of unemployment in their country, the institutional level of worker power to shape their own working environment, the sufficiency of welfare safety nets, and the nature of a country's Active Labour Market Policy; and,
- Environmental Conversion Factors such as the climate in which they work.

It is only after this process that we can fully measure peoples' work-related wellbeing, extending our analysis beyond a narrow assessment of work characteristics in peoples' current vector of achieved Functionings. Figure 1.2 gives an illustration of how this Capability Theory could be used to conceptualise the differing work-related wellbeing of two people – one with high work-related wellbeing (an advantaged person) and the other with low work-related wellbeing (a disadvantaged person) – throughout their life course. The point to emphasise is that at certain time intervals in their life course, the vector of achieved Functionings from work resources for these two people might be the same: early on in their lives, they might carry out work activity which is very similar, such as insecure and under-paid work. An index of QoW which only measured peoples' vector of achieved Functionings would therefore identify both workers as engaging in similar work activity: to refer back to Figure 1.1, their QoW Index score would be similar. It is only after adjusting for their work-related wellbeing – by considering the Capability Set and Conversion Factors – that the true differences between these two individuals could be identified. This is because one person has a wider range of combinations of Functionings outside their own vector of achieved Functionings in their current work activity (a wide Capability Set). This gives them the power to negotiate access to forms of work which build around their Conversion Factors at various life intervals. By contrast, the other person has a limited range of alternative combinations of Functionings outside their vector of achieved Functionings. Thus the first person can be described as advantaged and the second can be described as disadvantaged only once we consider the interaction of circumstances outside the space of work.

1.5.5. Operationalisation

To make up these indicators and dimensions, important work resources – and thus dimensions and indicators of a QoW index – can be identified based on the extent to which they affect, or impede, the achievement of an identified list of Functionings inside and outside the space of work. In principle this is an empirical rather than a normative exercise. Previous research has already identified potential indicators of Central Capabilities using existing survey data (e.g. see Anand et al. 2009), and with good data it would be possible to empirically assess which work resources are

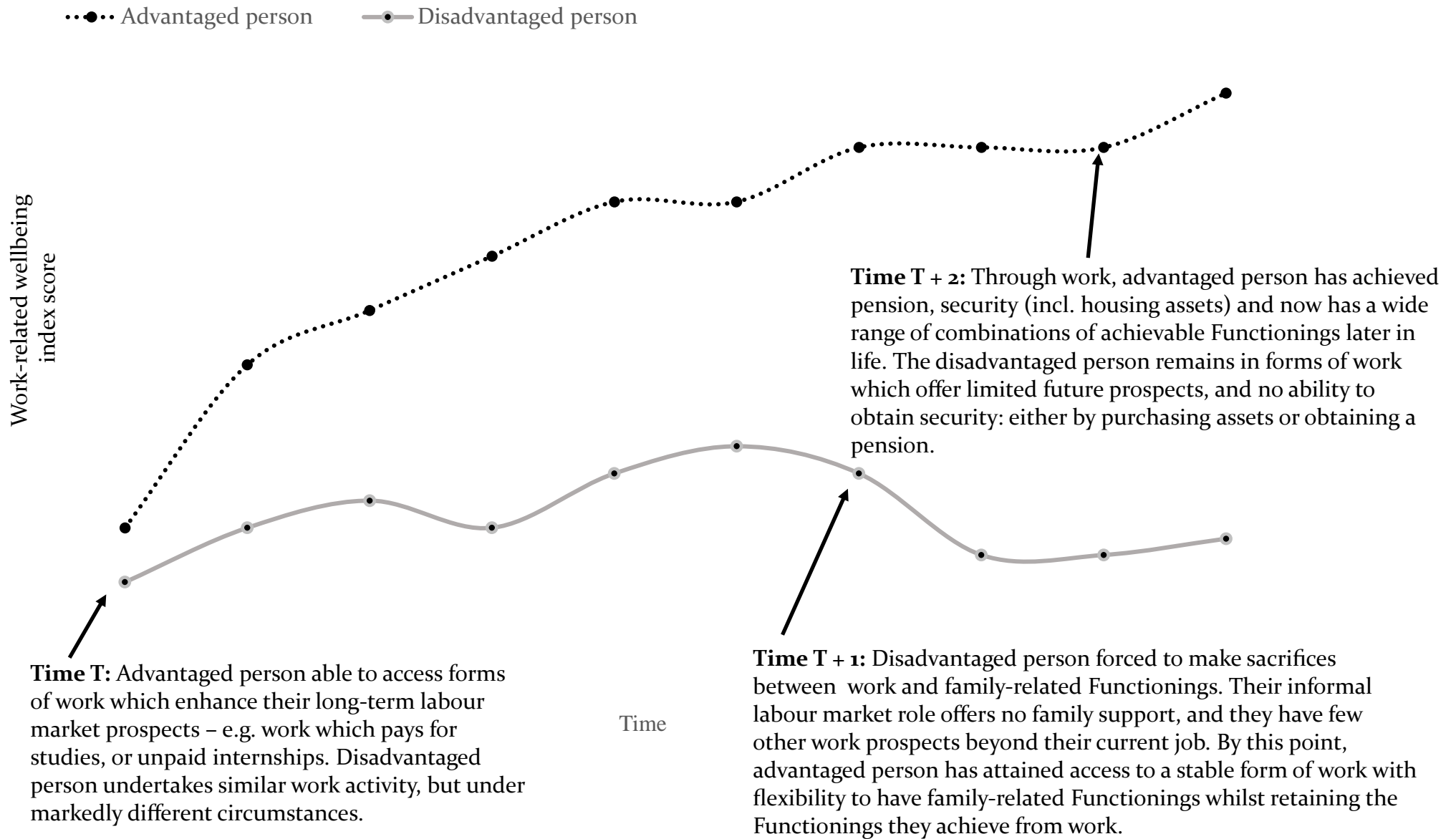
important to the achievement of these. In the absence of such data, a review of literature across the social sciences would suffice (e.g. see Muñoz de Bustillo 2011). It will be useful through this process to create dimensions of job quality, but as highlighted by Suppa (2019, 13), it is important to “distinguish the multidimensionality of labour activities carefully from the multidimensionality of human wellbeing.” It follows that dimensions of QoW should instead be regarded as work resources, grouped according to the similar way in which they help achieve, or impede the achievement of, Functionings. I further suggest that in line with most applications of the CA, indicators in this index would strongly emphasise the objective characteristics of work rather than subjective aspects such as job satisfaction (Felstead *et al.*, 2019): by definition, such subjective characteristics satisfaction are an *effect of* a work resource (after the interaction of other circumstances outside the space of work), and not work resources in themselves. Whilst nonetheless crucial to the study of job quality (see Brown *et al.*, 2012), for the purposes of this Capability Theory subjective indicators are only useful to the extent that they suggest the existence or non-existence of a given important work resource, in the absence of a more direct measure of the existence of this resource. For example, to establish the use of temporary contracts in a country, one may have to rely on a survey question asking workers whether they *think* their job is permanent or temporary. Beyond this, this Capability Theory does not propose a specific way of aggregating indicator and dimension scores to determine index scores, and is compatible with a range of aggregation and weighting techniques.

Due to limits on data availability this proposed index would necessarily provide an incomplete picture. Despite including unpaid work in the definition of work resources at the Specification stage, it is likely that compromises will later need to be made due to a tendency for national surveys to only ask those in paid work about job quality. However I suggest that it would be possible for future quantitative surveys of working conditions to incorporate insights from qualitative research which asks participants questions about both paid and unpaid work activity (Cooke *et al.*, 2013). All survey participants, in both paid and unpaid work, could be asked a range of questions about the conditions of unpaid work, such as the worth they attach to their unpaid activity, the hours they devote to it, the nature of this activity (e.g. whether it

is unpaid caring, or volunteering), and whether they regard it as a supplement to or replacement for paid work. In time, this would allow quantitative research to start to integrate unpaid work activity into indices of QoW.

I suggest the key added value of a Capability Theory of QoW is in the introduction of the Capability Set and Conversion Factors, towards the right of Figure 1.1. A set of indicators for each of these could be used to adjust the QoW index score, creating a Work-Related Wellbeing index score. To measure these indicators, I suggest existing multi-dimensional indices of QoW make use of surveys which combine longitudinal and household data alongside data on individual working conditions. Social or environmental Conversion Factors could also be inferred based on the features of specific welfare states and labour markets. The proposed index would be a step forward on existing job quality indices by allowing us to explore how a range of individual, social and environmental factors interact with conventional measures of multi-dimensional job quality. This would allow us to understand the wider circumstances of people in “good” vs “bad” jobs.

Figure 1.2. Conceptual illustration of the implications of a Capability Theory of QoW – Conversion Factor and Capability Set-adjusted index scores of an advantaged vs. disadvantaged person throughout the life course.



1.6. Conclusions

Bringing together literature on the conceptualisation and measurement of job quality, this paper has charted the first steps towards a Capability Theory of QoW, designed to meet five requirements based on Robeyns' modular framework. It has been developed with operationalisation in mind, and has ended by outlining the core elements of an index of QoW. In advancing this theory, I have attempted to resolve some of the conceptual debates in the CA in particular, and in job quality literature more broadly – bridging the gulf between conceptual and operational approaches to address some of the issues causing a lack of consensus about how to measure good work.

The theory particularly draws from Bueno (2021), Sayer (2012), Suppa (2019), and Weidel (2018). Consistent with Sayer, it recognises the all-pervasive effect that work has across every aspect of peoples' lives, through the (instrumental) impact that work resources have on Functionings. However, following Bueno and Weidel, it argues that intrinsic work Functionings exist, and should thus feature in the Capability Set. In line with Suppa, it conceptualises work resources in a way which is consistent with his idea of work as a characteristic-providing activity, and argues that Conversion Factors and the Capability Set play a crucial role in determining peoples' ultimate work-related wellbeing.

A key emphasis throughout this paper is that the true impact that work has on people can only be understood if we consider circumstances outside the space of work. As outlined in the introduction, the CA's central argument is not merely that we must regard Functionings rather than resources as the intrinsic aspects of wellbeing: it is that we must ground our understanding of the interaction of these resources and wellbeing in the social context people live in. Any set of resources do not create wellbeing in a fixed, time-static way. Rather, these resources interact with other factors to create wellbeing; and peoples' ultimate wellbeing is determined by their freedom to achieve other states of wellbeing outside of their vector of achieved Functionings. It is only by conceptualising work in this way that we will be able to fully understand the negative impact that the most damaging forms of work have on

peoples' lives, and the stark inequities in the experience of work both within and between societies.

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Paper 2

Inequality and Change in UK Job Quality, 2012-21: Evidence from a New Quality of Work (QoW) Index

Multidimensional job quality indices have become increasingly popular in recent decades, yet the job quality agenda has had limited impact on public policymaking, especially at a national level. I suggest one reason for this is the tendency to use international (usually European) indices of job quality, which lack the sample size and indicators to explore important country-level inequalities in job quality. This is exacerbated by continuing disagreements over how to identify indicators and weight indices. To address these issues, this paper introduces a new synthetic index of the Quality of Work (QoW) for the United Kingdom. The index contains 7 dimensions and 15 indicators. The paper analyses changes in job quality from 2012-2021; and differences in job quality by type of employment (self-employed, platform labour or gig economy), previous employment status (prior unemployment spell), sex, age, ethnicity and region. Several novel indicators argued to be particularly important to the UK context are introduced: earnings equity, earnings sufficiency, continuous employment, pension enrolment, future job prospects, and health & safety. The QoW index uses a weighting and aggregation approach informed by the Alkire-Foster method, but the sensitivity of these findings to alternative hedonic, frequency-based and data-driven weighting methods is then explored. Save for hedonic weighting, these show a broad consistency in many of the key findings: namely, inequalities in job quality between most of the same sub-groups; and polarisation in job quality between employees and self-employed workers, and between men and women, over the past decade.

Keywords: Job quality · Labour market inequalities by region, age, ethnicity and gender · Self-employment, gig economy, platform labour and insecure jobs · Synthetic multidimensional indices · Weights · Worker wellbeing.

2.1. Introduction

Over the past two decades, there has been a growing interest in what can be done to measure and improve job quality. This was instigated by the International Labour

Organisation (ILO) in the late-1990s (ILO, 1999a), but the European Union (EU) followed shortly after with the adoption of the “more and better jobs” agenda (European Commission, 2001, 2003; Eurofound, 2012). Studies on the topic have since been carried out under the purview of the OECD and World Bank (Hovhannishan *et al.*, 2022). This interest has perhaps been spurred on by the growth of new and more precarious forms of work in the global north (e.g. see Kalleberg, 2009), and its continuing high presence in many countries in the global south, posing a problem for the sustainability of welfare systems (OECD, 2023).

Job quality needs to be measured to be improved. This requires national and international statistics to be developed to monitor changes in job quality over time; investigate inequalities in job quality within and between societies; and identify who is in the lowest-quality jobs. Without such measures, it is argued, long-standing indicators which do not capture the full range of ways work impacts peoples’ wellbeing will continue to predominate, such as hourly wages (Muñoz de Bustillo, Fernandez-Macias, *et al.*, 2011) or the quantity of jobs (Sehnbruch, 2004).

There is widespread agreement that job quality is an inherently multidimensional concept, and thus cannot be captured with any single indicator. This requires it to be measured using multiple indicators. These are usually aggregated into dimensions, which in turn are aggregated into an index. Hence, in tandem with this growing interest in job quality, we have seen the proliferation of multidimensional job quality indices from a range of national and international contexts – particularly in Europe (Leschke, Watt and Finn, 2008; Smith *et al.*, 2008; Muñoz de Bustillo, Fernandez-Macias, *et al.*, 2011; Cascales Mira, 2021) but increasingly also in other international contexts, especially South and Central America (Inter-American Development Bank, 2017; Soffia, 2018; Sehnbruch *et al.*, 2020; González *et al.*, 2021).

Yet despite this progress, the job quality agenda is generally held to have had a limited impact on at least European public policymaking (Piasna, Burchell and Sehnbruch, 2019). This is in part because of a lack of a clear consensus about how job quality indices should be constructed and weighted. Research has suggested the weights used do often affect the conclusions that can be drawn from the data (Greco, 2018), yet the tendency is to apply equal weighting of all dimensions, which has been criticised (Decancq and Lugo, 2013). In addition, existing literature has tended to be

international in focus, with a relative scarcity of national job quality indices. Within European research, the most common approach has been to use the European Working Conditions Survey (EWCS) (Leschke and Watt, 2014, p. 4), which lacks the sample size to explore many within-country inequalities in job quality. All of this perhaps explains why many national statistics authorities to construct indices of job quality, and why progress in constructing these indices has stalled even in countries where there has been recent interest in job quality, such as the UK (see Section 3.1).

This paper makes a contribution to addressing these limitations by investigating job quality over the past decade within a single country context, the UK. I introduce a new synthetic index of the Quality of Work (QoW) in the UK, built using a large-scale national longitudinal survey (Understanding Society). I investigate changes in job quality over time, and inequalities in job quality between a range of sub-groups. I then introduce three alternative hedonic, frequency-based and data-driven weighting approaches to test the sensitivity of conclusions to different weighting methods.

The rest of this paper is split into four sections. First, I briefly set out some requirements for synthetic indices of job quality, and how the QoW index addresses them. Second, I describe indicators and dimensions of the QoW index, the dataset used, the country context, and the three alternative weighting methods. Third, I outline the findings of the paper. Fourth, I conclude with an overview of key findings and future implications.

2.2. Building Job Quality Indices

I begin by outlining four requirements for multidimensional indices of job quality. I then set out how the QoW index addresses each of these requirements.

2.2.1. Indicator Selection and Construction

Every index of job quality involves an initial normative statement about how work relates to peoples' wellbeing, quality of life, or some other 'good' outcome of interest. This requires a definition this 'good' outcome, and a discussion of the role that job characteristics play in the creating or impeding the fulfilment of it. Broadly speaking, two opposing approaches exist in the literature. Liberal approaches define job quality in terms of its impact on subjective wellbeing measures such as job- or life- satisfaction

(e.g. see Schokkaert, 2007), or alternatively what workers themselves value as important (e.g. Clark, 2015). An alternative set of approaches emphasise more objective measures of wellbeing. These can be broadly split between neo-Marxist philosophies which emphasise the role of work in alienating individuals from the means of production (Blauner, 1964; Braverman, 1974), versus philosophies which argue that a broader range of objective factors than alienation alone are important to wellbeing. Perhaps the most popular version of this latter philosophy is the Capability Approach, which defines wellbeing in terms of (a) what people are able to do and be (Functionings); (b) their freedom to achieve other combinations of beings and doings (Capabilities); after accounting for (c) the different rates at which individuals convert resources into beings and doings due to their personal, social and environmental circumstances (Conversion Factors) (Nussbaum, 2011; Sen, 1992, 1999). Other objective philosophies exist, however, such as the earlier Scandinavian level of living approach (Erikson, 1974, 1993). They tend to share a scepticism of the role of subjective measures of wellbeing, highlighting peoples' ability to adapt to disadvantageous circumstances (Sen, 1987c, pp. 45–47); and argue that resources, particularly income or wages, whilst important, are insufficient measures of picture of poverty or wellbeing (Sen, 1999, p. 87).

This paper draws from a normative framework for measuring job quality using the Capability Approach (Stephens, 2023c), which defines job quality in more objective terms based on the impact of work on the achievement of important Functionings. The Capability Approach is widely used in job quality literature (Sehnbruch, 2004; Green, 2009; Soffia, 2018), and applications of the approach tend to emphasise the use of objective over subjective job quality indicators (Felstead *et al.*, 2019). Despite these fundamental differences between objective and subjective approaches, it has been argued there is a “remarkable consensus” in terms of the importance of the key indicators, with both approaches emphasising the measurement of “variety in the task, the level of personal initiative that can be exercised, the degree of participation at work, and the extent to which the job permits personal self-development” (Gallie, 2003, p. 65). Both approaches have also placed increased emphasis on the importance of job security and career development opportunities (Gallie, 2003, pp. 62–63) following the end of full employment in Western societies since the 1980s (Gallie,

Marsh and Vogler, 1995). However, there is a risk of under-stating the continued differences. Direct measures of subjective job satisfaction do not always align with what objective indicators tell us about job quality (e.g. see Clark, 1997; Léné, 2019), and subjective indicators are widely criticised by proponents of more objective indicators (Hamermesh, 2001; Green and Tsitsianis, 2005; Muñoz de Bustillo and Fernández Macías, 2005; Brown *et al.*, 2007). Both approaches also have reason to disagree about the *relative weights* to be assigned to different indicators, as I will justify later. It is therefore important we continue to be explicit about the normative frameworks used in indices.

Indicators are the building blocks of any multidimensional index: scores on indicators ultimately determine index scores, and thus our assessment of an individual's job quality. This involves two considerations: indicator *selection* and indicator *construction*. The challenge of indicator *selection* should not be understated. Issues of survey construction and variable availability limit the choice of indicators. Effective indicator selection also requires careful consideration of the legal and societal environment in which people are working, since some indicators will be more important in some contexts than others. For example, Kalleberg (2018, p. 30) observes that the importance of different indicators of job precarity will depend on the policy and statutory environment in a country, since “policies that impose austerity by removing or decreasing economic or social benefits ... will also lead to precarious work, whether the employment contract is temporary or not.” Workplace pensions indicators will be more important in societies with inadequate state-provided pensions (Barr and Diamond, 2010). The sufficiency of earnings to meet some societally-agreed standard will depend on the cost of goods and services in a country, and whether services such as healthcare are free at the point of use or paid for through other means. This paper therefore constructs indicators based on consideration of the specific UK context (see Section 3.2 and Appendix F).

Indicator *construction* is generally framed in terms of the transformation function used to standardise the values of the selected indicators and turn them into indicator scores, ready to be aggregated into a multidimensional index (Decancq and Lugo, 2013, pp. 11–14). This, again, involves some normative considerations such as whether there is declining marginal utility (i.e. diminishing returns to higher values in a variable);

what role the distribution of values within each variable should play in determining indicator scores; and, more fundamentally, what the index is designed to measure. For example, the use of a cut-off approach using binary indicators – where each indicator has only two possible scores, deprived and non-deprived – tends to be favoured for more poverty or deprivation-based measures of job quality (e.g. see González et al., 2021). Alternative approaches using categorical or continuous indicators are also used, especially for indicators where a binary cut-off is misleading or impossible (Cerioli and Zani, 1990; Cheli and Lemmi, 1995; Deutsch and Silber, 2005).

To inform indicator construction, the paper suggests that the concept of *job quality* is best captured using a broader wellbeing-based approach. When we talk about work-related *wellbeing*, we are viewing jobs along a spectrum of wellbeing achievement, as distinct from concepts such as poverty or deprivation which focus on the identification and study of a smaller subset of the working population. I suggest the Totally Fuzzy Approach to indicator construction (Cheli and Lemmi 1995) is best-suited to capturing this. The method originated in poverty research out of a need to capture individuals' *proximity* to a deprivation cut-off, rather than simply writing-off all individuals who are above this cut-off. The same principles can be used for the QoW index.

Let X^{ij} denote the score of individual i on indicator j of the QoW index, which can range from 0 (lowest work-related wellbeing on indicator j) to 1 (highest work-related wellbeing on indicator j). Let ψ_{ij} denote the 'raw' (i.e. non-standardised) value of indicator j for individual i . $\psi_{j\ min}$ denotes the value needed to achieve the minimum possible score for an individual on indicator j (i.e. $X^{ij} = 0$), and could in some literature be equated with a poverty or deprivation cut-off. $\psi_{j\ max}$ denotes the value needed to achieve the maximum possible score for an individual on indicator j ($X^{ij} = 1$). For most indicators in the QoW index, a number of possible scores in-between these minimum and maximum values exist, as follows.⁴⁶

Binary indicators have just a minimum cut-off $\psi_{j\ min}$, which is in line with deprivation-based indices of job quality. Only a small number of indicators in the

⁴⁶ The fuzzy set theory literature tends to define these three types of indicator differently using the labels "dichotomous", "polytomous" and "continuous", respectively (see Deutsch and Silber, 2005). I retain their underlying definitions but rename the first two as the more intuitive "binary" and "categorical."

QoW index are binary. Their scores are therefore determined simply by the following notation:

$$X^{ij} = 0 \text{ (Worst) if } \psi_{ij} \leq \psi_{j \min}$$

$$X^{ij} = 1 \text{ (Best) if } \psi_{ij} > \psi_{j \min}$$

Categorical indicators also have a maximum cut-off, $\psi_{j \max}$, and thus have three possible scores. These constitute the majority of indicators in the QoW index, and allow for the identification of a middle-scoring part of the population who achieve more than the minimum cut-off but below the maximum cut-off. They thus are above the minimum deprivation threshold, but are still unable to achieve the work-related wellbeing enjoyed by a large proportion of the population and so should still be of some concern for policymakers interested in improving job quality. Scores for categorical indicators are determined by the following notation:

$$X^{ij} = 0 \text{ (Worst) if } \psi_{ij} \leq \psi_{j \min}$$

$$X^{ij} = 0.5 \text{ (Middle) if } \psi_{j \min} < \psi_{ij} < \psi_{j \max}$$

$$X^{ij} = 1 \text{ (Best) if } \psi_{ij} \geq \psi_{j \max}$$

Continuous indicators have more than three possible scores. These are used in a minority of indicators when work-related wellbeing changes in line with where ψ_{ij} is in the distribution of all ψ_j , with considerations such as declining marginal utility not coming into the picture. For these indicators, ψ_j are first converted into standard units by deducting them from the mean and dividing by the standard deviation for the population. $\psi_{j \min}$ denotes the worst value and $\psi_{j \max}$ the best value of ψ_{ij} for all ψ_{ij} in standard units. Note that ‘worst’ and ‘best’ do not necessarily reflect the lowest or highest raw values, respectively, since this depends on the nature of the indicator: e.g. for an indicator of occupational health and safety, a *higher* incidence reflects *worse* job quality. The scores in-between these thresholds are simply determined by where the scores are in the distribution:⁴⁷

$$X^{ij} = 0 \text{ (Worst) if } \psi_{ij} \leq \psi_{j \min}$$

⁴⁷ This is similar to the formula presented in Deutsch and Silber (2005, p. 148). Only the middle line is completely necessary, but the minimum and maximum scores are specified separately here to aid in transparency and understanding.

$$X^{ij} = \frac{\psi_{ij} - \psi_{j \min}}{\psi_{j \max} - \psi_{j \min}} \text{ if } \psi_{j \min} < \psi_{ij} < \psi_{j \max}$$

$$X^{ij} = 1 \text{ (Best) if } \psi_{ij} = \psi_{j \max}$$

2.2.2. Aggregation and Weighting

Scores then need to be aggregated into an index. This is usually (though not necessarily) preceded by a stage where similar indicators are first aggregated into dimensions. In both stages, a judgment needs to be made about the weights of the indicators within each dimension, and then the dimensions within the index. Weights should reflect the *substitutability* of different indicators and dimensions and not merely the relative importance of them, since a low score in a higher-weighted indicator is harder to be compensated for by a higher score in a lower-weighted indicator (Decancq and Lugo, 2013, p. 13).

The QoW index defaults to a weighting method informed by the Alkire-Foster method (Alkire and Foster, 2011a, 2011b; Alkire *et al.*, 2015). Whilst originally used for the measurement of poverty, a version has been developed for job quality indices in Central and Latin America (Sehnbruch *et al.*, 2020; González *et al.*, 2021), Spain (García-Pérez, Prieto-Alaiz and Simón, 2017), and at a global level (Hovhannishan *et al.*, 2022). Indicators are given equal weighting within each dimension. This means that, consistent with González *et al.* (2021), the score of a given individual on a given dimension, S^{id} , is simply the sum of indicator scores (X^{ij}) divided by the number of indicators in that dimension (N^{jd}). Note that all dimension scores therefore range from 0 to 1, with 0 meaning the individual scored the lowest in all indicators of a dimension and 1 signifying the highest score in all indicators:

$$S^{id} = \frac{\sum_a X^{ij}}{N^{jd}}$$

The dimensional scores are then added together into an index score for each individual, C^i , which can be represented as the weighted sum of all S^{id} :

$$C^i = \sum S^{id} \times W^d$$

Many job quality indices assign a higher importance to earnings (Muñoz de Bustillo, Fernandez-Macias, *et al.*, 2011, p. 152; Sehnbruch *et al.*, 2020; González *et al.*, 2021). To reflect this, the earnings dimension is assigned a double weight of 25%.⁴⁸ Beyond this, and again consistent with the existing applications of Alkire-Foster to job quality, all other dimensions are weighted equally. Note that this does not mean that all *indicators* are weighted equally within the index, since this will depend on the number of indicators within each dimension. The minimum index score C^i will be 0, reflecting the lowest possible score on all indicators of every dimension, whilst the maximum will be equal to the weighted sum of the number of dimensions. However, this paper also explores the effect of three alternative weighting methods on the results, which together reflect a wide spectrum of different approaches to weighting (see Section 3.4).

2.2.3. Methods of Analysis

The above conclusions naturally give rise to several ways of presenting and analysing the data from the index. Because very few indicators in the QoW index are binary, this paper departs from more deprivation-based measures used in literature such as Alkire-Foster (Alkire *et al.*, 2015), and is limited to the following methods of analysis:

- **Uncensored indicator headcount ratios.** For binary and categorical indicators these are the proportion scoring Worst and (if applicable) Middle, whereas for continuous indicators they are represented as the proportion scoring ≤ 0.5 (Worst) and > 0.5 (Best). The term is drawn from the Alkire-Foster literature (Alkire *et al.*, 2015, pp. 156, 167).
- **Mean QoW Index, dimension and indicator scores.** These allow us to explore changes in QoW over time and differences between sub-groups. Higher mean scores mean higher QoW.
- **Net percentage difference in mean QoW.** This gives a picture of inequality in QoW calculated by dividing the mean QoW score of a range of sub-groups versus the mean of a consistent comparator sub-group. The higher the

⁴⁸ Some applications of Alkire-Foster to job quality instead adopt a criterion wherein anyone deprived in the earnings dimension is classed as deprived. This is not useful for our purposes since the focus of the QoW index is not measuring the proportion of people deprived in the QoW index (see Section 2.4). In any event, there are grounds for contesting this approach, since it assumes no substitutability of earnings with the other dimensions.

percentage, the greater the inequality in mean QoW between the sub-group and the comparator.

2.3. The UK QoW Index: Context, Data and Indicators

2.3.1. Country Context

The UK has seen unprecedented interest in job quality in recent years which makes it an informative country of focus. In response to growing concerns about the impact of technology on future employment and of new and more insecure forms of labour, the then-Government commissioned the Taylor Review of Modern Working Practices in 2017 (Taylor, 2017). Since then there has been considerable interest in how job quality should be measured (Irvine, White and Diffley, 2018; ONS, 2019; Dobbins, 2022; Soffia, Hall and Skordis, 2023), although few regularly published national statistics on multidimensional job quality have been developed despite the Taylor Review recommending this over six years ago (Taylor, 2017, p. 11).

It also has a distinct legal and policy environment in job quality. For over two decades, the predominant job quality intervention of successive governments has been on hourly wages at the bottom of the pay distribution, with the statutory minimum wage for most adults set to reach two-thirds of median earnings by 2024 (Low Pay Commission, 2023). Automatic enrolment of most employees into workplace pensions was introduced in the Pensions Act 2008, in order to improve the savings rates of workers (Pensions Regulator, 2017).

Beyond this, there has been a lack of national policy interventions in wider aspects of work. Self-employment rose sharply in the decades before the pandemic (Giupponi and Xu, 2020), in tandem with growing concern over the impact of new insecure forms of work such as zero hours contracts, platform labour, or the gig economy (BEIS, 2018). This contrasts with the broader policy focus on wider non-pecuniary aspects of work in some other European countries, such as the long-standing Scandinavian interest in the quality of working life (Gallie, 2003), and the greater emphasis on sectoral collective bargaining (Pedersini and Molina, 2022), involvement of workers' representatives in decision-making (Conchon, 2011), and most recently the right to disconnect from work (Vargas Llave, Weber and Avogaro, 2020).

2.3.2. The Dataset

The QoW index uses data from Understanding Society, also known as the UK Household Longitudinal Study. Understanding Society is one of the largest panel surveys in the world, and interviews adults aged 16 and over in a representative sample of UK households, with most interviewed annually over overlapping 24-month waves (UK Data Service, 2015). Weighting methods have been introduced to allow it to be used for representative cross-sectional analysis, and to correct for survey design and non-response biases (Lynn, 2011; Kaminska and Lynn, 2019). Understanding Society asks questions on job quality in every other wave. The QoW index therefore consists of everyone in paid work, or away from paid work in the previous week, in Waves 4 (2012-13),⁴⁹ 6 (2014-15), 8 (2016-17), 10 (2018-19) and 12 (2020-2021) of the survey. This consists of an unweighted number of 108,973 non-independent respondents, ranging from 23,759 independent respondents in Wave 4 to 15,636 independent respondents in Wave 12.

Understanding Society has several advantages over alternative UK surveys. Its income data has been found to compare well with other national surveys (Fisher *et al.*, 2019), and unlike the UK's official labour market survey (the Labour Force Survey) it includes self-employed as well as employee earnings. All but one of the indicators for the QoW index has been constructed to include workers who are self-employed in their main job. Three indicators in the index use data on the earnings and hours worked in *all* paid jobs, and not just main jobs. The sample size is sufficient to investigate differences in job quality by ethnicity, region, sex and age. Missingness is generally low amongst those who respond to the survey (<5% of weighted respondents in each wave), but exceeds 5% in a number of cases. Missing data for most indicators is therefore imputed using multiple imputation using chained equations, in line with best practice (Collins, Schafer and Kam, 2001; Azur *et al.*, 2011; Van Buuren and Groothuis-Oudshoorn, 2011). Appendix B contains a full missing values analysis and Appendix C outlines the imputation methodology. Taken together, all the above offers significant advantages over some other job quality indices, which can struggle to include informal, self-employed or insecure workers; exclusively use data on main jobs; lack the sample

⁴⁹ Wave 2 is excluded due to the lack of data on a Continuous Employment indicator for this wave.

size to analyse many within-country inequalities in job quality; and deal with missingness through listwise deletion, which can bias results.

2.3.3. *Dimensions and Indicators*

Figure 2.1 sets out the indicators, dimensions and weights of the UK QoW index. There are three binary, eight categorical, and four continuous indicators, grouped into seven dimensions. Figure 2.2 provides a snapshot of descriptive data on indicator scores at the latest wave available (Wave 12). The index captures many aspects of job quality which are discussed in the literature, but also builds on these in many ways to create indicators which are particularly important to the UK context.

In the Earnings dimension, I make a crucial distinction between two indicators: (a) the sufficiency of *net* earnings to meet some minimum societally-agreed standard, in this case the Joseph Rowntree Foundation's Minimum Income Standards (Earnings Sufficiency) (Bradshaw *et al.*, 2008; Hirsch, 2015); and (b) where one's *gross* hourly wages sit within the wage distribution, with a particular focus on those at the bottom 20% of the wage distribution in line with the focus of research (Machin, 2011) (Earnings Equity). This is in line with OECD (Cazes, Hijzen and Saint-Martin, 2016; OECD, 2017a, p. 17) and European (Leschke, Watt and Finn, 2008, p. 10) research, but the quality of the earnings and working hours data in the index allows me to make this distinction more clearly than some other studies. Alongside this, a separate Pensions indicator captures whether workers are contributing to a workplace pension, or if not, a personal pension. Its relatively high weighting in the index reflects its particular importance in the UK, with the state pension inadequate on its own to provide citizens with a decent standard of living.

The Autonomy indicator captures measures of task autonomy which receive emphasis in both strands of job quality literature (Gallie, 2003; Gallie, Felstead and Green, 2004), whilst Collective Voice measures one aspect of employee voice exercised through trade unions and staff associations which has been the subject of long-standing interest in literature on worker voice (Freeman and Medoff, 1992; Boroff and Lewin, 1997; Bennett and Kaufman, 2007). Finally, the Work-life Balance dimension reflects the literature on work-family and family-work conflict (Esping-Andersen, 1996; Parasuraman and Simmers, 2001; Gallie, 2007; Annor and Burchell, 2018) using two

indicators: an indicator comparing hours worked in all jobs compare with the UK Working Time Directive of 48 hours (Worst) or the average for full-time workers of 37 hours (Middle); and an employee-only indicator on the number of worker-oriented flexible working opportunities available.

Two dimensions on Security and Prospects capture the growing role of these two issues in job quality since the 1980s. This is particularly reflected in the Composite Security Prospects, Managerial Duties and Short-Term Prospects indicators, which respectively capture workers' perceived job security; whether they have supervisory duties or (if self-employed) hire their own staff; and their perceived likelihood of accessing training, getting a better job, finding a promotion or starting a business. These are supplemented by two more novel and objective indicators. Continuous Employment uses longitudinal data to measure employees' length of continuous service with the same employer. This is aligned to UK employment law, where many protections for workers are based on length of continuous service (with self-employed workers denied these protections) (Brione, 2022). Long-Term Prospects uses Department for Education data from Working Futures (DfE, 2020; Wilson *et al.*, 2020) on the projected replacement demand and employment growth of each occupational group over the coming decade (2017-2027) by 2-digit Standard Occupational Classification (SOC). This provides an estimate of the replacement rate (retirement and exit of current workers) and projected employment growth of their occupation – and thus their vulnerability to lay-offs due to technological change and low demand for workers in their profession. The methodology for creating this indicator is set out in Appendix E.

Finally, a dimension of workplace health and safety is also introduced. Understanding Society contains no questions on health and safety, but indicators of workplace fatalities, accidents and illnesses are introduced by matching incidence rates from the Health and Safety Executive and LFS by workers' Standard Industrial Classifications (SIC). Appendix D sets out the methodology for doing this.

2.3.4. *Alternative Weighting Methods*

Three variations to the weights set out in Figure 1 are explored. These weights are designed to reflect the sensitivity of this paper's findings to some reasonable alternative views about how the index should be constructed:

- **Hedonic weighting.** This is designed to reflect the weights of a more liberal normative framework. Taking advantage of the longitudinal nature of Understanding Society data, the hedonic weights are informed by first-difference fixed effects regressions of the effect of changes in scores on each indicator in the QoW index on changes on both life- and job- satisfaction. This allows me to control for time-invariant unmeasurable individual idiosyncrasies and characteristics, and replicates a proposal set out in Schokkaert (2007) and Schokkaert et al. (2009). The standardised coefficients, where significant and consistent for both measures, are used to determine the weights of each indicator, with the life satisfaction coefficients weighted 2/3rds to reflect its higher importance to wellbeing.
- **Frequency-based weighting.** This assigns a *higher* weight to those indicators with the *best* mean scores in Wave 4, i.e. the lowest proportion of people scoring poorly in them. This replicates a weighting proposal in poverty research (Cerioli and Zani, 1990; Cheli and Lemmi, 1995; Deutsch and Silber, 2005).
- **Data-driven weighting.** This weights indicators according to the amount of variance they explain in the data, using Principal Component Analysis (PCA). I take a weighted average of the factor loadings of those principal components which explain 90% of the variance. Only positive factor loadings are used. PCA is widely used in the literature (e.g. see Cascales Mira, 2021; McGillivray, 2005; Noorbakhsh, 1998), and its use in this paper is similar to Greco (2018, p. 464).

Table 2.1 sets out the percentage weights of these three alternative weighting approaches. Appendix A provides fuller detail on how these weights were constructed and contains a critique of the normative assumptions underlying them.

Figure 2.1. Dimensions, indicators and percentage weights of the UK Quality of Work index.

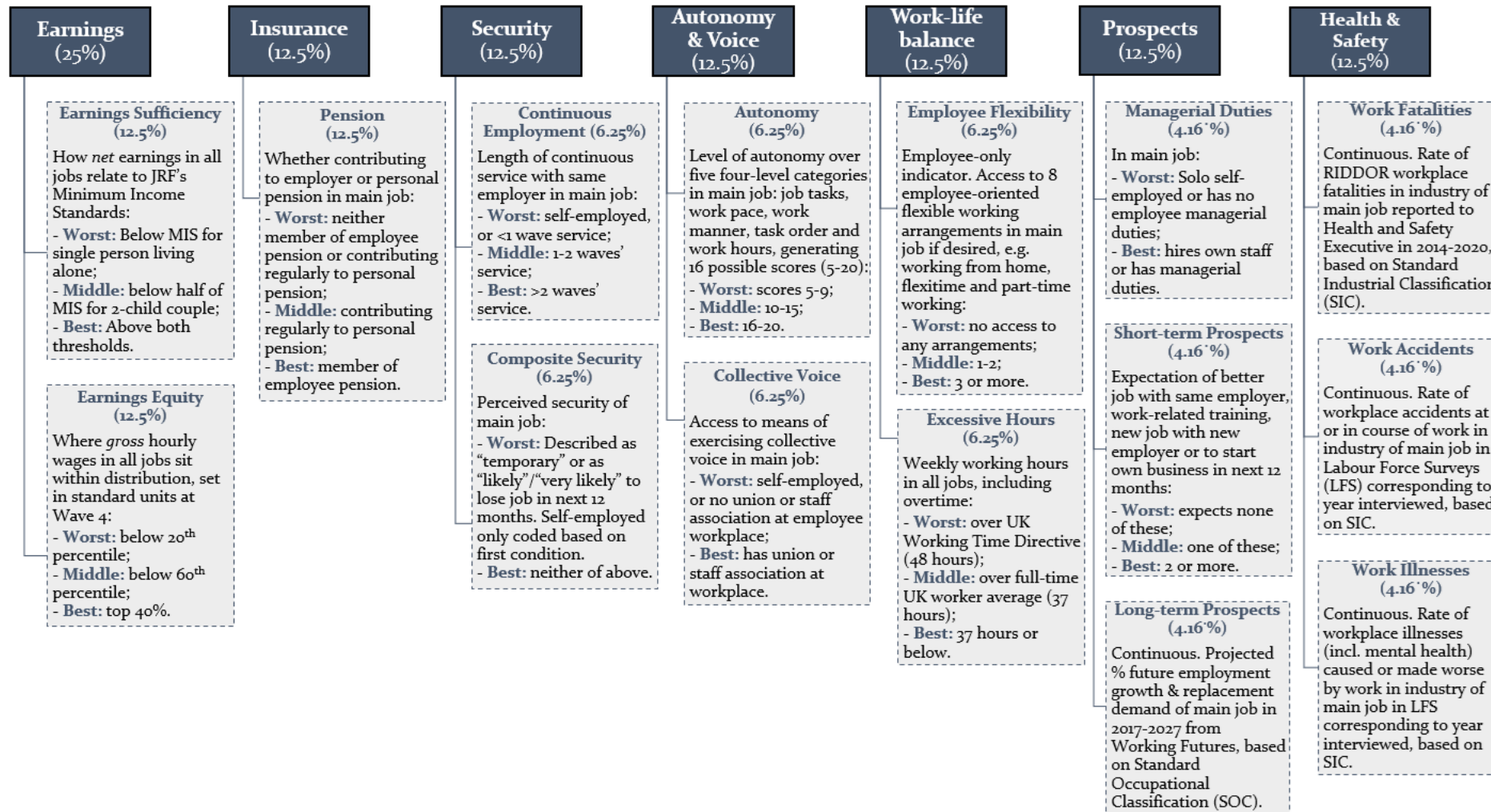


Figure 2.2. Uncensored indicator headcount ratios as at Wave 12 (2020-21) for all workers in the QoW index. Note the Flexibility indicator shown as a proportion of employees only, since self-employed are not scored on this indicator.



Table 2.1. Percentage weights for hedonic, frequency-based and data-driven weighting methods for the QoW index. Full methodology in Appendix A.

Indicator	QoW Index weight (Alkire-Foster based)	Hedonic weight	Frequency-based weight	Data-driven weight (PCA)
Earnings Sufficiency	12.50%	6.49%	5.62%	14.4%
Earnings Equity	12.50%	7.61%	6.32%	12.5%
Pension	12.50%	0%	5.67%	7.7%
Continuous Employment	6.25%	0%	7.02%	8.0%
Composite Security	6.25%	32.06%	8.29%	4.8%
Autonomy	6.25%	31.75%	7.06%	6.0%
Collective Voice	6.25%	0%	5.42%	5.5%
Employee Flexibility	6.25%	9.36%	5.88%	5.4%
Excessive Hours	6.25%	9.86%	6.61%	2.3%
Managerial Duties	4.16%	0%	5.10%	9.6%
Short-Term Prospects	4.16%	0%	5.11%	0.8%
Long-Term Prospects	4.16%	0%	8.15%	4.7%
Work Fatalities	4.16%	0%	11.36%	5.0%
Work Accidents	4.16%	2.87%	6.27%	6.2%
Work Illnesses	4.16%	0%	6.14%	7.0%

2.4. Findings

2.4.1. *Headline Time Series Changes: Employees vs. Self-Employed*

I begin with an overview of key changes in QoW in the UK. Because of the stark differences in the nature and trends in job quality between employees and self-employed workers, these are presented separately. Figure 2.3 presents a time series of mean QoW index scores by weighting method for these two groups. Figure 2.4 provides a more detailed picture of changes in mean QoW by each indicator of the QoW index, weighted according to the first weighting method only. Figures 2.5-2.6 provide an even more detailed picture, showing net changes in uncensored headcount ratios in the QoW indicators between 2012-13 and 2020-21, again broken down by employees and self-employed.

Three of the four weighting approaches agree that the self-employed have lower job quality than employees. Only hedonic weighting places them more highly due to its greater weighting of measures of autonomy in which self-employed workers score more highly. All four weighting approaches agree that employee job quality has risen to at least some extent over the past decade. This has been particularly driven by a marked rise in employee pension enrolment following the introduction of the Pensions Act 2008. This is consistent with what other national statistics show (ONS, 2022a), and explains the greater improvement in employees' positions in the Alkire-Foster based weighting method (which assigns a higher weight to Pensions). It is also driven by a marked improvement in the position of workers in the bottom 20% of the wage distribution (Earnings Equity): a key success story of the UK economy as a result of the long-standing focus on improving hourly wages, and again consistent with what is found in other datasets (Resolution Foundation, 2023). There has also been a fall in workplace accidents, which were accelerated by, but not caused by, the Covid-19 pandemic. This appears to reflect a genuine trend in the labour market, and whilst there have been issues with how this data is captured due to the pandemic alternative calculations have shown similar improvements (see HSE, 2021 and Appendix D).

Other trends are less positive. There is agreement across all weighting approaches that the position of self-employed workers has declined relative to employees: it has stagnated for two of the weighting approaches, and declined considerably according

to hedonic weighting. Whilst the self-employed have seen similar positive trends as employees in Earnings Equity and Workplace Fatalities, and an improvement in Excessive Hours, they have seen a decline in the Earnings Equity, Composite Security, Managerial Duties, and to a small extent Pension indicators. Both employees and self-employed have seen a decline in Short-Term Prospects, and a stark rise in Workplace Illnesses since the Covid-19 pandemic. It is noteworthy that Earnings Sufficiency and Earnings Equity tell a rather different story of the earnings of UK workers over the past decade: self-employed workers have seen a decline in Earnings Sufficiency, and employees have seen only a small improvement. This serves to illustrate that an improvement in gross wages may not always lead to an improvement in the sufficiency of net earnings, because the latter depends on the interaction of wages, hours worked, pay deductions, inflation, and societally-agreed minimum income standards.

Overall, the net effect of these trends has been to increase labour market polarisation between employees and self-employed workers. This provides the backdrop to the discussions in the succeeding sections.

Figure 2.3. Time series of mean QoW index scores by weighting method, broken down by employees vs. self-employed, 2012-13 to 2020-21. Error bars show standard errors of the weighted means.

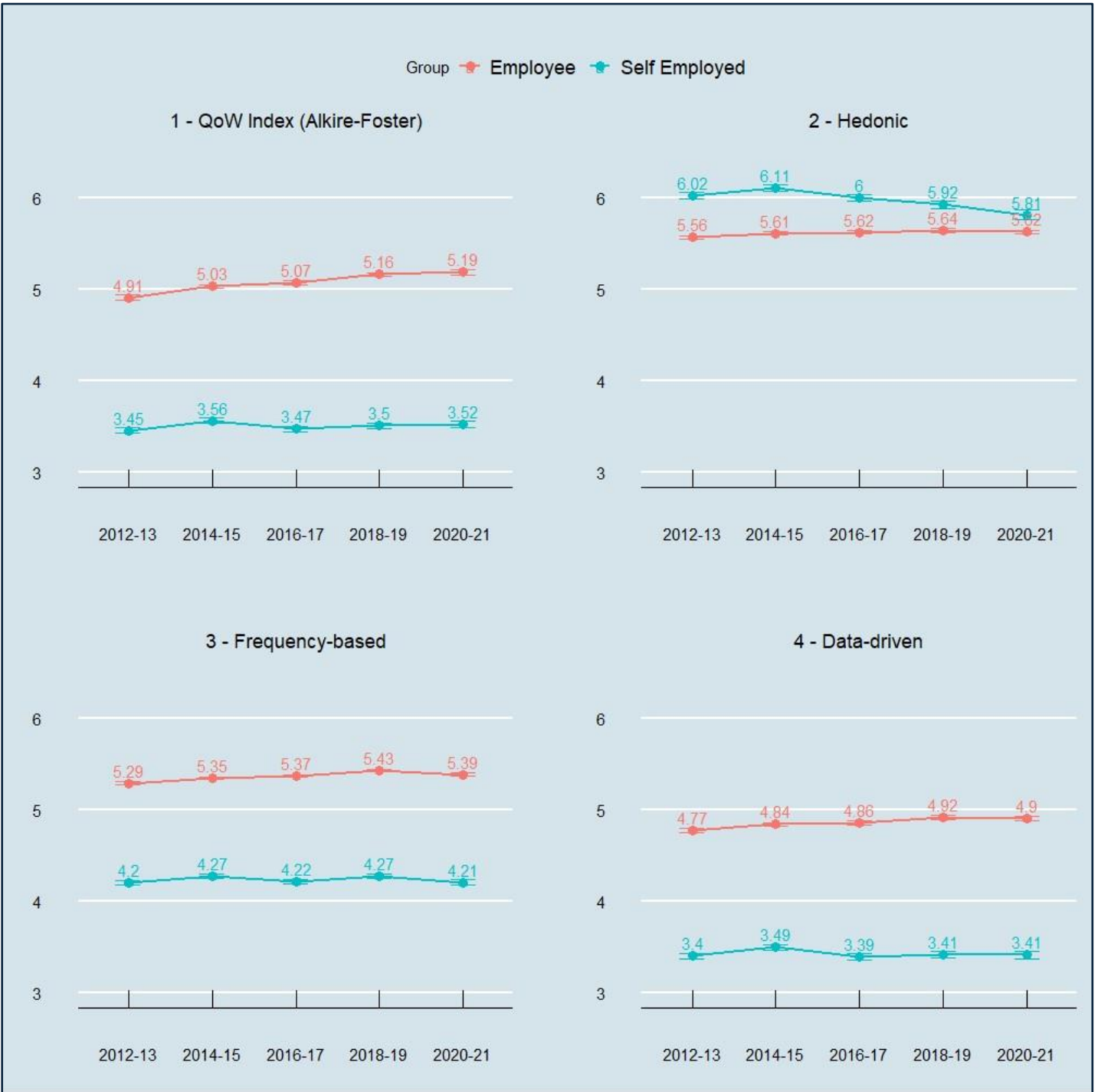


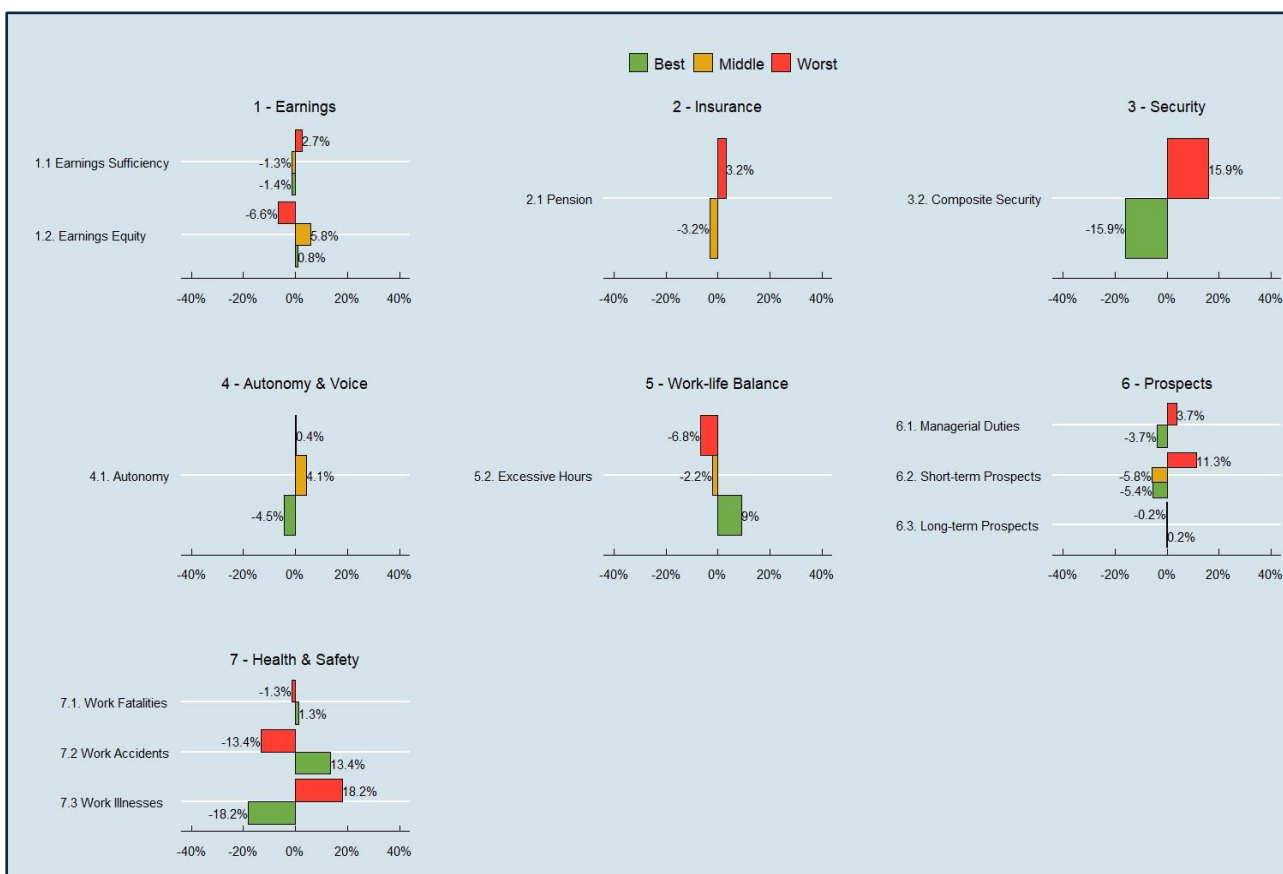
Figure 2.4. Time series of mean QoW indicator scores broken down by employees vs. self-employed, 2012-13 to 2020-21. Error bars show standard errors of the weighted means. All scores have been converted to a 0-1 scale to aid comparison; this does not reflect their weighting in the QoW index. Self-employed scores not included in Continuous Employment, Collective Voice and Flexibility.



Figure 2.5. Employee net change in uncensored headcount ratios, 2020-21 minus Wave 4 2012-13.



Figure 2.6. Self-employed net change in uncensored headcount ratios, 2020-21 minus 2012-13. Note net change in the continuous indicators is not reflected in indicator scores in the same way as the binary and categorical indicators, since many workers have scores in-between 0-0.5 and 0.5-1. This should be borne in mind when interpreting net change for these particular indicators.



2.4.2. Inequalities in Job Quality

Because of the data used, the QoW index is able to present inequalities in job quality to a higher degree of granularity than is possible in many international job quality indices. These shed light on some important differences in the experience of work between many groups in society. Figure 2.7 presents the inequalities net difference in mean QoW scores in the latest wave of the index (2020-21) for 29 subgroups of the UK labour force. To aid comparison, these percentage differences are represented with reference to four common reference groups.

Again, the data shows that there is broad agreement across the weighting approaches in the inequality in job quality in many sub-groups: the weighting approaches disagree over the extent of the inequality, but not usually over which group is worse off. Again, the key exception is hedonic weighting: Black African and Black Caribbean groups have a considerably worse QoW according to hedonic weighting, and people aged 66+ and, as discussed, self-employed workers have considerably better QoW. Overall, the most pronounced inequalities in QoW are seen with respect to 16-25-year-olds, gig economy workers, the self-employed, those who had at one unemployment spell since the last wave, some ethnic groups (esp. the Bangladeshi and Pakistani community), and residents of one region (Northern Ireland).

Figure 2.8 shows how these inequalities have changed over time for 12 sub-groups with the greatest differences in QoW, broken down by weighting method. These show a mixed picture over the past decade. Again, all approaches save for hedonic weighting broadly agree on the trends. The data suggests there has been an improvement for 16-25-year-olds, some regions, and potentially also people of Black African ethnicity (although hedonic weighting suggests the opposite for the latter group). However, all approaches agree that the position of Bangladeshi workers, the self-employed, women and to a lesser extent 56-65-year-olds has declined relative to their respective comparator groups.

Finally, Figure 2.9 illustrates where these inequalities continue to present themselves as at 2020-2021, showing radar plots of differences in each dimension of the QoW index for 12 sub-groups. Lower-scoring groups tend to consistently have lower earnings. This is particularly important in determining the poorer labour market position of women vs. men. There is also a tendency for lower-scoring groups to

perform similarly or better on Work-Life Balance: they tend to work lower hours, which improves their score on Excessive Hours but often drops their scores in Earnings Sufficiency below the minimum income thresholds.

Beyond this, the inequalities in QoW manifest themselves differently for different sub-groups. The North East, Northern Ireland and North West score better than London on Insurance and Security, yet people of Bangladeshi and Pakistani ethnicity and the youngest and oldest age groups score worse than comparator groups on both these measures. Notably, all age groups have poorer Prospects scores than the reference group of 36-45-year-olds – a potentially concerning finding for public policymaking, especially for the youngest workers. These findings illustrate the distinct roles which each of the dimensions of the index play in UK job quality. It also suggests that public policymakers need to tackle a broad range of issues to improve the labour market position of the most disadvantaged in society. This includes improving their earnings, but it should also involve tackling other vital non-pecuniary aspects of work where these inequalities manifest themselves.

Figure 2.7. Net percentage difference in mean QoW scores (2020-21) between pairs of sub-groups by weighting method. Standard errors of the weighted mean of the smallest-sized (lowest n) sub-group in error bars.

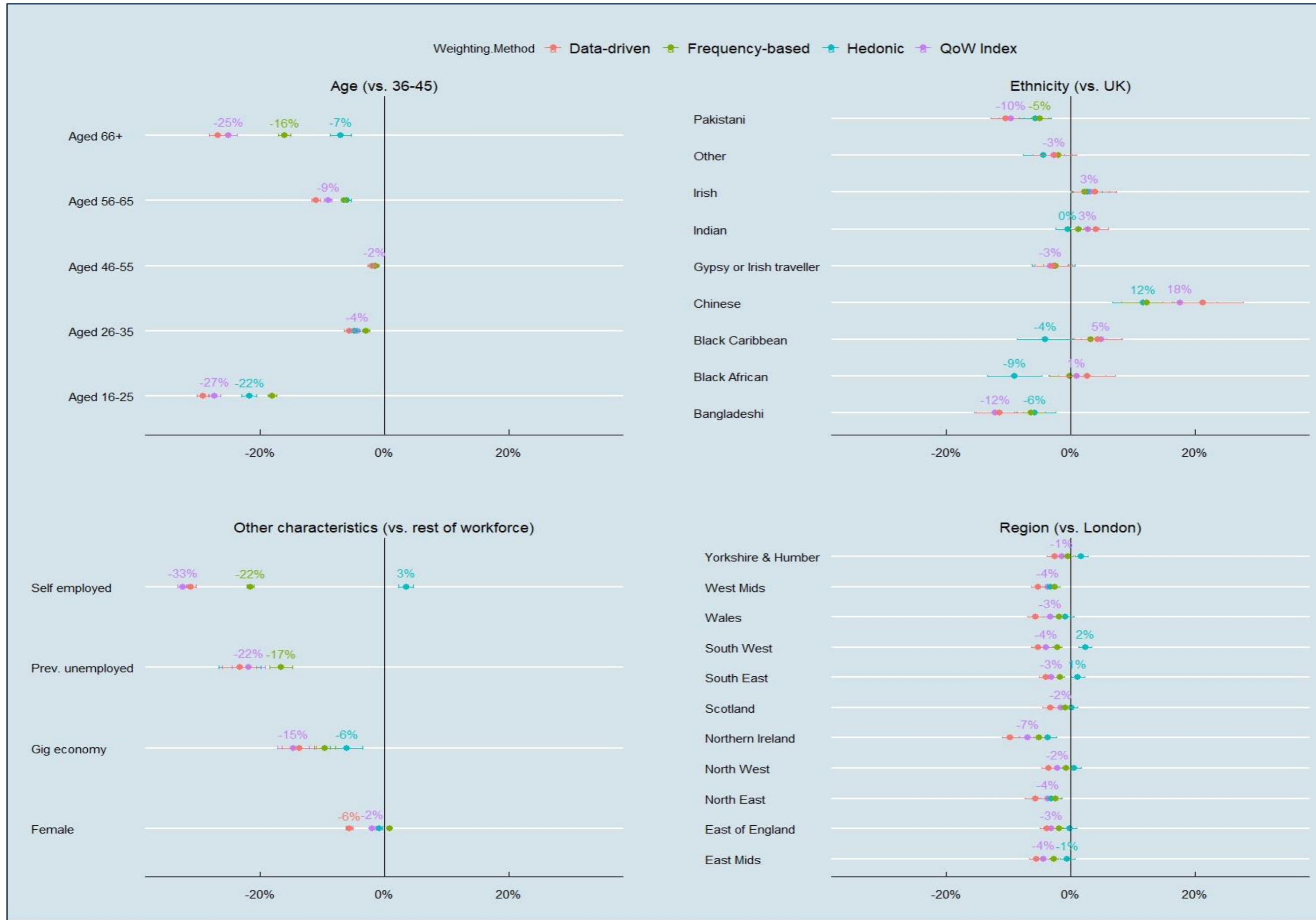


Figure 2.8. Time series of net percentage differences in mean QoW scores between pairs of sub-groups by weighting method. Standard errors of the weighted mean of the smallest (lowest n) sub-group in error bars.

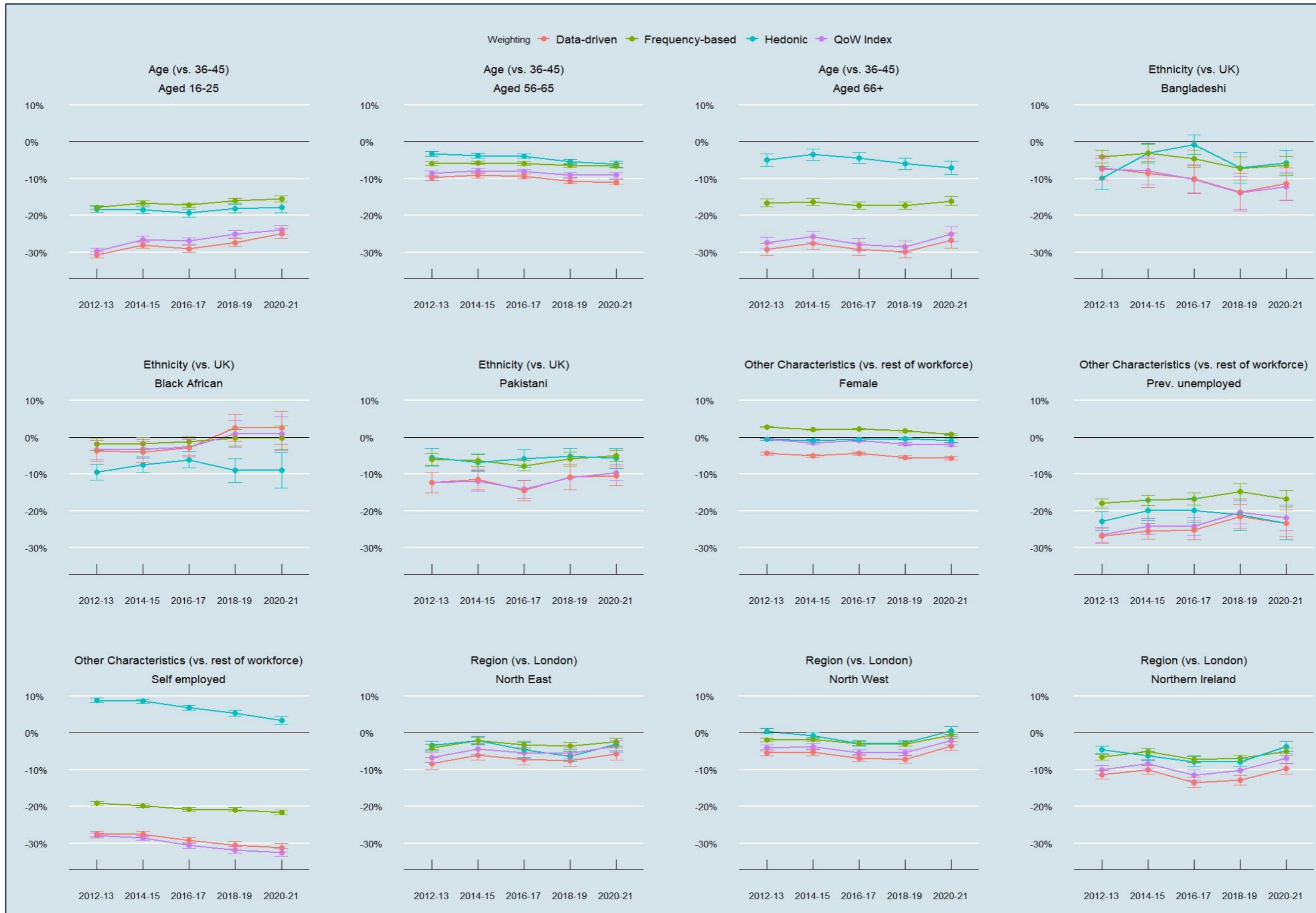
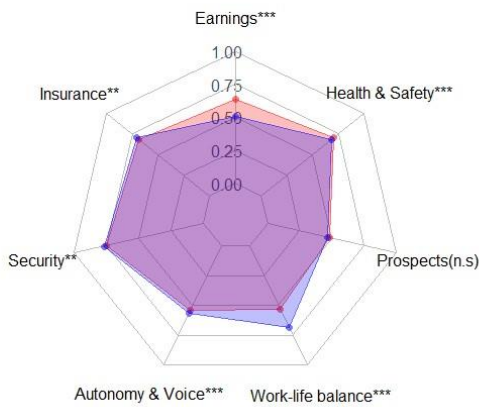
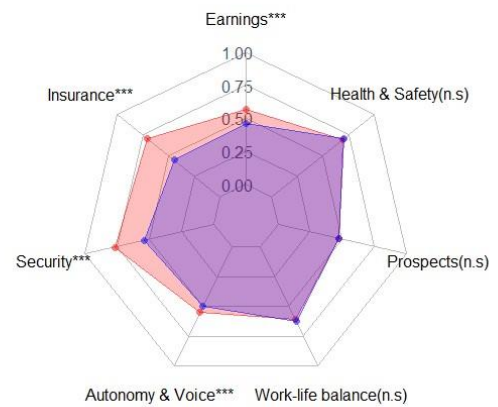


Figure 2.9. Radar plots of dimensional differences in QoW by pairs of sub-groups as at Wave 12 (2020-21). Asterisks represent whether the mean difference in QoW is statistically significant at the 0.05 (*), 0.01 (**), and 0.001 (***) confidence level using a non-parametric independent samples test (Kruskhal-Wallis).

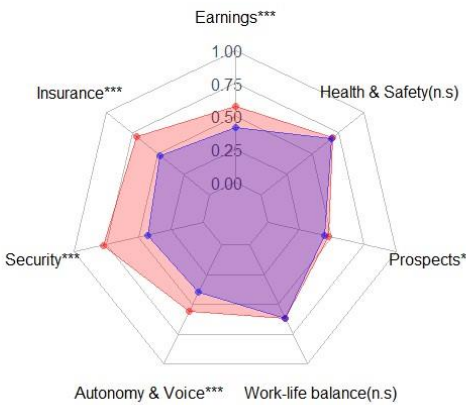
2.9a Female vs. Male



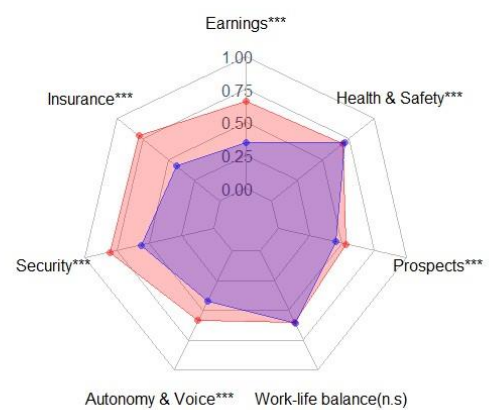
2.9b Gig economy vs. Rest of workforce



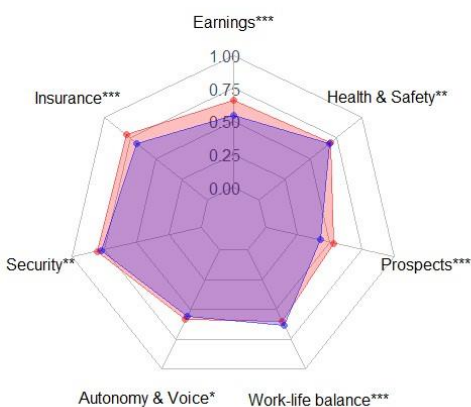
2.9c Prev. unemployed vs. rest of workforce



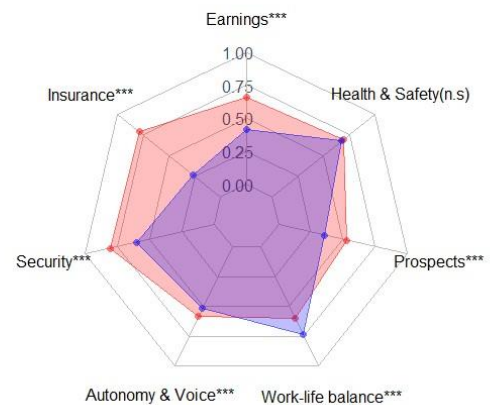
2.9d Aged 16-25 vs. 36-45



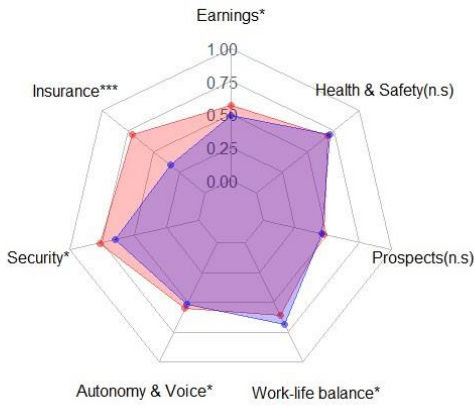
2.9e Aged 56-65 vs. 36-45



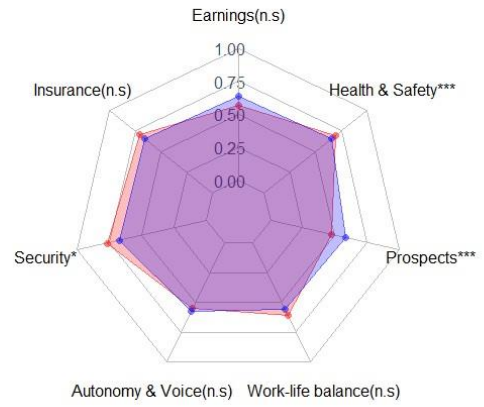
2.9f Aged 66+ vs. 36-45



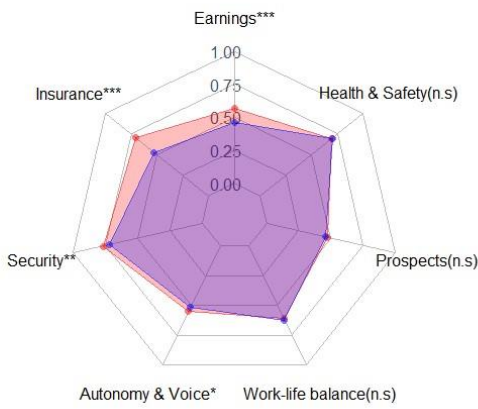
2.9g Bangladeshi vs. UK ethnicity



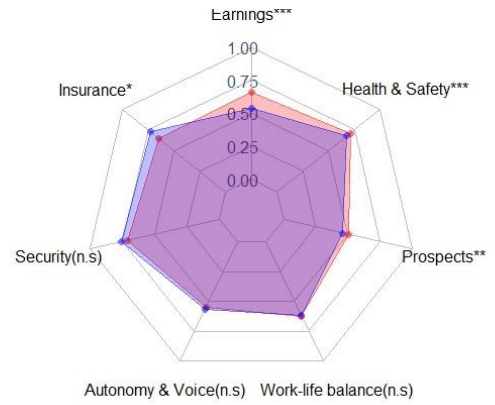
2.9h Black African vs. UK ethnicity



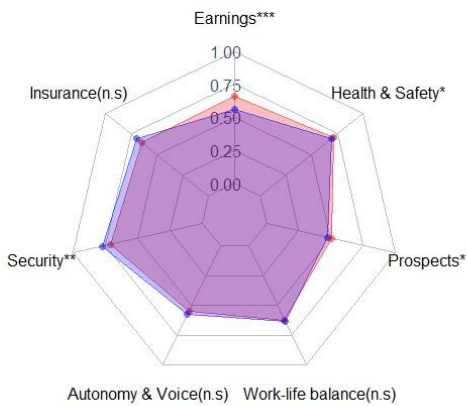
2.9i Pakistani vs. UK ethnicity



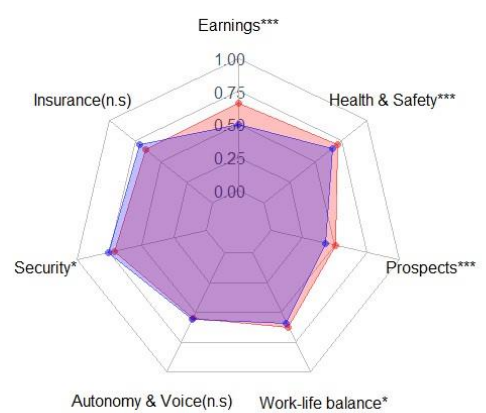
2.9j North East vs. London region of residence



2.9k North West vs. London region of residence



2.9l N. Ireland vs. London region of residence



2.4.3. Relationships Between Indicators

The previous subsection has already given an insight into how inequalities in QoW manifest themselves differently across various groups in the UK, and are not uniform across these sub-groups. Figure 2.10 supplements this by presenting a correlation matrix of the standardised QoW indicator scores. Table 2.2 presents the results from a Principal Component Analysis (PCA) of this correlation matrix, showing the factor loadings of the first eight principal components which together explain 90.2% of the variance in the data.

The correlation between many indicators is weaker than in some other multidimensional indices of wellbeing, and the first principal component explains quite a small proportion – 30.8% – of the variance. This contrasts with many other wellbeing indices, such as the Human Development Index (cf. Noorbakhsh, 1998, p. 594). Factor loadings exceed ± 0.3 – a common standard for PCA – for all but one indicator (Collective Voice), although it is very close to 0.3 in the first component. There is also a lack of large positive factor loadings for Work Fatalities and to a lesser extent Managerial Duties. The large number of negative factor loadings is again distinct from some other applications of PCA (Vyas and Kumaranayake, 2006, pp. 463–464). PCA in itself should not be seen as a validation of an index, and there are strong arguments against using it to inform weighting decisions (see Appendix A), yet it is noteworthy that the index nonetheless performs well according to this commonly used dimensionality reduction technique.

This negative relationship between some indicators is consistent with what some other job quality indices show. The European Job Quality Index for example shows a negative (although weak) association between their work-life balance and pay dimensions (Muñoz de Bustillo, Fernandez-Macias, *et al.*, 2011, p. 194) and even a negative relationship between some indicators within the same dimension, such as flexibility and hours worked (Muñoz de Bustillo, Fernandez-Macias, *et al.*, 2011, p. 188). This makes logical sense, since a fall in hours worked should all else held equal lead to a fall in earnings, and workers may access flexible work arrangements instead of reducing their hours to deal with work-family and family-work conflict. However, it should be emphasised that there is no inherent reason why the scores in these indicators would be negatively correlated, since the cut-offs used should not prohibit

the achievement of good scores on all indicators simultaneously. To score best on Excessive Hours, a worker simply needs to work in line with the average number of working hours of 37 hours a week (ONS, 2024a) – a commonly-stipulated contractual obligation in standard employment contracts. Yet it is striking that many workers working below this struggle to earn a decent wage and achieve a level of take-home pay above the Minimum Income Standards.

There is also a weak or negative correlation between Work Illnesses and most other indicators of the QoW index. These negative associations likely reflect its distribution across industries and occupations: for example, it tends to be higher in more heavily unionised industries such as human health and public administration (see Appendix D, Table D.3).

Finally, it should also be noted that although Earnings Sufficiency and Earnings Equity are strongly positively correlated and have consistently positive factor loadings in all but one component of the PCA, the strength of the correlation between these indicators declines over the course of the time series. This reflects the trends outlined in Section 4.1, and highlights the importance of measuring the twin aspects of earnings in precisely the way discussed in international literature.

Figure 2.10. Correlation matrix of the standardised QoW indicator scores, using Spearman correlation coefficients. Pooled data from all waves of the QoW index.

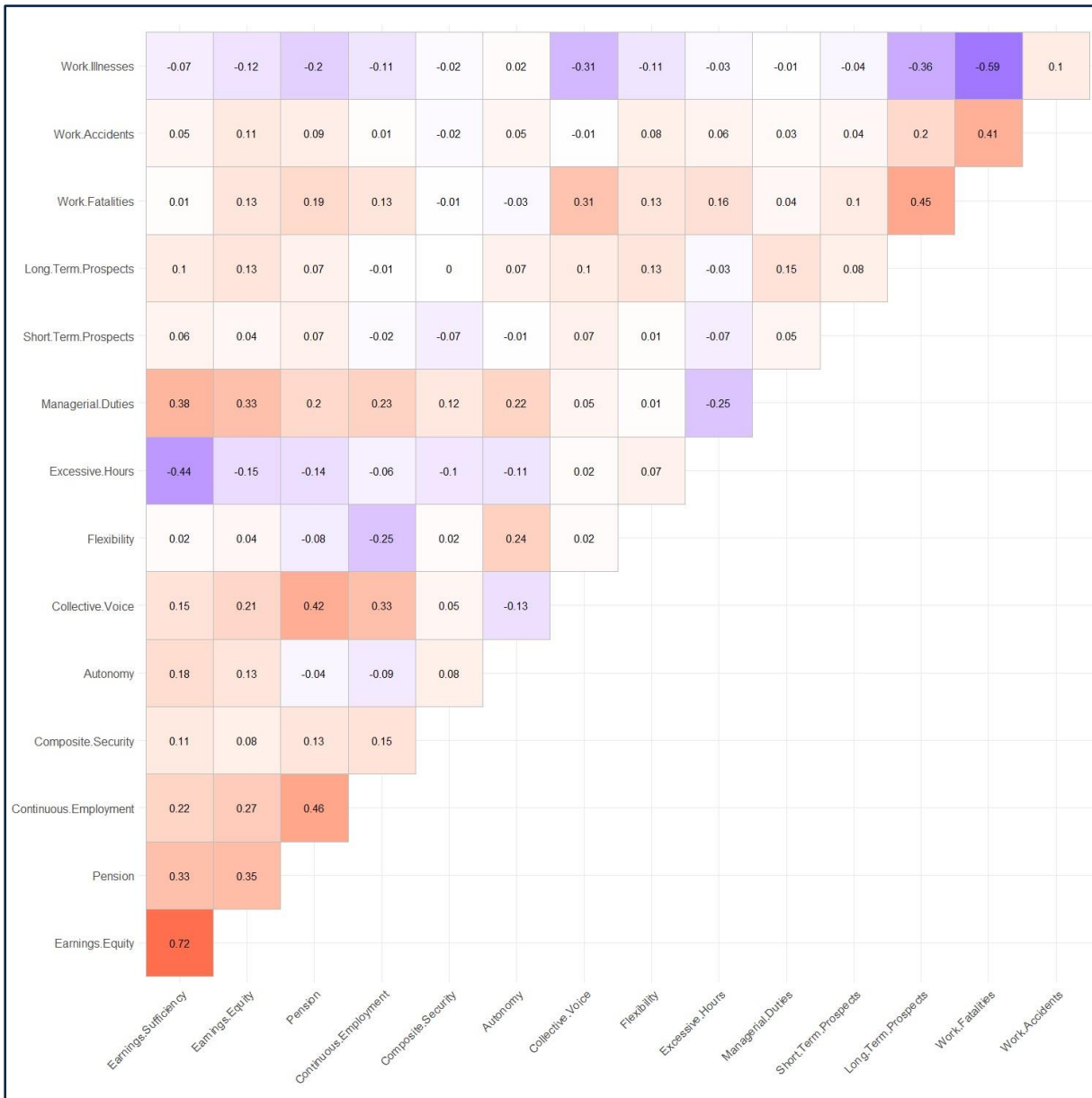


Table 2.2. Factor loadings of the first eight principal components of the QoW index (explaining 90.2% of variance). Based on a Principal Component Analysis of the correlation matrix of standardised QoW index indicators, using Spearman correlation coefficients. Factor loadings > 0.3 marked green and < -0.3 marked red. Pooled data from all waves of the QoW index.

Indicator	Comp.1	Comp.2	Comp.3	Comp.4	Comp.5	Comp.6	Comp.7	Comp.8
Earnings Sufficiency	0.419	0.272	0.231	0.105	0.006	0.217	0.158	0.241
Earnings Equity	0.382	0.144	0.149	0.085	-0.058	0.396	0.051	0.393
Pension	0.395	-0.033	-0.232	-0.007	0.012	0.061	0.146	-0.346
Continuous Employment	0.338	0.023	-0.398	-0.046	-0.153	-0.063	-0.253	-0.187
Composite Security	0.076	0.129	-0.071	-0.503	-0.218	-0.553	0.433	0.213
Autonomy	-0.046	0.185	0.435	-0.243	-0.008	0.02	-0.259	-0.518
Collective Voice	0.297	-0.241	-0.26	-0.156	0.245	0.199	0.143	-0.197
Flexibility	-0.147	-0.109	0.403	-0.334	0.214	0.312	0.321	-0.145
Excessive Hours	-0.303	-0.308	-0.242	-0.141	-0.074	0.312	-0.309	0.276
Managerial Duties	0.252	0.221	0.201	0.009	-0.075	-0.194	-0.491	-0.079
Short-Term Prospects	0.006	-0.049	0.028	0.455	0.669	-0.341	0.106	-0.015
Long-Term Prospects	0.124	-0.326	0.349	0.087	-0.101	-0.289	-0.201	0.3
Work Fatalities	0.165	-0.541	0.145	0.079	-0.167	-0.073	0.025	-0.09
Work Accidents	-0.056	-0.167	0.132	0.469	-0.549	0.036	0.332	-0.277
Work Illnesses	-0.3	0.458	-0.167	0.266	-0.145	0.068	0.097	-0.041
Proportion of variance	30.8%	23.0%	13.9%	6.8%	6.0%	4.9%	3.7%	2.9%

2.5. Conclusions

This paper has presented the first data from a comprehensive synthetic index of job quality in the UK. The indicators and dimensions of the index have been identified based on a normative framework for measuring job quality using the Capability Approach, and there is therefore an emphasis on objective rather than subjective aspects of work in a way which is consistent with this strand of literature. Nevertheless, many of the indicators and dimensions of the index capture important aspects of job quality discussed in a broad spectrum of academic research (Gallie, 2003) – including job security, autonomy, workers’ voice, work-life balance and job prospects. The QoW index defaults to a weighting approach informed by the Alkire-Foster method which has been applied in a wide range of studies of other national and international contexts (e.g. see González et al., 2021). This in itself provides a useful contribution to the debate of using job quality indices, shedding new light on important trends and inequalities in job quality within a single country context in an area of study where international indices predominate, hindering the analysis of important within-country inequalities in job quality.

However, the paper supplements this by presenting some innovations in the development of social indicators for job quality. Within the Earnings dimension, a crucial distinction is drawn between the position of workers in the *gross* wage distribution (Earnings Equity) and the sufficiency of their *net* earnings to meet societally-agreed minimum standards (Earnings Sufficiency). Indicators of pension enrolment and continuous employment are developed due to the specific role these play in the UK context. Finally, four important indicators of long-term job prospects and health and safety are introduced into the index using data from external sources, bringing these indicators into Understanding Society for the first time to allow us to analyse their relationships with other job quality indicators. Crucially, three alternative hedonic, frequency-based, and data-driven weighting approaches are introduced in order to test the sensitivity of findings to different views about weighting.

The paper has found that the UK has seen an improvement in job quality in precisely the areas which have been the focus of public policymakers – improving hourly wages for those at the bottom of the distribution; and improving pension coverage for

employees. This has led to a reduction in inequality in job quality for some sub-groups, notably the youngest workers, and between regions. However, this has come at the expense of neglecting other aspects of job quality, including many crucial non-pecuniary aspects of work. This, in turn, has led to a polarisation in job quality between self-employed workers vs. employees, and to a lesser extent women vs. men. Inequalities in job quality between Bangladeshi and Pakistani workers vs. UK workers also show no signs of falling. Crucially, these broad findings are consistent across the four weighting approaches used in this study. Further, with the exception of hedonic weighting, all weighting approaches agree on the *relative* position of different sub-groups, if not always the *extent* of the difference between these groups.

Even within the Earnings and Pensions dimensions, the improvement for UK workers has not been uniform. Self-employed workers have not benefitted from the drive to increase workers' pension enrolment, and the sufficiency of their earnings has declined despite the rise in gross hourly wages. This suggests a more broad-based set of interventions is needed to improve UK job quality: addressing the factors keeping *net* earnings low, particularly hours worked and pay deductions; including the informal economy in labour market interventions such as pensions; and taking steps to improve vital non-pecuniary aspects of work which have deteriorated in the past decade, such as Short-Term Prospects and Composite Security.

There are some limitations to this study. The changes outlined above have occurred in the context of significant changes in the population in the QoW index due to the rise of the employment rate, yet in common with other job quality indices I do not capture the experience of individuals who are not in paid employment. No claim is made to give a comprehensive picture of all possible alternative weighting methods, with a particular neglect of any weights which vary at an individual or group-level. Going forward, I suggest that future research could build on this work by further investigating important within-country inequalities in job quality, and operationalising a broad spectrum of alternative weighting approaches when presenting results. This, in turn, may help resolve debates and issues which have to date limited the impact of the job quality agenda on public policymaking in many countries, including the UK. I also suggest that the challenge of *indicator* selection needs to be more carefully considered in future research, since this index has presented

some novel indicators which do not always feature in job quality indices and yet show distinct trends and relationship with other indices. In time, this could pave the way towards more regular published statistics on multidimensional job quality.

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Paper 3

Bad Jobs: Choice or Constraint? Quantifying the Relationship between Worker Job Quality and Choices in the UK Labour Market, 2012-21

Worker choice, or the lack thereof, plays a major role in debates about the quality of paid work. However, few studies quantify the extent of worker choice, and there is also disagreement over how choice should be conceptualised or measured. This article takes steps towards redressing these issues. Using the capability approach and Bourdieu's theory of capitals, it proposes ten indicators of choice using individual, family, household, and longitudinal data from *Understanding Society*, a nationally representative survey of the UK. It then compares workers' scores on these choice indicators with their scores in an existing UK job quality index. It finds a strong relationship between constrained choices and low job quality. Over one in ten (12%) workers can be categorised as the most marginalised of all: in low-quality jobs, with few-to-no alternative choices. However, there is considerable heterogeneity in workers' choices, particularly for those in low-quality jobs and/or the self-employed.

Keywords: Bourdieu's theory of capitals, Careers, Capability Approach, Entrepreneurship, Gig / platform economy, Labour market analysis/segregation, Multivariate quantitative methods, Nonstandard work arrangements (shift work, flexible work, teleworking, freelancing e.t.c.), Self-employment, Working conditions/job quality

3.1. Introduction

The amount of "choice" workers have – within their current workplace; between different types of alternative paid work; and between paid work and other activities – is a key undercurrent in many debates about job quality in academic literature and public policymaking. It is sometimes used synonymously with "freedom" (e.g. see Bueno, 2021), "opportunities" (e.g. Williams, 2007), and "agency" (e.g. Wheatley et al., 2023, p. 2), and is antonymous to "constraint" (e.g. Briken and Taylor, 2018; Burchardt

and Le Grand, 2002; Corby and Stanworth, 2009). To some, the decision on whether to ban or regulate new and more flexible forms of labour hinges on the “choices” they enable workers to have. Indeed, the *Taylor Review of Modern Working Practices* – a UK Government-commissioned report into job quality – defended platform labour on the grounds of its ability to “present individuals with greater freedom over when to work, and what jobs to accept or decline, than most other business models” (Taylor, 2017, p. 37).

What is meant by choice? Do some workers have more choice than others, and if so whom? And most fundamentally: do workers in low-quality jobs access these jobs as a free choice, or because they have few other options? Two limitations have prevented research from answering these questions.

Firstly, there is limited empirical data on the aggregate amount of worker choice at the national or international level. The richest empirical data we have on choice tends to be qualitative, and focus on sub-sets of the paid working population such as migrant workers (Nee and Sanders, 2001; Vershinina, Barrett and Meyer, 2011; Abada, Hou and Lu, 2014; Harrison, Collins and Babor, 2022); gig economy, agency or platform labour workers (Wood *et al.*, 2019; Auguste, Roll and Despard, 2023; Tarrabain and Thomas, 2024); unemployed workers (Egdell and Beck, 2020; Gousia *et al.*, 2021; Jones, Wright and Scullion, 2024); the legal profession (Epstein *et al.*, 1999); the self-employed (Smeaton, 2003); informal entrepreneurs (Williams, 2007); or chefs (Belardi, Knox and Wright, 2021b). This has meant it has been difficult to provide a concrete answer to the questions posed at the start of this introduction: it *appears* that workers at the bottom end of the labour market are severely constrained in their choices, but we lack the representative data to confirm this or to categorise workers according to the relationship between their job quality and range of choices.

Secondly, there is no agreed conceptualisation of choice in the literature. Choice is often not the primary concern of research into work; is rarely defined in its own terms; and is often considered only in relation to another associated concept, like autonomy. This reflects a wider neglect of choice across most theories of human wellbeing (Robeyns, 2017, p. 119), and is thus not solely a sociological problem. There is therefore no consensus over which indicators should be used to measure choice at an aggregate level, and how they should be aggregated and weighted. A particular unsettled issue is

whether subjective measures should be used to reflect choice – such as peoples’ job satisfaction or stated motives for undertaking particular forms of work (CIPD, 2017); or the inference of peoples’ preferences from their actions (e.g. Hakim, 2000; for a criticism, see Rogers, 2002).

This article contributes to addressing these limitations using new quantitative data from a representative sample of UK workers. The empirical basis for this article is data from a large-scale UK survey (*Understanding Society*). This survey has recently been used to develop a multidimensional index of job quality, the UK Quality of Work (QoW) index (Stephens, 2023a, 2024). *Understanding Society* is a longitudinal household survey, and so contains data not just on the job characteristics of individual workers, but also their family and household circumstances, qualifications, housing assets, work histories, and socio-economic backgrounds. It thus provides a useful range of potential indicators of worker choice which could be compared with workers’ job quality to understand the relationship between job quality and constrained choices. The main focus of this article is on individuals in paid work, and thus represented in the QoW index, as at Wave 12 (2020-21) of the survey, but some data from previous waves is also used.

Addressing the second, conceptual, gap in the literature, a conceptual framework is then applied to inform the identification of a set of indicators of worker choice. The capability approach (Sen and Hawthorn, 1987; Sen, 1999) is used as the starting point for the framework, since it provides a uniquely clear articulation of the role of choice in human welfare. The approach is used to identify ten individual, household, family and longitudinal indicators which are argued to be proxies for the “Capability Set”: they suggest the degree to which an individual has a wide range of potential alternative things they could do or be, other than their chosen work activity. The indicators identified are also argued to relate strongly to Bourdieu’s theory of capitals (Bourdieu, 1983) as they are also measures of economic, social and cultural and human capital; this informs the aggregation and weighting approach for the different indicators.

The rest of this article is split into three sections. In the first, the article discusses how literature conceptualises choice and advances the proposed conceptual framework. Second, data and methods are outlined. Ten indicators which are argued to be proxies for workers’ Capability Sets are identified, together with their relation to

economic, social, and cultural and human capital. Third, the findings are presented, and three research questions are answered:

RQ1: *What is the general relationship between (paid) workers' job quality and the extent of their choices, measured using proxies for the Capability Set?*

RQ2: *How do the choices available to workers in non-standard employment relationships (the self-employed, those on zero hours contracts and platform labour workers) compare with those of different groups of employees?*

RQ3: *How large is the population of the most marginalised workers in the labour market (those with few choices and low job quality), and what distinguishes them from other workers?*

3.2. Job Quality and Worker Choice

3.2.1. Job Quality: Definitions and Measurement

Consistent with a recent article in *Work, Employment and Society* (Jones, Wright and Scullion, 2024), job quality in this article is defined as “the extent to which a job has work and employment-related factors that foster beneficial outcomes for the employee” (Holman, 2013, p. 476). The focus of this article is the job quality and choices of all individuals *in paid work* in the UK, including employees, self-employed and informal workers.

There is widespread recognition that job quality is an inherently multidimensional concept (Leschke, Watt and Finn, 2008; Muñoz de Bustillo, Fernandez-Macias, *et al.*, 2011; Felstead *et al.*, 2019). It therefore needs to be measured using multidimensional indices, comprising a range of pecuniary and non-pecuniary indicators. The past two decades have seen the proliferation of these indices (OECD, 2003; European Commission, 2007; Smith *et al.*, 2008; Sehnbruch *et al.*, 2020; Cascales Mira, 2021). It is important that such indices are *individual-level*, *representative* and *synthetic* – that is, they must contain data from a single source so we can compare individual workers' job quality both across dimensions, and with other variables; they must come from a representative sample of a population of interest; and it must be possible to assign individuals synthetic dimensional and job quality scores, to enable quantitative analysis. It follows that such job quality indices should enable analysis at three levels:

(a) the *indicator level*, comprising all variables used in the index; (b) the *dimensional level*, with each dimension comprising similar indicators assigned weights added together; and (c) the *index level*, comprised of the weighted sum of all dimensions. Such indices enable the quality of jobs to be measured along a continuous spectrum, with the lowest-quality jobs scoring lowest and the highest-quality jobs scoring highest.

Since the *Taylor Review*, researchers in the UK are now able to make use of data from individual-level, representative and synthetic indices of job quality in ways which were not possible previously (Irvine, White and Diffley, 2018; Dobbins, 2022; ONS, 2022b; Soffia, Hall and Skordis, 2023; Stephens, 2023a). Although there are continued disagreements over indicator selection, weighting and aggregation of indices (for a discussion, see Piasna et al., 2019), there is nonetheless a “remarkable consensus” between different job quality scholars on which indicators measure job quality, with general agreement that it includes measures such as “variety in the task, the level of personal initiative that can be exercised, the degree of participation at work, and the extent to which the job permits personal self-development” (Gallie, 2003, p. 65). These developments open up the possibility for new forms of analysis using these indices – allowing us to measure not just the *level* of job quality, but also the *relationship* between job quality and other variables of interest. Pursuant to this, this article uses a recently-developed UK job quality index (Stephens, 2023a, 2024) to explore the relationship between job quality and worker choices.

3.2.2. *Choice in Existing Literature*

This leads us on to how worker choices should be defined. To date, three key limitations have prevented researchers from making a definitive assessment of the level of choice in the UK labour market.

Firstly, as discussed in the introduction, there is no consensus over the conceptualisation of choice. In the literature it is most often discussed in relation to an associated concept rather than defined in clearly in its own terms. It most strongly features in discussions of family-work and work-family conflict and gender inequality, where workers in the most disadvantaged positions are often framed as facing “an unpalatable choice” between career goals and family goals (Ford *et al.*, 2021, p. 88).

Women who attempt to reconcile these by working part-time have been found to lose out on their career goals relative to women working full-time who sacrifice family goals for work (Epstein *et al.*, 1999). The concept also finds resonance in discussions of worker flexibility, with women found to access flexible work arrangements in the context of constraint (Atkinson and Hall, 2009) while men “may use FWAs with a greater degree of choice, enabling retention of full-time hours and associated benefits” (Wheatley, 2017b, p. 568). It is also related to the concept of autonomy, since the term is inherently related to the ability of workers to make free choices – both within the workplace itself, in terms of task autonomy (Gallie, Felstead and Green, 2004); but also outside the workplace, in terms of the general life autonomy (Gousia *et al.*, 2021). In addition, choice has emerged as a particularly strong theme in debates about workers in non-standard forms of employment following the publication of the *Taylor Review*, which painted a generally positive picture of the circumstances of workers in such employment relationships. As the review argued (Taylor, 2017, p. 16):

*“Our flexible approach – what the Review calls ‘the British way’ – works. Full-time, permanent work remains the norm, but other ‘atypical’ arrangements are usually **chosen** and valued by the individuals concerned.”* [emphasis added]

Contrary to the Taylor Review’s claims, subsequent sociological research has tended to find that most workers in such non-standard employment relationships face considerable constraint over other work opportunities or life pursuits, and are often forced into this work activity due to welfare conditionality and precarious living arrangements (Bales, Bogg and Novitz, 2018; Briken and Taylor, 2018; Egdell and Beck, 2020; Gousia *et al.*, 2021; Auguste, Roll and Despard, 2023; Jones, Wright and Scullion, 2024; Tarrabain and Thomas, 2024). Yet owing to the disparate range of ways choice is discussed and conceptualised, this evidence is far from universally accepted. For example, scholars of entrepreneurship have tended to characterise many sole business owners in ethnic minority communities as “opportunity entrepreneurs” rather than “necessity entrepreneurs” (for evaluations, see Beck and Williams, 2015, p. 309; Vershinina *et al.*, 2011, p. 102). Self-employed workers have been similarly characterised as freely choosing a more free and flexible working opportunity – citing for example how female self-employment enables women to engage in

entrepreneurship while simultaneously supporting a family, in ways not possible in standard employment relationships (Parker, 2018, p. 188).

Secondly, there is unresolved tension whether workers' stated preferences and subjective wellbeing can be used to infer the choices they have. Subjective or preference-oriented studies tend to take a more positive assessment of the degree of worker choices. Industry groups have defended gig economy work by suggesting such workers' subjective job satisfaction is high, and that workers' self-reported reasons for accessing these jobs suggest they have a range of other work opportunities (CIPD, 2017). The Taylor Review itself used the "diametrically opposed views" it received from non-standard workers about the quality of their own jobs as grounds for its above argument for a "British way" (Taylor, 2017, p. 11). Historically, the single largest reason UK self-employed workers cited for taking up such work in 2000 was "to be independent" (Parker, 2018, p. 109). This is in line with what evidence in the wider job satisfaction literature suggests, where many workers in objectively bad working conditions often report high subjective wellbeing – such as cleaners (Léné, 2019), women (Clark, 1997), and part-time workers (Booth and Van Ours, 2008). Some exceptions to this rule exist, however – Wheatley (2017, p. 572), for example, finds that self-employment has a positive impact on men's but not women's subjective wellbeing, supporting the argument that "men use part-time with a greater degree of choice." Similarly, Knox et al. (2015) use differences in stated preferences between groups of workers to propose a typology of workers based on their labour market choices.

By contrast, studies using more objective data, or contrasting objective data with stated preferences, have tended to take a more sceptical approach of stated preferences. Wood et al. (2019, p. 67), for example, find that while many remote gig workers personally place a high value on flexibility, many in practice cannot take advantage of it and in fact "had to work long hours" because "the wages were driven low and the work was precarious." Objective data on self-employed workers also suggests that most have lower incomes and slightly higher material deprivation than matched groups of employees, with the exception of those in the top decile of the income distribution (Henley, 2022). Williams, 2007 (p. 314) offers an exception, however, finding evidence that entrepreneurs operating in the informal economy are

objectively “relatively affluent” and previously in “formal employment”, but finds signs of such workers being pushed into such work from their interview evidence – driving the conclusion that “both choice and constraint are often involved in their decision to set up a business venture.” All the research discussed above suggests that, at the very least, subjective data should neither be taken at face value nor used as the sole indicator of worker choice. Rather, it should be used alongside more objective data on the material, social and wider circumstances of such workers.

Thirdly, there is a further unsettled debate over the relative importance of (a) the characteristics of *jobs themselves* in determining worker choices versus (b) *wider circumstances or relations* often correlated with, but distinct from, the specific jobs workers are doing. The two concepts are sometimes discussed together, but are very much distinct. Many accounts of the former are informed by Marxist labour process theory (Braverman, 1974; Friedman, 1977; Gandini, 2019), and emphasise the way new non-standard forms of employment constrain workers’ autonomy and choices through mechanisms inherent to the jobs themselves – such as by “algorithmic control” (Wood *et al.*, 2019) or “algorithmic insecurity” (Lefcoe, Connelly and Gellatly, 2023, p. 2) limiting the flexibility workers have in practice; and “emotional labour” (Gandini, 2019, p. 1048), or the restriction of work shifts to compliant workers (Tarrabain and Thomas, 2024) forcing workers to work intensively and compliantly in order to be given work. Perhaps ironically, *the Taylor Review’s* own account of flexibility could be seen as placing a similar emphasis on the work environment, albeit to make the opposite argument: it has been criticised (Bales, Bogg and Novitz, 2018; Briken and Taylor, 2018) for offering an account of work which is abstracted from the circumstances of the worker, and thus implying that flexible jobs have inherent characteristics which provide workers with greater “freedoms” than standard forms of employment.

By contrast, other research agrees that the nature of work can severely constrain workers’ choices, but also sees other factors as important in determining or mediating the choices available to workers in low-quality jobs. Kalleberg (2011 p. 83) emphasises the role of “marketplace bargaining power” in workers’ job quality in the United States, arguing that the growth of market-mediated employment relations means these are increasingly individually agreed between workers and employees rather

than collectively negotiated or subject to state regulations. Applied to the concept of worker choice, this calls for consideration not just of the way jobs themselves constrain choices, but of the circumstances under which different groups of workers negotiate access to these jobs – what power do they have to negotiate favourable terms, access the jobs they desire, and freely choose between different forms of productive activity? It also requires us to consider deeper factors which constrain individuals' choices – such as gender roles (Loretto and Vickerstaff, 2013, p. 65); “the mediating role of ... factors beyond the workplace, such as economic competition and the division of household labour” (Monteith and Giesbert, 2017, p. 827); and the role of institutions, such as the conditionality of welfare systems, in forcing individuals to engage in certain labour market activities (Jones, Wright and Scullion, 2024). This article suggests a further under-discussed factor determining workers' choices is their own human capital, such as their skills, and the social connections and general social standing of them and their families, since these will help them gain access to a wider range of jobs than those without these connections or skills.

Overall, there is a strong case for bringing these two considerations together into a unifying framework, since they evidently feed off each other. For example, in the case of algorithmic and other forms of control these circumstances will play a dual role in exacerbating the constraints faced by workers, in both directions: it will for example be far easier for an employer to control workers if they have few other labour market opportunities, no other means of support, and no social connections, than if they have a range of alternative choices available to them.

3.2.3. The Capability Approach

The capability approach – pioneered in particular by Sen and Nussbaum (1993) – has the potential to address three issues outlined above: providing a conceptual framework for choice; a clear account of the role of objective vs. subjective factors in measuring choice; and accounting for the role of both job characteristics and worker circumstances in constraining choice. The approach has already been used to inform sociological research on the agency, choices and freedoms of workers, particularly in active labour market policy (Egdell and Graham, 2017; Egdell and Beck, 2020; Fernandez-Urbano and Orton, 2021), although relatively fewer studies apply the

approach to the study of job quality in general (for an exception, see Monteith and Giesbert, 2017). However the key principles of the capability approach, and particularly its emphasis on agency and freedom to human wellbeing, have applications to job quality more broadly. This is because, uniquely across theories of wellbeing, the approach makes a distinction between two things:

- (a) achieved wellbeing, defined as the achievement of valued “beings and doings”, (Functionings), such as the Functioning to have a family, to work in a fulfilling and meaningful job, to participate in civil society, or to be well-nourished.
- (b) freedom to achieve different states of wellbeing (the Capability Set), defined as the freedom to achieve different combinations of the above Functionings.

This distinction has been described as “virtually absent from the [wider] wellbeing literature” (Robeyns, 2017, p. 119). When applied fully, it means that someone with an apparently high level of Functioning achievement may not necessarily be in a high state of wellbeing if they have a narrow Capability Set: lacking the Capability to achieve a wide range of different combinations of Functionings. For example, a woman in a high-paying and successful career may have sacrificed the ability to enjoy family- and life-related Functionings, because – unlike a man – she is unable to achieve all these Functionings simultaneously. Such a job may therefore be accessed in the context of constraint rather than choice. Conversely, someone with a low level of Functioning achievement may be in an even worse position than their current observed state of wellbeing might suggest: a worker in a low-quality job with poor remuneration, limited flexibility and no task autonomy may be doing this because they have few other achievable Functionings other than their chosen work activity.

The capability approach also provides a clear account of the dangers of relying solely on subjective wellbeing and preference satisfaction to infer worker choices. Scholars applying the approach have tended to emphasise the importance of objective rather than subjective factors in determining human wellbeing (e.g. see Green, 2007; Sehnbruch et al., 2020), with Sen himself highlighting how some of the most disadvantaged people may only report high subjective wellbeing due to adaptation to these poor circumstances (e.g. see Sen, 1987, pp. 45–47). It follows that to measure Capability Sets, we need a set of objective indicators which would suggest an individual has a wide Capability Set – such as measures of their command over resources, their

social connections, the range of jobs they could do, and their skills – rather than subjective measures such as preference satisfaction. The approach offers the basis for a framework which acknowledges the role both job characteristics and the circumstances under which jobs are accessed in constraining choices. The worst jobs directly inhibit workers’ achieved and achievable Functionings – stunting human brain development at the earliest life stages (e.g. see Sayer, 2012), and controlling workers’ behaviour through work which is *de facto* compulsory, unsociable and intense regardless of the nature of the employment contract. But workers with few achievable functionings are also severely disadvantaged in their negotiations over access to work in exactly the ways highlighted by Kalleberg (2011): precisely *because* they lack few other opportunities, they lack the power exercise genuine choice and agency. The capability approach is also comprehensive enough to conceive of this choice and agency as extending beyond simply paid work: when measuring worker choice we should indeed critically consider the choice workers have to exercise other work-related Functionings, but we should also consider the range of choices they have over activities outside the paid labour market – such as their ability to achieve “social citizenship” (Laruffa, 2020).

However, on its own, the capability approach does not tell us how to identify indicators for, and measure, the choices available to workers outside their current work activity. Indeed the Capability Set itself cannot be directly measured since it rests on an inherent “counterfactual” (Comim, 2008, p. 173). Therefore while a range of agreed important Functionings have been developed in the literature (for a review, see Qizilbash, 1996), progress in using these to directly evaluate peoples’ freedom to achieve different combinations of these Functionings has been limited. To address this, this article suggests it can be measured indirectly using proxies which are argued to be correlated with having a wide Capability Set. It does this by the introduction of a wider range of resources, such as social capital or time (eg see Burchardt, 2010), into our analysis of human wellbeing to get a sense of peoples’ *potential* achievement.

3.3. Data and Methods

3.3.1. *Understanding Society and the UK Quality of Work Index*

In order to identify indicators of worker choice, this article uses data from Understanding Society – a large-scale representative survey of UK households, started in 2009. The survey has been used in a wide number of studies of job quality (e.g. see Warren, 2015; Wheatley, 2017). In common with other surveys a range of weights are used to correct for non-response bias and panel attrition, meaning the survey is representative of the UK population. The data from this survey has recently been used to develop a synthetic index of job quality in the UK, called the UK Quality of Work (QoW) index (Stephens, 2023a, 2024) which can enable us to answer the research questions set out in the introduction.

Figure 3.1 lists the indicators, dimensions and weights of the index. The indicators comprise most of the measures used across the literature on multidimensional job quality – including data on the pay of employees and self-employed workers, working conditions, task autonomy, pension coverage, length of continuous service, managerial responsibilities, employee-oriented flexibility, hours of work, health and safety and long-term employment prospects. Three of these indicators (Excessive Hours and the two Earnings indicators) include data on all paid jobs, and not just main jobs. The index has been created for five waves of data from Wave 4 to Wave 12, covering the period 2010-11 to 2020-21. There are 108,973 unweighted (non-independent) respondents in the index, ranging from 23,759 unweighted (independent) responses in wave 4 to 15,656 unweighted (independent) responses in wave 12. For further details and descriptive statistics, see the online Appendix (Table G.1). This article compares workers' job quality scores in the QoW index with their achievement on a range of choice indicators, created using the same survey.

3.3.2. *Measuring Worker Choice: Identifying Proxies for the Capability Set and their Relation to Forms of Capital*

As discussed earlier, the Capability Approach on its own does not provide a clear basis for identifying aggregating, weighting and categorising these indicators. To do this, this article draws from Bourdieu's (1983) theory of capitals to group these indicators into three dimensions. Both the capability approach and the theory of capitals also

have several commonalities, particularly their sceptical account of the role of adaptation and stated preferences – with Bourdieu (1998) arguing that new and flexible forms of work “placed under the sign of freedom” have the potential to constrain rather than enhance workers’ choices in modern precarious labour markets. The theory of capitals has already been operationalised to measure the wellbeing of a range of different types of workers, particularly immigrant communities (see in particular Harrison et al., 2022; Nee and Sanders, 2001; Vershinina et al., 2011), and some scholars have already integrated the theory with the capability approach (Bertin and Sirven, 2006; Hart, 2014; Molla and Pham, 2019). In this article, it is used for the specific purpose of informing the identification and aggregation of indicators of workers’ choices.

The theory argues that three forms of capital are important in determining individuals’ advantage or disadvantage in societies. While these forms of capital are argued to be interchangeable with each other, the most important of these is economic capital. Table 3.1 contains a list of indicators proposed as proxies for the Capability Set, together with details of their calculation, weights and coverage and their relation to the three forms of capital, as follows:

Economic capital is described by Bourdieu (1983, p. 243) as capital “which is immediately and directly convertible into money.” It also includes “property rights.” In line with existing applications of the theory (Nee and Sanders, 2001), this article places particular emphasis on the role of the household and family, and not merely the individual, in determining workers’ choices: economic capital therefore comprises not just individual income and assets, but income from other household members. Individuals with a large amount of economic capital will tend to live with other household members whose income is high up the equalised income distribution (EC.1), and live in households which own housing assets (EC.2). They will also themselves contribute a large share of the income of their household, since this is indicative of a family model in which they are the breadwinner, and thus have more power within the household (Loretto and Vickerstaff, 2013, pp. 72–73). Importantly, these measures comprise not just labour earnings, but income from investments, assets, pensions and private benefits.

Social capital relates to the strength of one's connections with networks and family. Those with more such connections likely have a wider range of labour and non-labour activities they could undertake, in addition to their chosen work activity, being able to take advantage of connections to progress into the jobs desired. This is captured using their family's socio-economic classification, measured using the highest NS-SEC of either parents (or, if missing, the individual worker's own first job) (SC.1) (for a discussion of the NS-SEC schema see Williams, 2017). It is also captured using an important "spatial dimension" (Kloosterman, van der Leun and Rath, 1999, pp. 258–259) of the social cohesion of the local neighbourhood they live in (SC.2). Lastly, this article also draws from literature which emphasises the importance of work histories data to measure capital (see in particular Nee and Sanders, 2001) by developing two indicators drawn from longitudinal data: the number of non-employment spells since the previous wave (SC.3); and workers' "QoW Capabilities", a composite indicator taking both the range of QoW scores achieved in their working life (highest minus lowest) added to their highest achieved QoW score (SC.4). This is designed to capture two twin concepts in the capability approach: wellbeing achievement, but also a measure of the freedom to achieve different kinds of jobs with different potential uses throughout their life course.

Finally, **cultural and human capital** takes three forms: embodied (in the form of knowledge), objectified (in terms of the possession of cultural goods) and institutionalised (in the form of qualifications). It was originally conceived exclusively as "cultural capital", and much like associated concepts in the capability approach cannot be reduced to human capital (for a discussion, see Robeyns, 2006), but this article follows Light (2004, p. 145) in broadening the concept to also include human capital. It is designed not just capture formal knowledge, but also general know-how and thus the ability to participate in society. Workers with more cultural and human capital not only have qualifications, but are also confident, connected and active participants in society and thus able to draw from this capital to achieve many other functionings. This article captures the concept using three measures: their highest qualifications (CC.1), proxies for perceived self-efficacy from the General Health Questionnaire (CC.2), and participation in civil and social organisations (CC.3).

The majority of these indicators have full coverage across all five waves of the QoW index, but some of them are only available in Wave 12 (2020-21). Most of the analysis in this article is carried out using the full range of indicators as at Wave 12, but to test the robustness of these conclusions this article also uses pooled data from all the waves using the more limited number of indicators. Principal component analysis (see online Appendix, Figure G.1 and Table G.4) has found that the indicators each have explanatory power, with a greater spread of variance explained by a wider range of the variables than is often found in such analyses.

Figure 3.1. Indicators, dimensions and percentage weights of the UK Quality of Work Index. Figure reproduced from Stephens (2024).

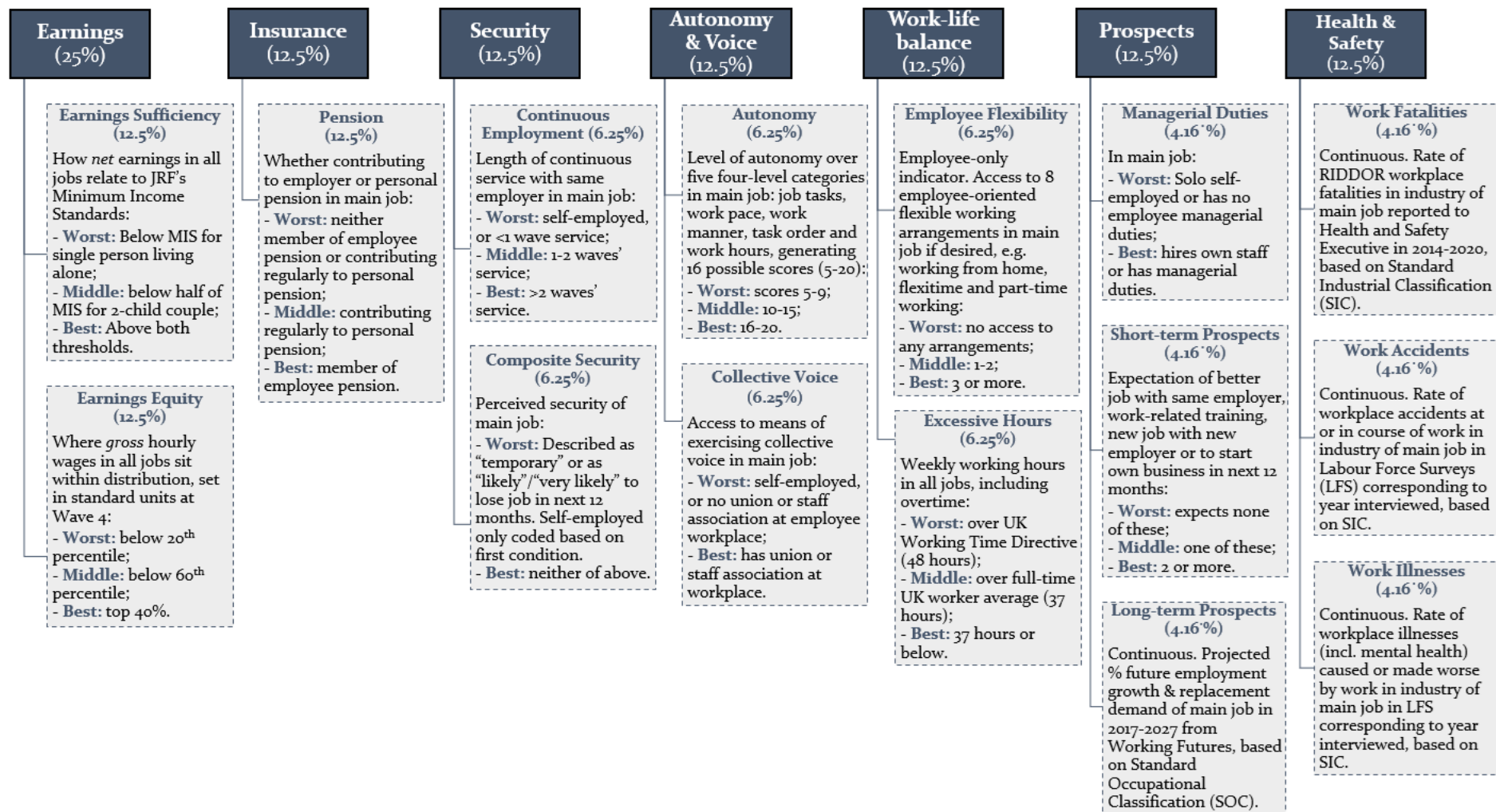


Table 3.1. Indicators and weights of proxies for the Capability Set, split according to the forms of capital they represent.

Form of capital (weight)	Indicator (weight in wave 12)	Description	Coverage
1 - Economic Capital (33.33%)	EC.1 - Equivalised household income distribution of other household members (excl. benefits) (11.11%)	Continuous. Captures respondent's potential to draw from other household members' resources to achieve different states of wellbeing. Measured using percentile rank of the net income of the rest of the respondent's household, excluding the individual's own labour earnings and welfare benefits. This is equivalised on the OECD scale and then ranked (between 0 and 1) based on its ranked position in the income distribution of all respondents interviewed in that wave. Use of percentile ranks has effect of narrowing difference of those further up the distribution, similar to converting income on a log scale.	All waves
	EC.2 - Individual share of household income (11.11%)	Continuous. Captures individual's own command of household resources, and thus their strength in negotiations over resources and freedoms within their household. Captured using individual's percentage share of net equivalised household income (incl. benefits) using their own net income (comprising labour earnings, investments, private benefits and pension income).	All waves
	EC.3 - Housing assets (11.11%)	Categorical. Tenure of the household the individual lives in, used as a proxy for asset ownership (as a limitation, this includes individuals who do not own the asset but live with family who do). Distinguishes between: <ul style="list-style-type: none"> 0 = Private rented (incl. social home); 0.5 = Owned with mortgage; 1 = Owned outright. 	All waves
2 - Social Capital (33.33%)	SC.1 - Parental or first job NS-SEC (8.33%)	Categorical. Highest National Statistics-Socio-Economic Classification (NS-SEC) of either parent when respondent was aged 14. Where this is missing, the NS-SEC of the individual's first job is used. Has eight categories from higher management (1) to routine (8). Categories are inverted and converted to a 0-1 scale.	All waves
	SC.2 - Neighbourhood social cohesion (8.33%)	Categorical. Social cohesion scale of respondent's household's neighbourhood using items from the Project on Human Development in Chicago Neighbourhoods (PHDCN). Has 17 levels. Rescaled on a 0-1 scale.	Wave 12 only
	SC.3 - Non-employment spells since last wave	Categorical. The number of reported non-employment spells (including inactivity and unemployment) since the wave immediately prior to the one interviewed.	All waves

	(8.33%)	Because of the low number of high values, converted into a categorical variable which distinguishes between: <ul style="list-style-type: none"> 0 = 0 spells; 0.5 = 1 spell; 1 = 2 or more spells. 	
	SC.4 - Quality of Work capabilities (8.33%)	Continuous. A composite of two things from longitudinal data: (a) the highest achieved QoW score from all previous waves and (b) the range of QoW scores (highest minus lowest) from all previous waves. Designed to capture both highest Functioning achievement, but also the freedom to achieve different combinations of Functionings. Both numbers rescaled on the same scale and then added together with equal weighting. Missing for respondents only interviewed in one wave.	Wave 12 only
3 - Cultural & Human Capital (33.33%)	CC.1 - Highest qualification (11.11%)	Categorical. Highest educational qualification achieved. Distinguishes between: <ul style="list-style-type: none"> 0 = No qualifications; 0.33 = GCSE and “other”, or equivalent; 0.66 = A-Level or equivalent; 1 = Degree, other higher degree, equivalent, or higher. 	All waves
	CC.2 - Perceived self-efficacy (11.11%)	Categorical. Designed to capture individuals’ perception of their own ability to shape their lives and thus exercise their own agency/freedoms. In the absence of any direct measures of self-efficacy in Understanding Society, uses data on distress from the General Health Questionnaire (GHQ), which been found to be correlated with self-efficacy. Questions placed on a Likert scale from 0 (the least distressed) to 36 (the most distressed). Scores inverted and converted to a 0-1 scale.	All waves
	CC.3 - Civil and social participation (11.11%)	Categorical. Designed to capture potential connections individuals may have to cultural, civil and social organisations. Uses a set of binary questions on whether respondents “join in the activities” of a set of 16 different organisations “on a regular basis”, ranging from political parties to voluntary services groups, sports clubs and religious/church organisations. Responses summed together and, because of the low number of high values, then categorised to distinguish between: <ul style="list-style-type: none"> 0 = Participates in 0 organisations; 0.5 = Participates in 1 organisation; 1 = Participates in 2 or more organisations. 	Waves 6 and 12 only

3.4. Findings

3.4.1. *The Relationship between Worker Choice and Job Quality: a General Picture*

This article now turns to research question 1, and explores the general relationship between worker choice and their job quality. For much of the subsequent analysis of this article, the working population were split into two sets of equally-sized quintiles: one set of quintiles based on their position in the distribution of QoW index scores; and another based on their position in the distribution of Capability Set (CS) scores. Figure 3.2 shows a cross-tabulation of workers' scores on each quintile for workers represented at Wave 12 (2020-21). Supplementary data tables show quintile-by-quintile cross-tabulations separately for economic (Figure 3.5), social (Figure 3.6) and cultural and human (Figure 3.7) capital in Wave 12; and scatterplots show the distributions for Wave 12 and for all waves pooled (Figure 3.8); and for each type of capital in Wave 12 (Figure 3.9).

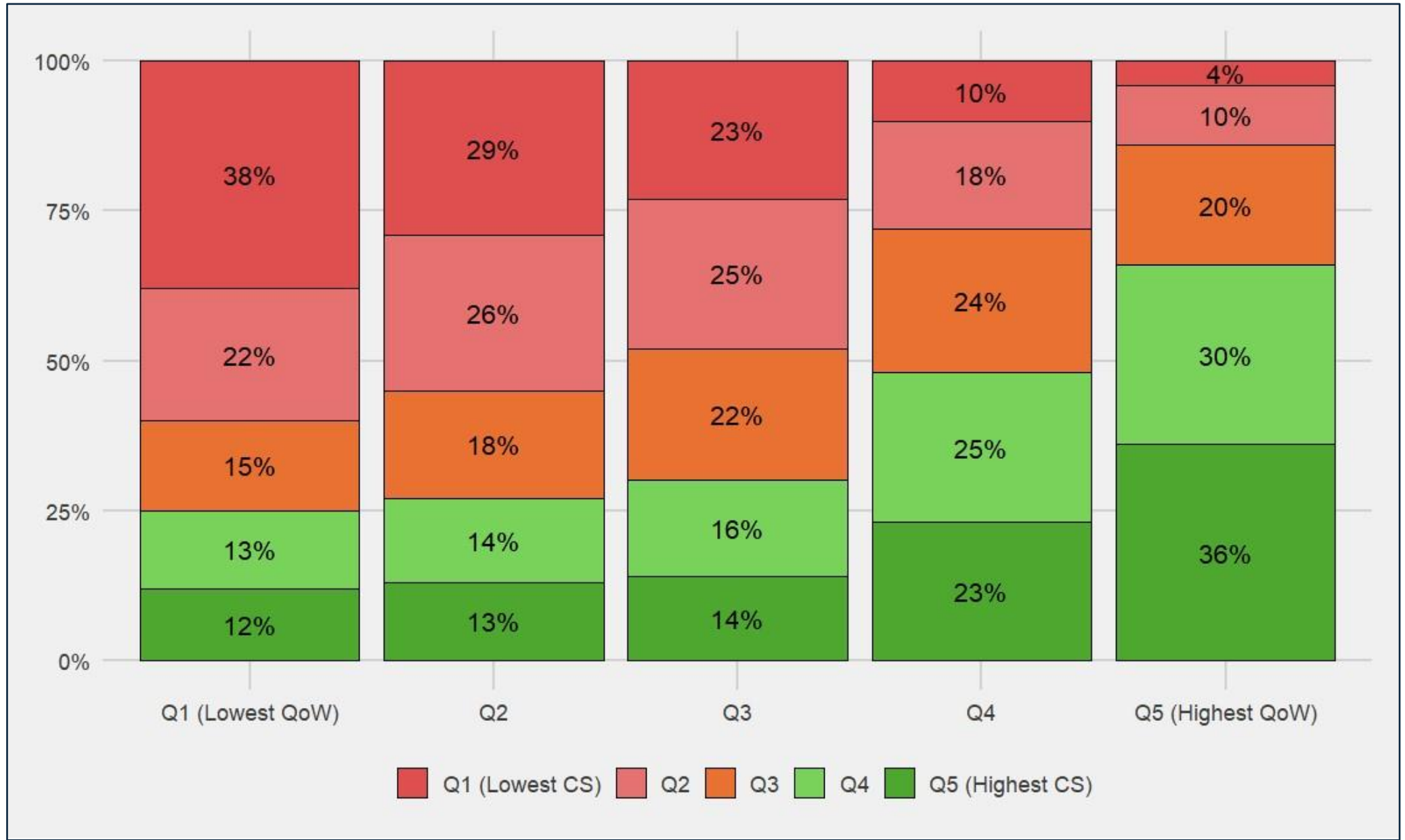
Overall, the analysis found a clear relationship between low job quality and constrained choices. Those in the worst jobs were significantly more likely to also be in the lower end of the distribution of CS scores – nearly 4 in 10 (38%) of those in the lowest-quality fifth of jobs were also in the bottom fifth of the CS distribution. The scatterplots (Figure 3.8) show there was a large distribution of workers with *both* high-quality jobs *and* wide choices (high QoW scores, high CS scores) and *both* low-quality jobs *and* constrained choices (low QoW scores, low CS scores). The difference was even more stark using data from the five waves pooled together, using only the indicators available for all waves (see Figure 3.9). In short, those in low-quality jobs appeared to have limited wider choices, whilst those in high-quality jobs had a wide range of different life- and labour market choices.

However, the relationship was more heterogeneous for some important sub-groups of workers. Both the cross-tabulations and the scatterplots show the relationship between QoW and CS scores was not entirely linear: there was a smaller yet still significant proportion of workers in low-quality jobs with a wide range of choices (low QoW, high CS). This suggests that an important sub-group of workers with low job quality may indeed access this work as a free choice, doing so in the context where they likely possess other opportunities inside and outside the labour market. However – in

line with what much existing qualitative research suggests – these were very much a minority of this sub-population, with most of those in low-quality jobs appearing to have few other options. By contrast, only a tiny minority of workers in high-quality jobs had narrow choices. This suggests that the highest-quality jobs are the preserve of those with a much wider range of work opportunities. This is consistent with what the normative theories discussed in the previous section would suggest: on the one hand, these jobs in themselves may directly enable the achievement of a wider range of capabilities, and thus provide workers with more choices; on the other, access to these jobs may be restricted predominantly to those with these freedoms in the first place, through the imposition of barriers associated with these workers' economic, social and cultural and human capital. Future research would need to establish the direction of any causal relationship, however.

There were also some notable differences in the relationship between job quality and CS scores by the type of capital. Broadly speaking, social capital was the most unequally distributed, followed by economic capital and then cultural & human capital (Figures 3.5-3.9). Indeed supplementary analysis (see online Appendix, Figure G.2) found a positive (albeit weak) correlation between many QoW index indicators and measures of civil participation and neighbourhood cohesion. If anything, this relationship between QoW and social capital was stronger than existing literature on capitals might suggest. There is a tendency in some research on capitals to argue that people in poverty – and, by implication, the most disadvantaged workers – might possess stronger amounts of within-community connections, particularly social capital, which they can “trade” for economic and other forms of capital (see in particular Light, 2004, p. 145). These findings suggest that this is either not the case for UK workers, or that it would need to be captured using alternative, unavailable, variables which would be uncorrelated with the measures used here.

Figure 3.2. Quintile-by-quintile cross-tabulation of workers' Capability Set scores by their Quality of Work scores, Wave 12 (2020-21).



3.4.2. Heterogeneity of Choices: Workers in Non-Standard Employment Relationships

This article now addresses question 2, and looks into the situation of workers in non-standard employment relationships, who have been at the forefront of much policy debate on worker choice and constraint. Three groups of non-standard workers in Wave 12 (2020-21) are compared, based on their self-reported main job: gig economy workers, the self-employed, and those who report currently using a zero hours contract. These are compared with the situation of the rest of the working population, comprising five further groups: employees in each quintile of the QoW distribution. Figure 3.3 shows boxplots of the distribution of CS scores of these eight groups of workers. The appendix contains a series of linear regressions of CS scores (Table 3.3); together with boxplots for economic (Figure 3.10), social (Figure 3.11) and cultural & human (Figure 3.12) capital for the same eight groups of workers. Figure 3.4 provides a more detailed breakdown of workers' scores in each CS indicator, comparing the weighted mean indicator scores for five of these groups: the workers in non-standard relationships and employees in the best (top 20%) and worst (bottom 20%) of jobs.

On average, workers in these non-standard employment relationships had more constrained choices than employees in the highest-quality jobs. Those on zero hours contracts tended to be in the worst position of all workers in non-standard employment relationships. However, the size of the difference depended on the form of capital and the underlying CS indicators. Non-standard workers' economic capital scores were particularly low, with the average zero hours and gig economy worker in as poor a position as employees in the bottom 20% of jobs. Across all CS indicators, all three groups of workers tended to possess CS scores closer to those of the bottom 20% than the top 20% of employees, although the small sample size for gig economy and zero hours workers makes it challenging to make a more definitive judgment. There was a notable difference between these workers in their scores on the non-employment spells indicator, with those on zero hours contracts scoring particularly poorly compared and gig economy workers and the self-employed particularly well. This suggests those on zero hours contracts tended to be much more likely to be on the margins of paid employment and worklessness. The relatively better performance of gig economy and self-employed workers on this same indicator was also consistent

with national statistics, since there is evidence that workers in these employment relationships rarely report being completely out of paid work – they are generally seen as “sticky” forms of employment relations which are difficult to get out of, regardless of how low one’s actual hours of paid work are (e.g. see Blanchflower, 2019).

As in the previous section, there was also a striking level of heterogeneity in the circumstances of some of these workers. This was especially true for economic capital and, within this, for the self-employed. Indeed, self-employed workers possessed both the highest *and* the lowest economic capital scores in the distribution (Figure 3.10). This suggests that neither extreme of the characterisation of self-employed workers is quite correct: they can neither be described as uniformly entrepreneurial workers with a wide range of freedoms; nor can they be regarded as homogeneously disadvantaged. This is consistent with what some previous analysis of national statistics has suggested about the composition of the self-employed, which has tended to characterise them as historically high-earning and entrepreneurial, and often hiring their own staff, but has seen the more recent influx of often solo self-employed workers as more disadvantaged and with few other labour market opportunities (see e.g. Giupponi and Xu, 2020). It is also likely compatible with Henley’s (2022) aforementioned analysis of self-employed workers using the Family Resources Survey, which found self-employed workers in the tenth decile reported higher incomes than statistically-matched equivalent employees but those in lower deciles reported lower incomes and “slightly higher [material] deprivation” than equivalent employees (Henley, 2022, p. 1413).

In other respects, however, this heterogeneity may itself simply be reflective of the general heterogeneity seen across the working population, discussed in the previous section of this article. As the figures show, employees in the lowest-quality jobs tended to possess a much wider variety of CS scores, whereas those in the top-quality jobs bunched towards a much more uniform set of scores. The data from these past two subsections therefore seems to support a general rule of thumb: *the lower the job quality, or the more non-standard the employment relationship, the greater the heterogeneity in worker choices.*

Figure 3.3. Boxplots of the distribution of Capability Set scores (rescaled on a 0-100 scale) of eight groups of workers in Wave 12 (2020-21). Note that workers are placed into mutually-exclusive categories based on workers' main jobs: gig economy and zero hours workers who report being employees or self-employed are removed from the employee/self-employed populations.

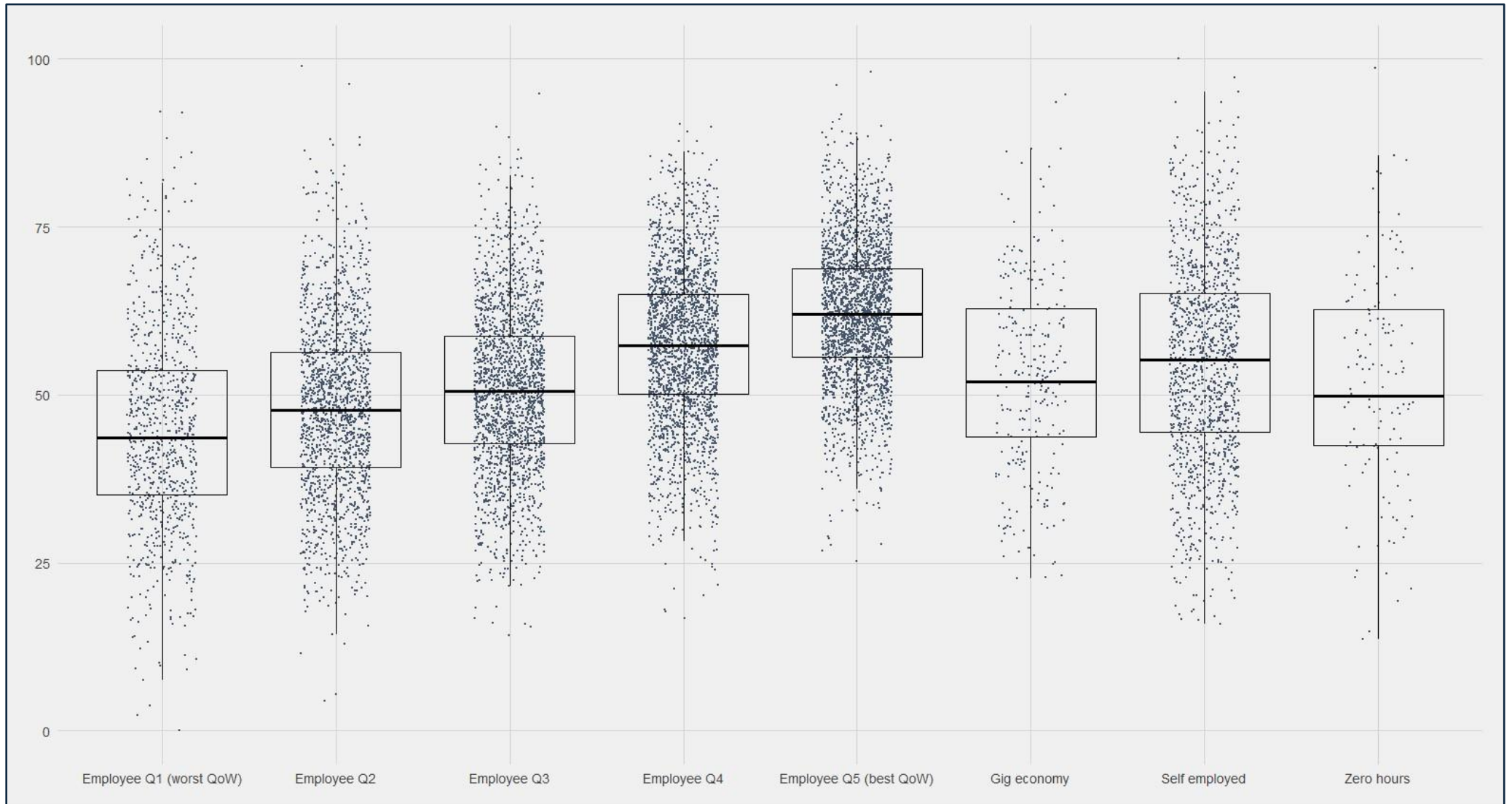
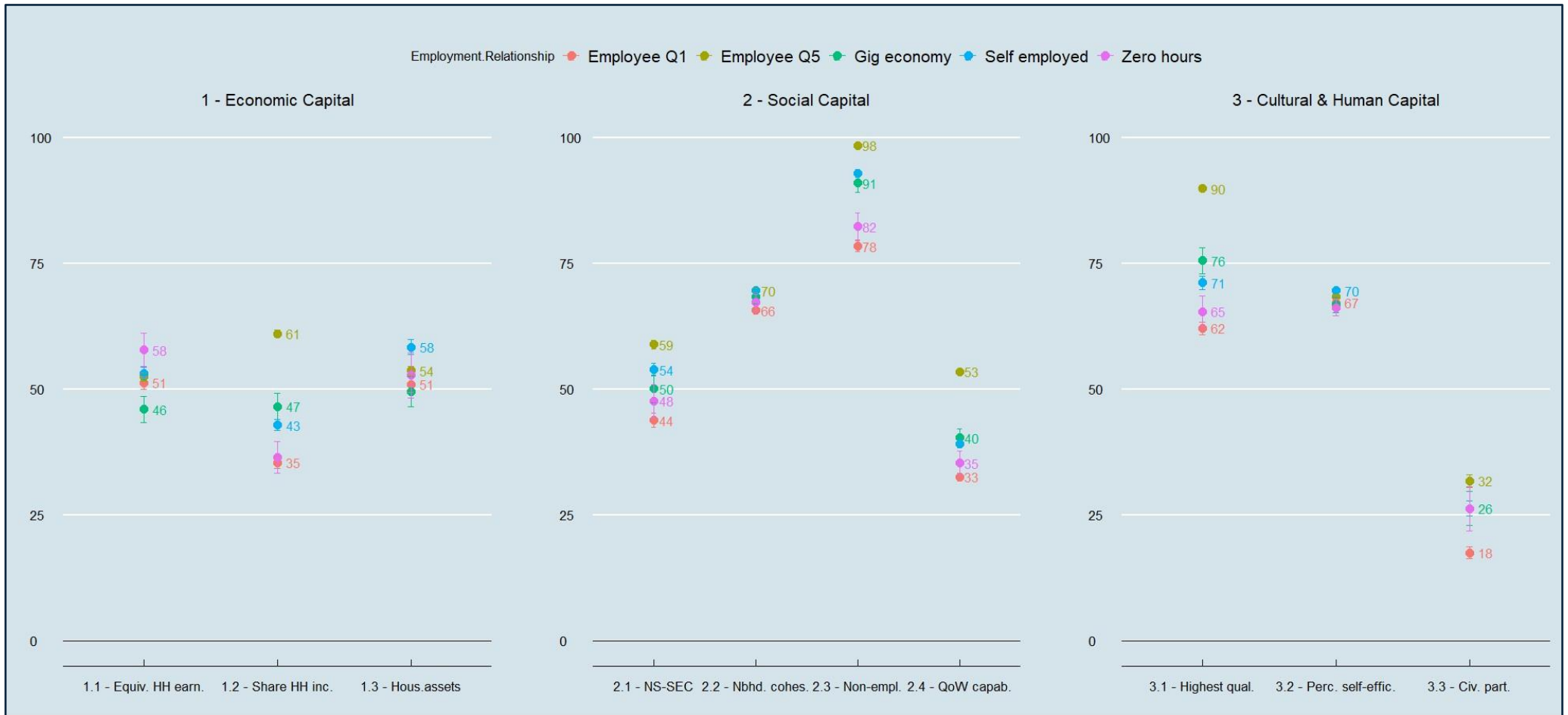


Figure 3.4. Weighted means of the Capability Set indicator scores (rescaled on a 0-100 scale) of eight groups of workers in Wave 12 (2020-21). Standard errors of the weighted means in error bars.



3.4.3. The Most Marginalised Workers: the Circumstances of those in Bad Jobs with Limited Choices

The analysis of the preceding subsections showed that the UK working population comprised three distinct groups. In order of size as at Wave 12 (2020-21), these consisted of the following:

- (a) **“High-quality job, wide range of choices”**: those in high-quality jobs who appeared to possess a wide range of freedoms and choices about the work and other activities they could undertake;
- (b) **“Low-quality job, constrained choices”**: those in low-quality jobs with seemingly little choice about the labour and non-labour market activities they could undertake;
- (c) **“Low-quality job, wide range of choices”**: workers in low-quality jobs who appear to have other opportunities inside and outside the labour market.

To answer the third research question, Table 3.2 sets out some descriptive statistics on the circumstances of three groups of workers (for more detailed ethnicity and region breakdowns, see the online appendix, Tables B.3 and B.4). These are grouped according to whether they were in the best or worst 40% of jobs and/or choices in the distribution (i.e. whether they were in the bottom/top 40% of the QoW or CS distributions). Using these criteria, 12% of the working population could be characterised as working in a low-quality job while having constrained choices. This constituted the majority of workers in low-quality jobs; only a minority of those in low-quality jobs appeared to do so as a genuine choice.

The data suggests all three groups of workers were remarkably distinct from each other. Compared with the workers in high-quality jobs with a wide range of choices, those in low-quality jobs with limited choices were disproportionately female; and over one in five (22.5%) had non-white UK ethnicity. They were more likely to have a long-standing illness, impairment or disability, possess within-household caring responsibilities, work in the gig economy, be self-employed or use a zero hours contract. They were also slightly more likely to live in the north of England, Northern Ireland or Wales. They had more children than those with low-quality jobs and wide choices, but fewer than those in high-quality jobs and wide choices. Consistent with the findings of the previous section, workers in non-standard employment

relationships split between the two subgroups of workers in low-quality jobs: those with wide choices; and those with narrow choices. The self-employed were very highly represented in the former group, and gig economy and zero hours workers were distributed more evenly between them. The former group also tended to be considerably older and less likely to live in northern England, Northern Ireland and Wales. In short, they consisted of an older group of workers with fewer children, residing disproportionately in southern England and Scotland.

The disproportionate distribution of family and caring responsibilities between these three groups emerged as a key issue. It should be a focus for future research, and will aid in identifying the most marginalised workers. In addition to emphasising the freedom aspects of wellbeing through the concept of the Capability Set, the capability approach has also highlighted the important role of personal, social and environmental conversion factors in changing the rate at which a given set of resources are converted into wellbeing. This aspect of the approach has been particularly influential in sociology (see especially Monteith and Giesbert, 2017, p. 820). It follows that all else held equal, workers with greater responsibilities should require higher-quality work to achieve the same level of work-related wellbeing as those without these same responsibilities. It is therefore concerning that some of the most marginalised workers in the UK possessed more rather than fewer conversion factors: they were much more likely to have additional caring responsibilities, or have a long-standing illness, impairment or disability of their own. These factors in themselves will increase the negative impact of low-quality work on their wellbeing.

Table 3.2. Descriptive characteristics of three subgroups of workers as at Wave 12 (2020-21): those in the top 40% of the distribution of *both* QoW and CS scores (“High-quality job, wide choices”); the bottom 40% for *both* QoW and CS scores (“Low-quality job, constrained choices”); and in the bottom 40% of QoW but top 40% of CS scores (“Low-quality job, wide choices”). Standard errors of the means in parentheses. More detailed breakdowns in online appendix, Table G.3.

		“High-quality job, wide choices” (top 40% QoW and CS)	“Low-quality job, wide choices” (bottom 40% QoW, but top 40% CS)	“Low-quality job, constrained choices” (bottom 40% QoW and CS)
Weighted proportion of paid workers (%) and no. respondents		18.0% (2,640)	5.3% (777)	12.0% (1,757)
Demographics	Age (#mean)	47.3 (0.31)	54.3 (0.7)	46.9 (0.51)
	Female (%)	50.7%	55.7%	55.9%
	Lives in northern England, Northern Ireland or Wales (%)	33.0%	27.7%	36.9%
	Non- white UK ethnicity (%)	17.1%	14.4%	22.5%
Family and care	Num. dependent children (#mean)	0.79 (0.03)	0.46 (0.05)	0.60 (0.04)
	Has long-standing illness, impairment or disability (%)	21.9%	24.6%	32.2%
	Has within-household caring responsibilities (%)	3.7%	4.7%	8.0%
Employment relationship	Gig economy (%)	0.01%	5.9%	4.7%
	Self-employed (%)	1.7%	46.7%	25.3%
	Zero hours contract (%)	0.00%	2.3%	3.0%

3.5. Conclusions

Using the capability approach, and informed by Bourdieu's theory of capitals, this article has carried out some of the first quantitative analysis of the range of choices different workers have in the UK labour market, and how these relate to the quality of workers' jobs and the nature of their employment relationships. It advances an objective rather than subjective definition of worker choice and constraint; and conceptualises constraint as arising not just from the nature of jobs themselves through mechanisms such as algorithmic control, but also from the circumstances of the workers accessing the jobs. To capture this, a range of individual, family and household data on everything from economic assets and income, social connections, human capital and civil participation are used, to make an assessment of how much choice different groups of workers really have over the work they could do.

In answer to RQ₁, this article finds a strong relationship between low-quality work and constrained choices: the majority of those in the worst-quality jobs appear to have limited alternative choices over other labour or non-labour market activities. However it has also found notable heterogeneity in the working population for those at the lowest end of the labour market, but notably less heterogeneity for those in the highest-quality jobs. In answer to RQ₂, it has found those in non-standard employment relationships tend to have signs of more constrained choices than employees in the highest-quality jobs, but again identifies a high degree of heterogeneity – especially for self-employed workers. The findings from these two RQs support a general conclusion: that the lower-quality the job and/or the more non-standard the employment relationship, the greater the variance in worker choices.

Finally, to address RQ₃, the article identifies the size and distinguishing characteristics of the most marginalised workers in the UK labour market: those in the lowest-quality jobs with constrained choices. This group comprises over one in ten UK workers. Compared with those in the highest-quality jobs with the widest choices it is disproportionately female, non-white, ill or disabled, and has considerably more caring responsibilities. Overall, this quantitative data supports evidence from many qualitative studies of worker choices (Abada, Hou and Lu, 2014; Beck and Williams, 2015; Bales, Bogg and Novitz, 2018; Briken and Taylor, 2018; Fernandez-Urbano and

Orton, 2021) – suggesting that some of their findings may be applicable to the general population of workers. This paves the way for further research to fill some of the remaining gaps in research: doing more to identify those workers with the most constrained choices, and devise policies to improve both their working conditions and their lived experience.

Supplementary Tables and Figures

Figure 3.5. Quintile-by-quintile cross-tabulation of workers' **Economic Capital** scores by their Quality of Work scores, Wave 12 (2020-21).

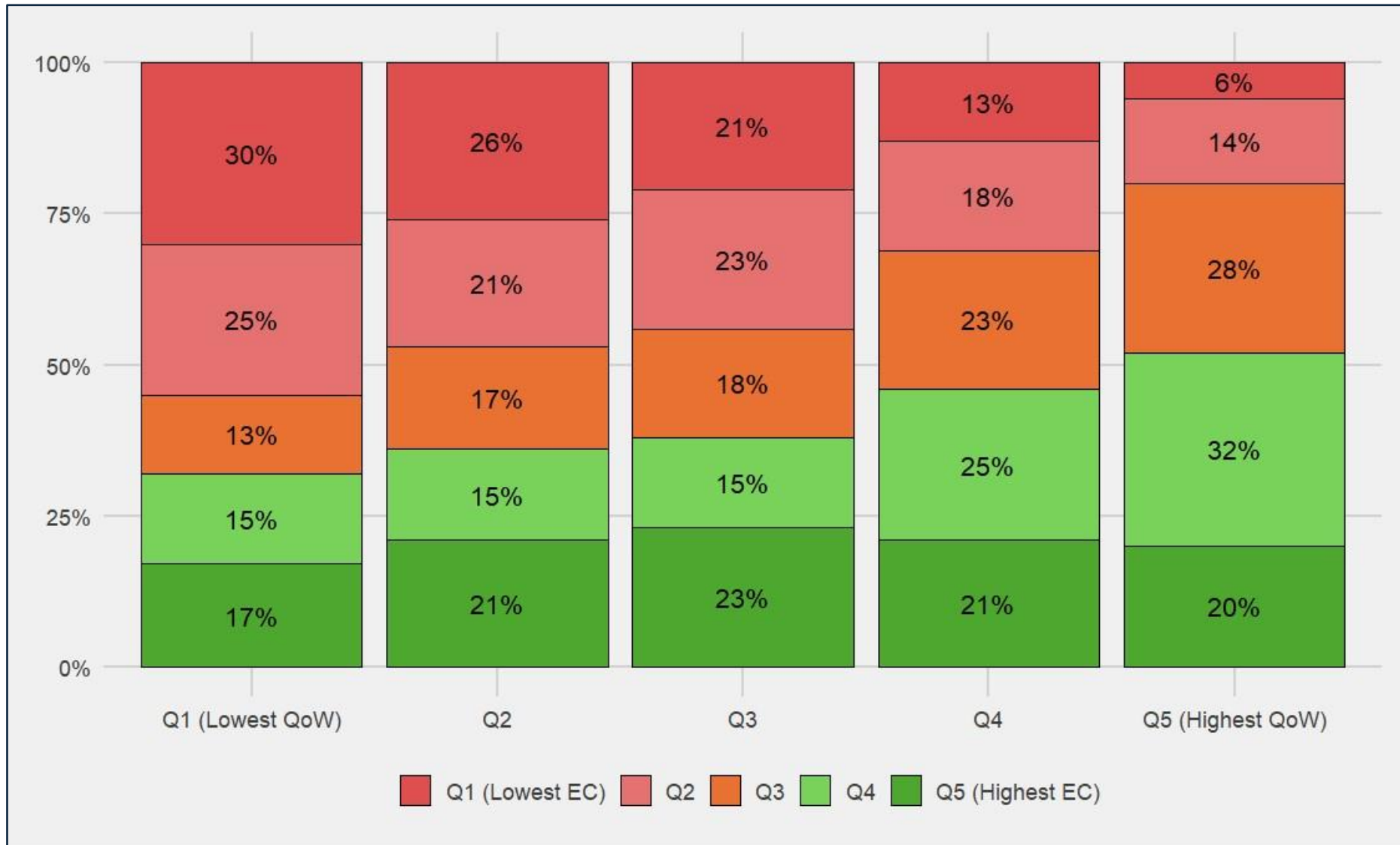


Figure 3.6. Quintile-by-quintile cross-tabulation of workers' **Social Capital** scores by their Quality of Work scores, Wave 12 (2020-21).

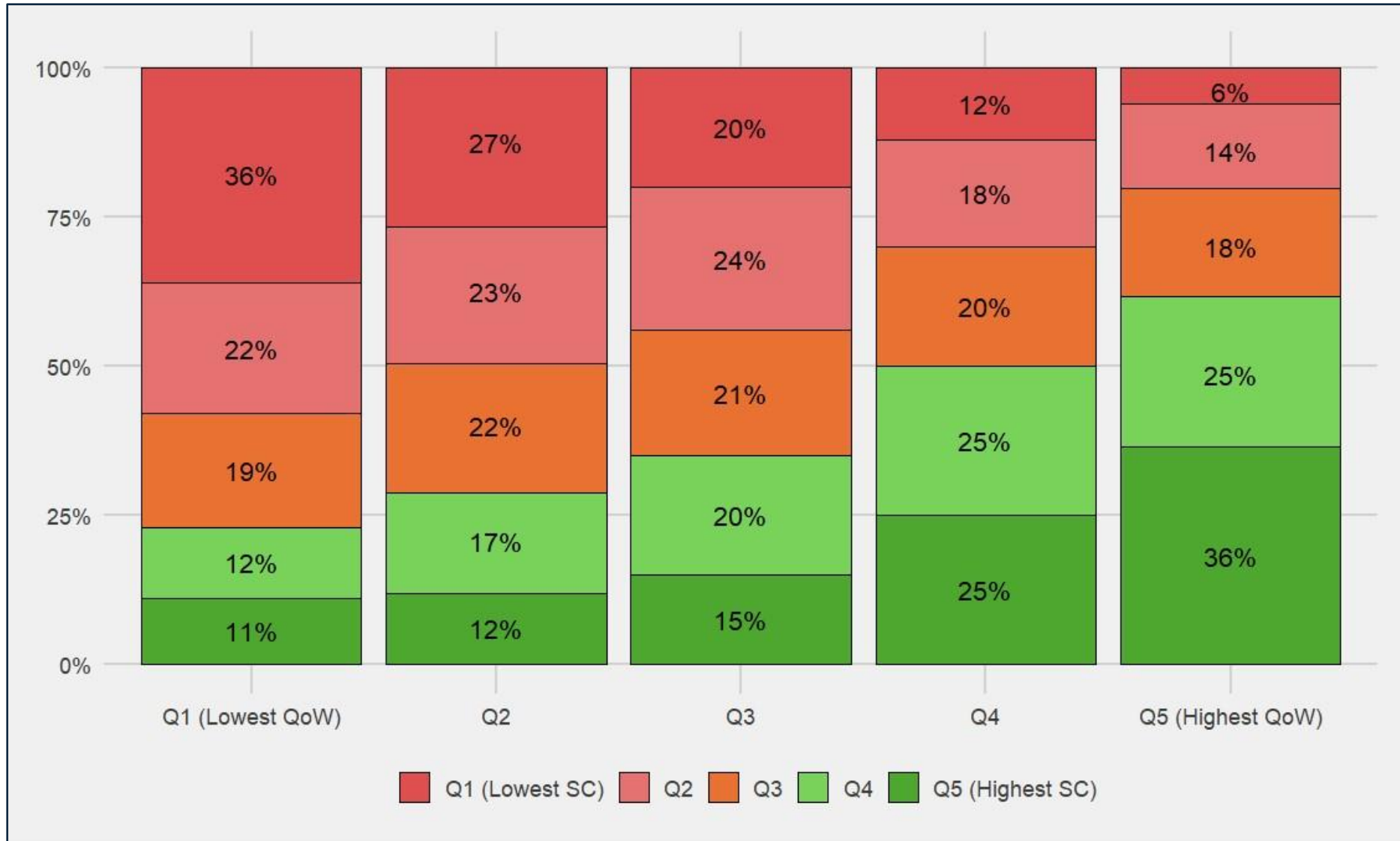


Figure 3.7. Quintile-by-quintile cross-tabulation of workers' **Cultural & Human Capital** scores by their Quality of Work scores, Wave 12 (2020-21).

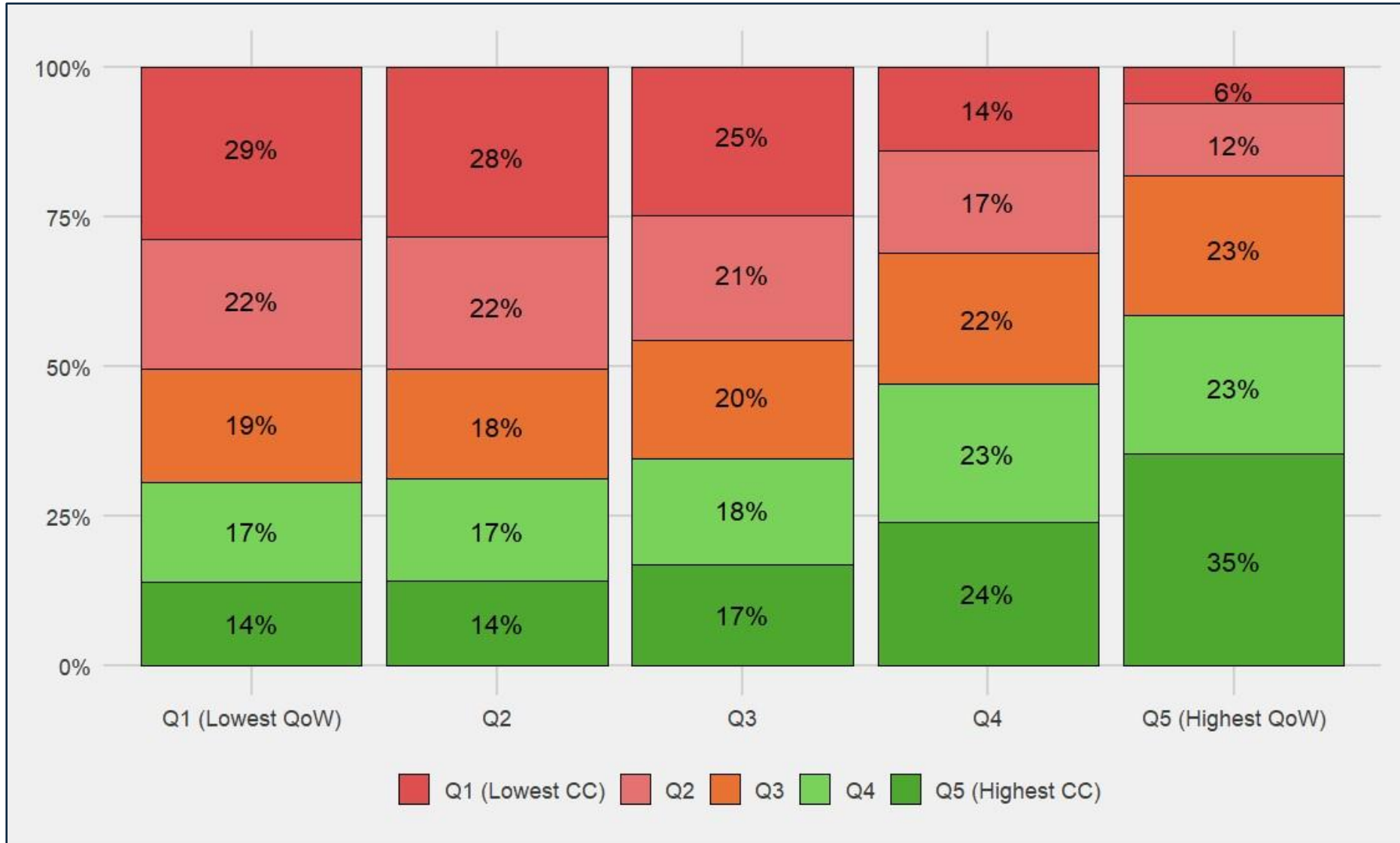


Figure 3.8. Scatterplot of relationship between workers' Quality of Work and Capability Set scores for Wave 12 and all waves. Scores rescaled on the same 0-100 scale to ease comparability. Note that the all waves' data excludes a number of indicators, as described in Figure 1.

Figure 3.8a – Wave 12 (2020-21).

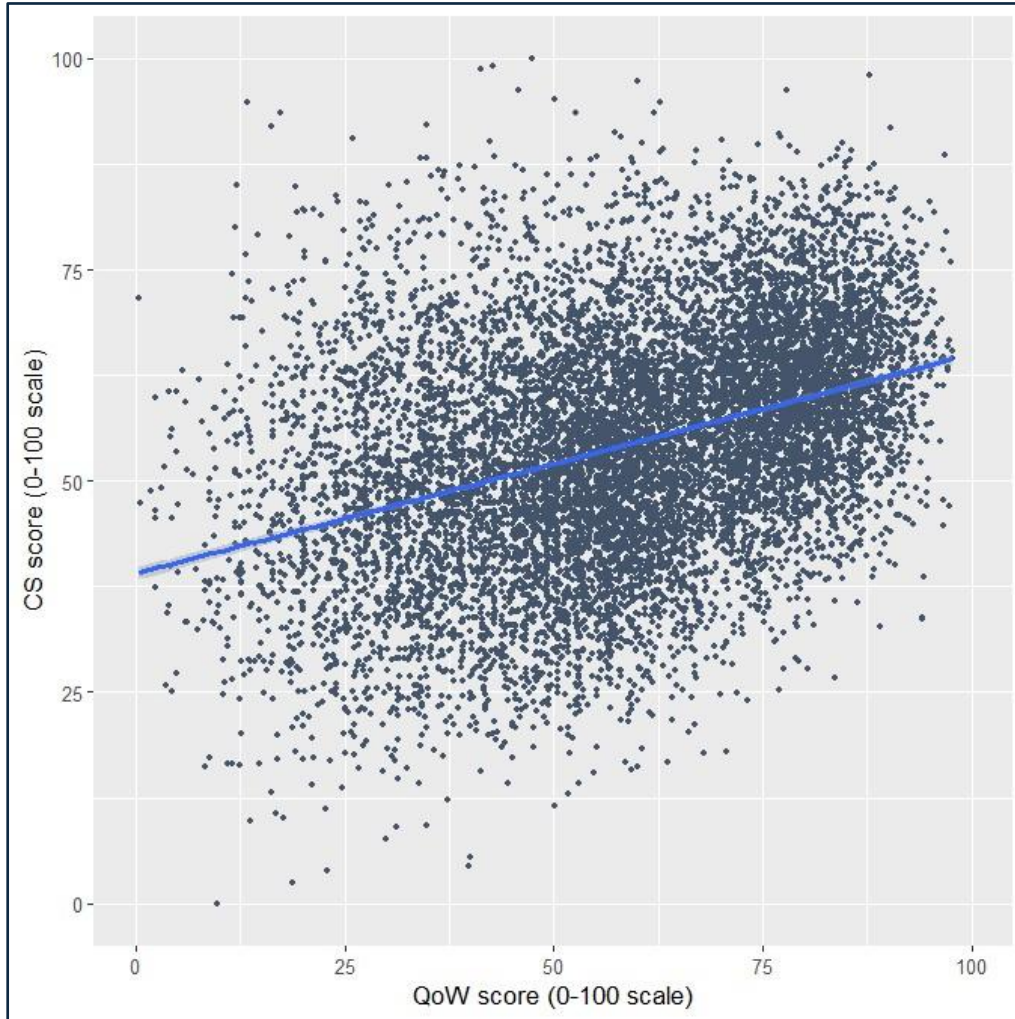


Figure 3.8b – All waves pooled (2012-21).

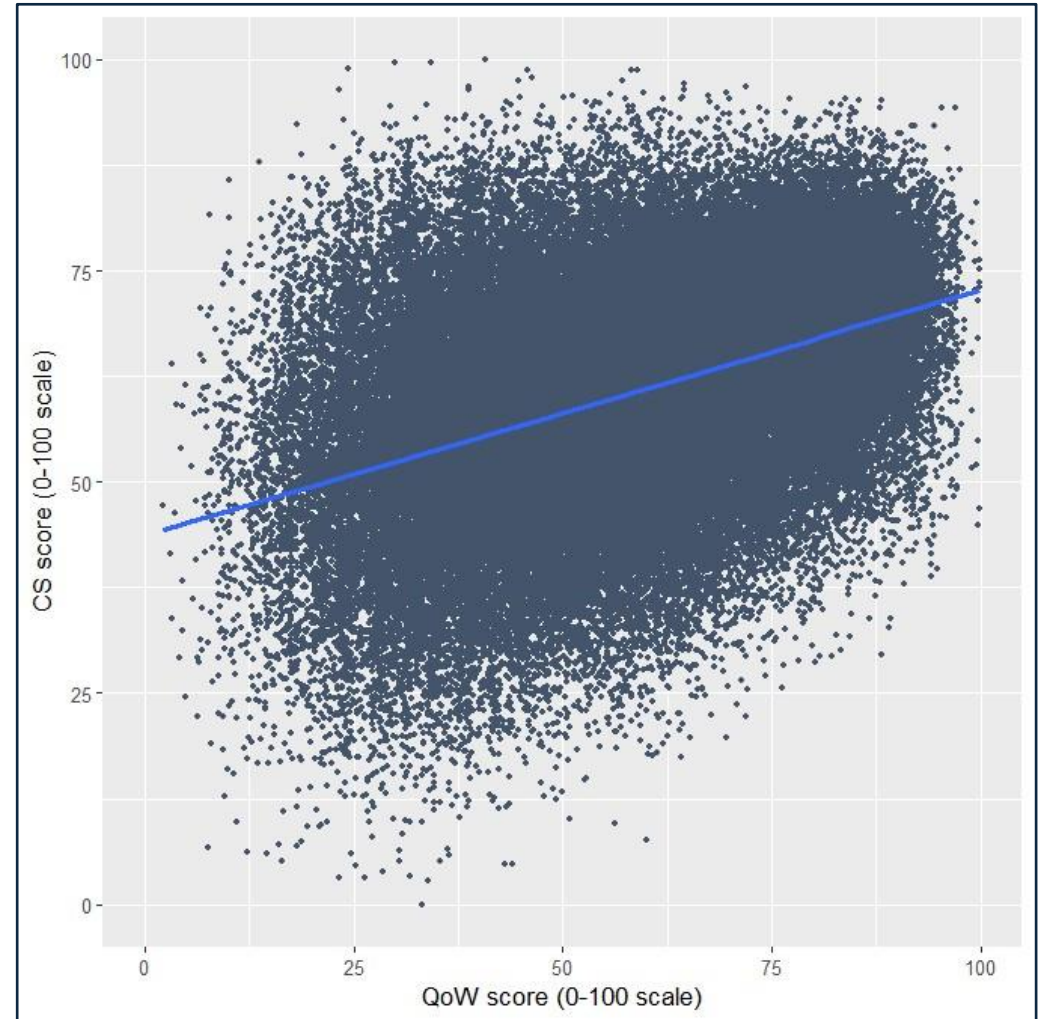


Figure 3.9. Scatterplot of relationship between workers' Quality of Work and Capability Set scores for Wave 12 by sub-group. Scores rescaled on the same 0-100 scale to ease comparability.

Figure 3.9a – Economic capital.

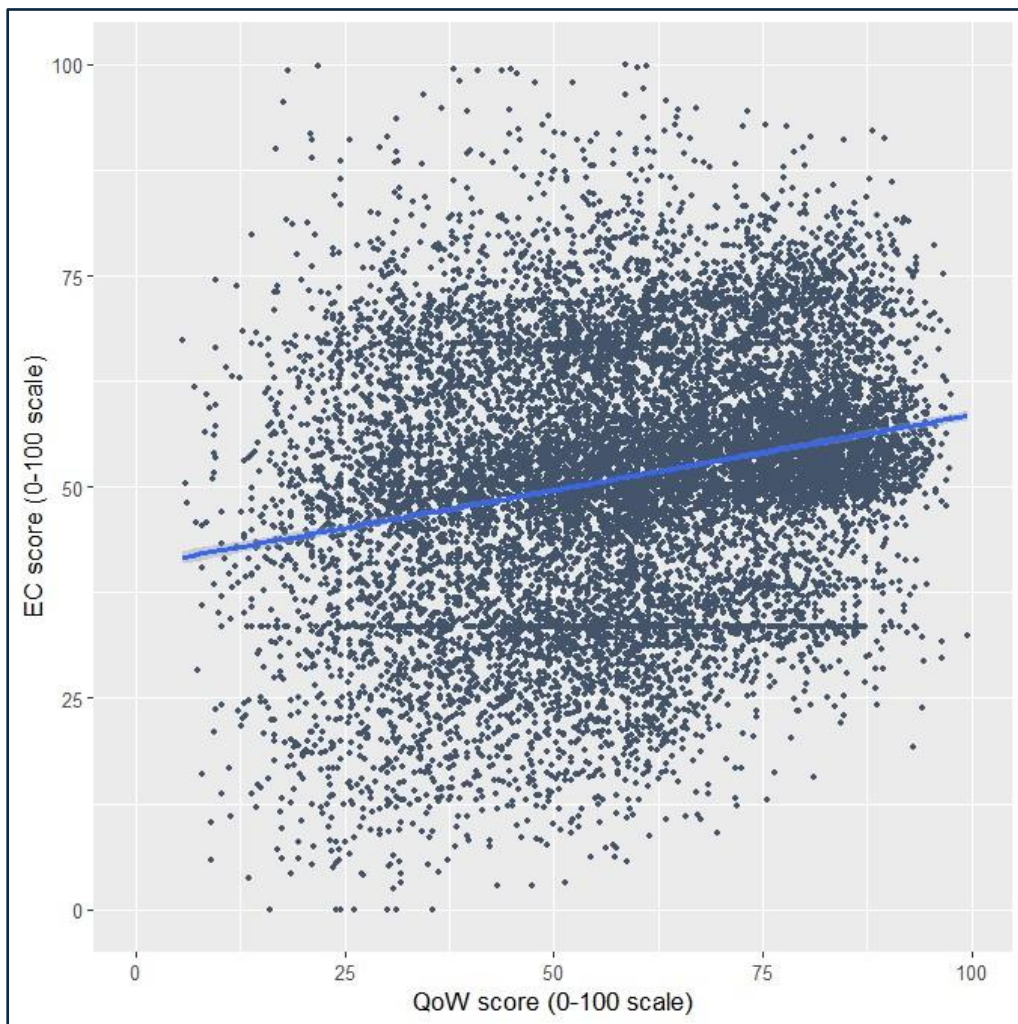


Figure 3.9b – Social capital.

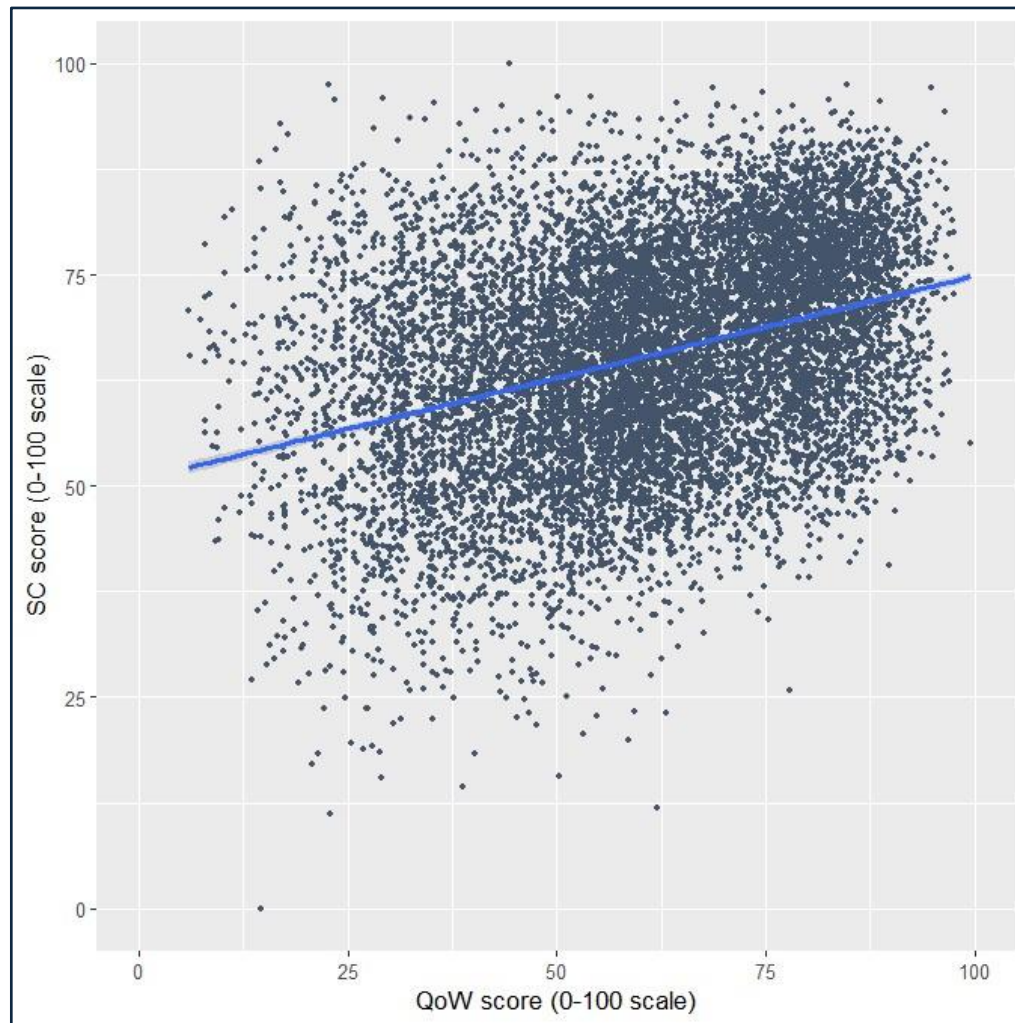


Figure 3.9c – Cultural & Human capital.

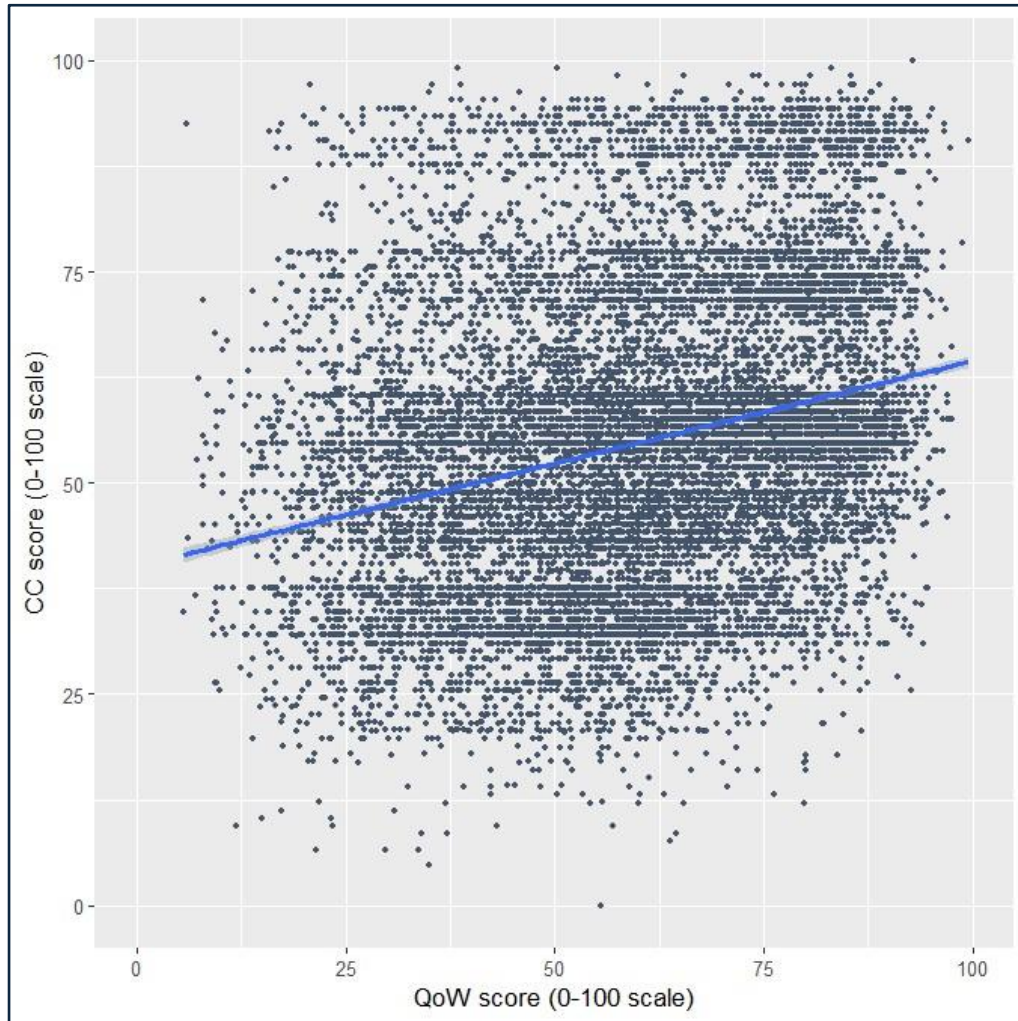


Table 3.3. Linear regressions of the relationship between workers' CS scores by various characteristics, Wave 12 (2020-21). As with the other analysis CS scores are scaled on a 0-100 scale. Column 1 contains a set of regressions done individually without controls for the other variables, whilst column 2 is a single regression with all the variables as controls. Standard errors in parentheses. Significance levels denoted by (.) (<0.1), * (<0.05), ** (<0.01), *** (<0.001).

		No controls (1) (all variables individually)	With controls (2) (all variables included)
Demographics	Age (#num)	0.159*** (0.155)	0.178*** (0.153)
	Female (dummy)	-1.110** (0.338)	-0.125 (0.347)
	Lives in northern England, Northern Ireland or Wales (dummy)	-1.282*** (0.387)	-1.059** (0.372)
	White UK ethnicity (dummy)	2.82*** (0.489)	2.063*** (0.479)
Family and care	Dependent children (#num)	-0.181 (0.200)	0.205 (0.195)
	Has long-standing illness, impairment or disability (dummy)	-2.414*** (0.416)	2.742*** (0.414)
	Has within-household caring responsibilities (dummy)	-5.855*** (0.939)	5.112*** (0.907)
Employment relationship	Gig economy (dummy)	-1.326 (1.170)	-1.212 (1.108)
	Self-employed (dummy)	0.603 (0.604)	1.776(.) (0.933)
	Zero hours contract (dummy)	-2.384 (1.977)	0.234 (1.885)
Other job characteristics	Hours worked per week (#num)	0.022(.) (0.129)	0.196 (0.201)
	Job perceived not permanent (dummy)	-0.306 (0.679)	1.326(.) (0.704)
	Job involves managerial/supervisory duties or, if self- employed, hires own staff (dummy)	3.470*** (0.169)	3.483*** (0.173)

Figure 3.10. Boxplots of the distribution of **Economic capital** scores (on a 0-100 scale) of eight groups of workers in Wave 12 (2020-21). Note that workers are placed into mutually-exclusive categories based on workers' main jobs: gig economy and zero hours workers who report being employees or self-employed are removed from the employee/self-employed populations.

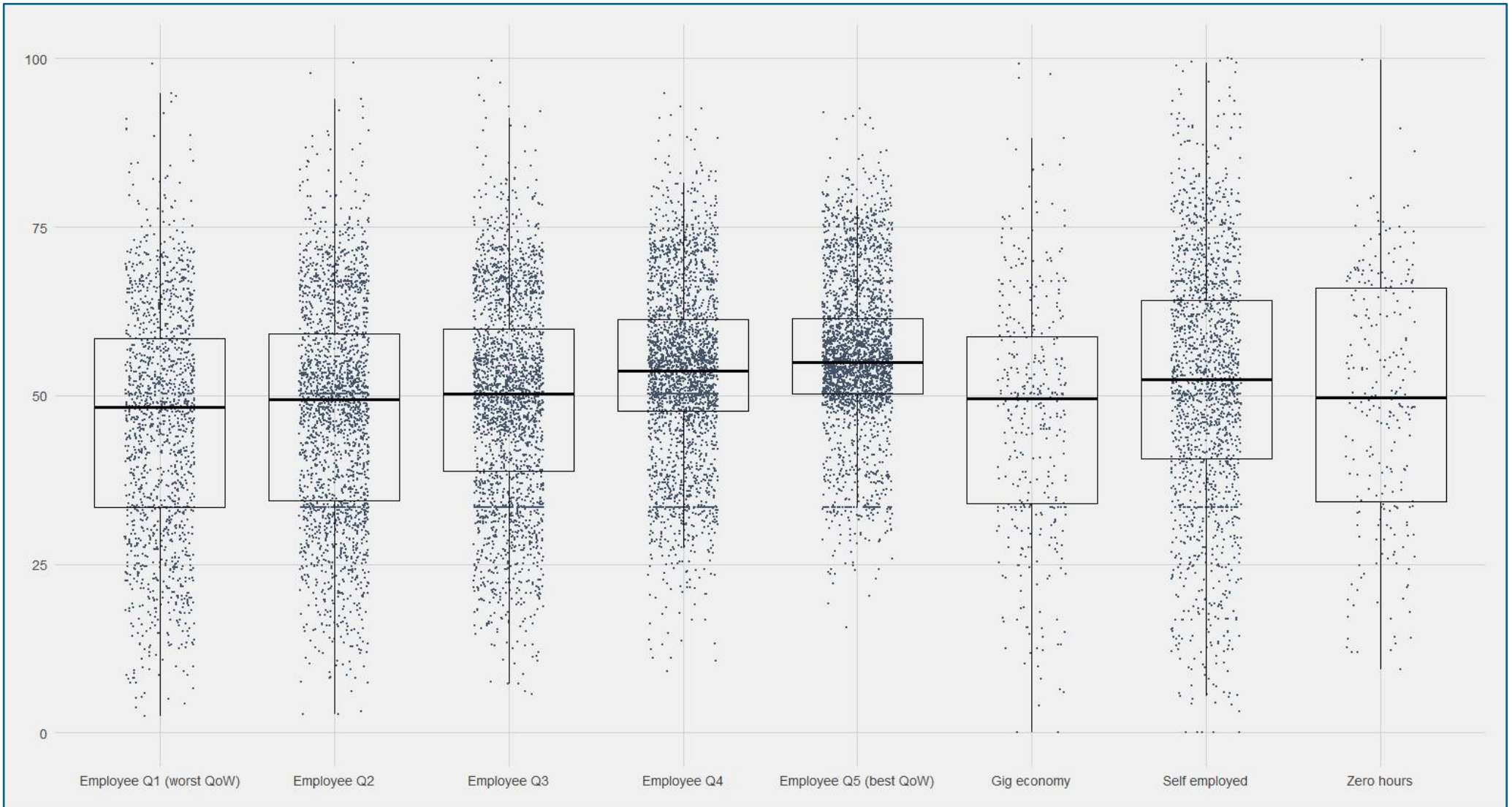


Figure 3.11. Boxplots of the distribution of **Social capital** scores (on a 0-100 scale) of eight groups of workers in Wave 12 (2020-21). Note that workers are placed into mutually-exclusive categories based on workers' main jobs: gig economy and zero hours workers who report being employees or self-employed are removed from the employee/self-employed populations.

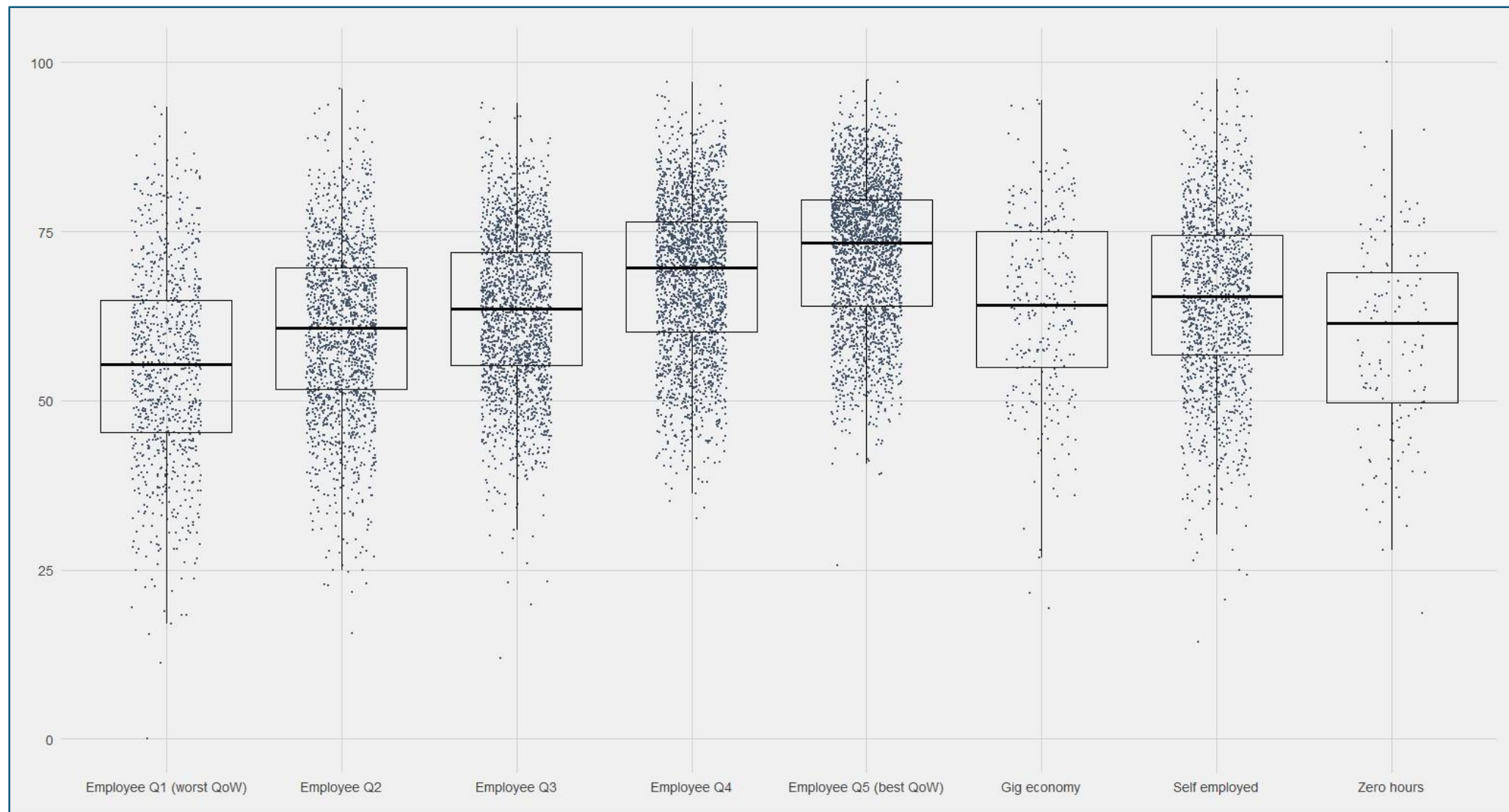
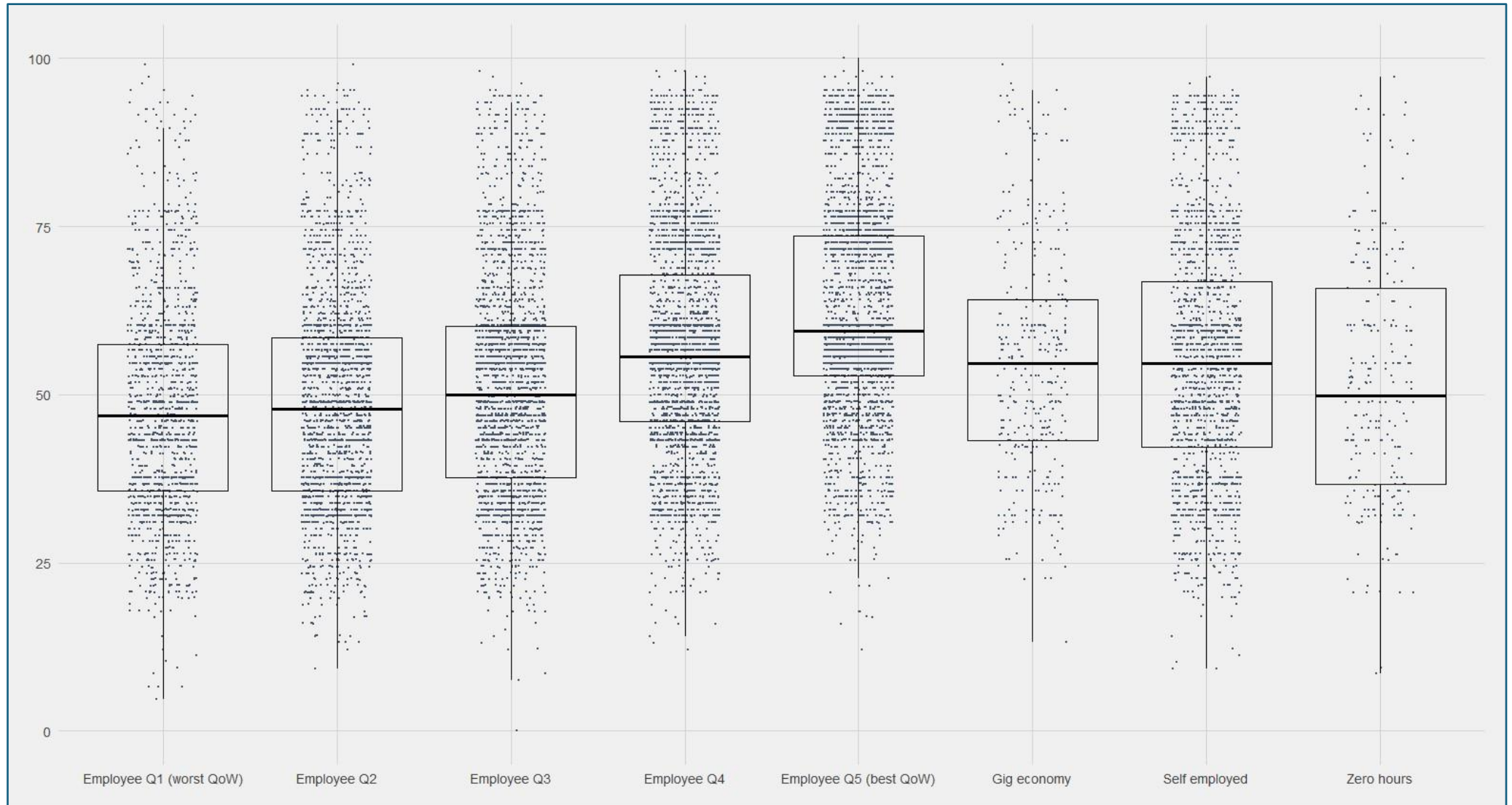


Figure 3.12. Boxplots of the distribution of **Cultural and human capital** scores (on a 0-100 scale) of eight groups of workers in Wave 12 (2020-21). Note that workers are placed into mutually-exclusive categories based on workers' main jobs: gig economy and zero hours workers who report being employees or self-employed are removed from the employee/self-employed populations.



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Paper 4

Quantifying the “mismatch” between work quality and worker circumstances: The Conversion Factors of UK paid workers, 2020-21

Workers’ personal, family, and household circumstances self-evidently affect the impact work has on their wellbeing. However, there is little data on the relationship between workers’ circumstances and work quality. This paper redresses this using household survey data. It identifies eight indicators of worker circumstances associated with greater life burdens, conceptualised using the Capability Approach as “Conversion Factors.” It explores their relationship with workers’ scores in an existing UK Quality of Work (QoW) index. It finds these Conversion Factors are associated with lower-quality work. Further, accounting for workers’ Conversion Factors increases labour market inequalities by gender and ethnicity.

Keywords: Capability Approach, Labour market inequalities, Work-family conflict, Work-life balance, Work quality

4.1. Introduction

Many studies write of an increasing “mismatch” (Correll *et al.*, 2014, p. 3; Moen, 2015, p. 176) between work and the circumstances of the worker in modern labour markets. This mismatch is most often discussed in the context of the way caregiving or health-related demands – such as childcare, care for other adults in the family, or disability and ill-health – compete with the demands of paid work. This has emerged as a particular issue in more recent decades due to the rapid rise in the (paid) labour market participation of workers with these commitments, especially women (Correll *et al.*, 2014; Moen, 2015). This means that in countries throughout the Western world, the population of paid workers today have a range of competing household-level commitments they are forced to reconcile with paid work, in ways far fewer workers had to in earlier periods of history (Davies and Frink, 2014).

Over this same period, we have seen the growth of policymaker and researcher interest in “work quality” (which is defined later, in the next section). This has been spurred on by the same transformative changes in Western labour markets which have

led to the stated “mismatch” between work and worker circumstances. These transformations have led to the growth of precarious, insecure jobs (Kalleberg, 2018), often with insufficient working hours (Blanchflower, 2019) – driven in part by the rise of market-mediated employment relationships (Kalleberg, Reskin and Hudson, 2000) – at the same time as paid work for other workers has become increasingly intensive (Green *et al.*, 2022) and total working hours have risen at the family level (Jacobs and Gerson, 2001). As a result of this interest, a wide range of multidimensional work quality indices are now available for use by researchers (see in particular Burchell *et al.*, 2008; Cascales Mira, 2021; González *et al.*, 2021; Leschke *et al.*, 2008; Leschke and Watt, 2014; Muñoz de Bustillo *et al.*, 2011; Sehnbruch *et al.*, 2020). These indices measure work quality by bringing together data from a range of indicators from a single survey; grouping like indicators into dimensions; and then aggregating these dimensions into an index.

However, to date, there has been a lack of research into the relationship between workers’ scores on these indices and the circumstances of individuals in work – such as their family commitments, the nature and size of their household, or any disability or health-related issues they or other family members must manage alongside paid work. This is a problem because there are theoretical grounds for arguing that, all else held equal, someone with additional commitments requires *higher* work quality to accommodate their work to these commitments. At present, we do not know from work quality indices whether those with the greatest commitments access the jobs with for example worker-oriented flexible working opportunities, good work security and decent prospects, or whether they are in fact disproportionately concentrated in jobs which perform more poorly in these respects.

This paper makes both conceptual and empirical inroads into addressing these issues.

Conceptually, the paper argues the Capability Approach (CA) – a theory of wellbeing pioneered by Nussbaum and Sen (1993) – offers the basis for measuring the aforementioned “mismatch” between work quality and worker commitments. It introduces and further develops an existing conceptual framework for measuring workers’ wellbeing using the CA (Stephens, 2023c). The CA argues that when making any assessment about peoples’ wellbeing, we should consider the way individual, social

and environmental Conversion Factors (Kuklys, 2004; Hobson, 2011; Moen, 2015, p. 177; Sen, 1994, p. 334) affect the rate of conversion of resources into wellbeing. When applied to the study of work, those with a lower rate of conversion when measured according to these Conversion Factors require *higher* work quality to achieve the same wellbeing from work than a reference individual with a higher rate of conversion. Where low rates of conversion correlate with low work quality, the worker can be argued to face a “mismatch”: they may for example have a large family, childcare responsibilities, and/or unpaid caregiving demands, but work in a job which is poorly remunerated, inflexible and/or has excessive working hours. This makes their wellbeing lower than a worker in the same job with a lower rate of conversion.

In addition, however, the CA further suggests that the choice workers have over alternative opportunities inside and outside the labour market – which the CA terms the “Capability Set – is also important in understanding this mismatch. Workers with more choices over different things to do or be are better able to shape work around their lives, thus making them better able to accommodate to these commitments (for a discussion see Stephens, 2023a, pp. 311, 323–324). Bringing everything together, the mismatch is therefore determined by the interaction of three things: work quality, worker Capabilities, and Conversion Factors. All three of these things need to be measured together, because they may not necessarily be correlated: low work quality, in terms of low scores in any work quality index, may not necessarily be correlated with the choice workers have over alternative labour market opportunities (their Capability Set); and neither may be correlated with their rate of conversion of resources into wellbeing (Conversion Factors). Conversely, where these are correlated, this could have significant implications for labour market inequalities: for example, if workers with low work quality were found to have disproportionately lower rates of conversion than those with higher work quality, this “mismatch” will increase the negative effect work has on their wellbeing.

Empirically, the paper then operationalises this framework for the first time using a large-scale survey representative of UK individuals and households (*Understanding Society*). An index of multidimensional work quality using this survey, the UK Quality of Work (QoW) index, has already been produced using this survey (Stephens, 2023a, 2024). The QoW index contains seven dimensions and 15 indicators (see Figure 4.1)

and is representative of all paid workers in the UK up to 2020-21. This provides the first of the three things needed to apply this theory: work quality.

Unlike surveys used in other work quality indices, this survey contains data not just on the work quality of individual workers but also their personal, family and household circumstances and their choices over alternative opportunities. The second of these (the Capability Set) is also operationalised alongside the QOW index by creating a separate index of workers' scores on proxies for their Capability Set (CS Scores) using a range of indicators of workers' economic, social and environmental capital – such as their assets, their skills, and their family and social connections.

Finally and most importantly, the third of these – Conversion Factors – is operationalised using data on workers individual, family and household circumstances. The paper operationalises eight Conversion Factors – such as the number of dependent children, childcare responsibilities, unpaid caring responsibilities, and personal disability or ill-health. To repeat, a higher score on a given Conversion Factor equates to a lower rate of conversion; this means a worker requires higher QoW to achieve the same wellbeing as a worker with lower scores on a given Conversion Factor (and thus a higher rate of conversion).

Taken together, these three elements enable us to analyse the relationship between work quality, measured according to their scores on a work quality index, and worker “commitments” for the first time. This helps us bridge the gap between literature on multidimensional work quality and worker commitments, providing new data on the commitments workers have to manage alongside paid work and their choices over alternative labour market opportunities. As will be seen, this enables us to make a more complete assessment of workers' wellbeing, and helps identify new inequalities in modern labour markets.

The rest of this paper is split into three substantive sections. The first section elaborates on the conceptual framework using the CA, bringing together various strands of research into worker wellbeing and work quality indices. The second section outlines the dataset, indicators and methodology. The third section presents the results of the analysis, and answers three research questions:

- **RQ1:** What is the relationship between workers' QoW and their Conversion Factors?

- **RQ2:** How does the choice workers have over different jobs or other labour market activities (their Capabilities) interact with their QoW and these Conversion Factors?
- **RQ3:** Do labour market inequalities by gender, ethnicity and the employment relationship change after accounting for these Capabilities and Conversion Factors?

4.2. Conceptual framework: the Quality of Work and worker circumstances

4.2.1. Defining work quality: progress in work quality research

Interest in work quality⁵⁰ is arguably as old as the social sciences itself, and dates at least as far back as the transformative upheavals of the industrial revolution in the 18th Century. Modern engagement with the concept could be argued to stem from the “Quality of Working Life” movement in the 1960s (for a discussion, see Warhurst and Knox, 2020). However the most recent interest, especially in Europe, arguably originates more from the adoption of “good work” agendas amongst international organisations at the turn of the 21st Century – first in the International Labour Organisation (ILO, 1999a), then the European Union (European Commission, 2001) and OECD (OECD, 2003). Although there are disagreements amongst scholars over how to measure work quality, there is broad agreement on the importance of characteristics such as task discretion, worker participation and work prospects (Gallie, 2003, p. 65).

This paper’s approach to measuring work quality is aligned with this, and is broadly consistent with that adopted by McGovern et al. (2004) and Sengupta et al. (2009) in previous issues of this journal. The index of work quality in this paper (see Figure 4.1) uses most of the indicators outlined by Wright and Dwyer (2006, pp. 279–280), as cited by Sengupta et al. (2009, p. 28), with work quality encompassing three sets of indicators (those measured in the index presented in this paper are highlighted bold):

⁵⁰ A wide range of different terms are used to describe work quality in the literature, including “job quality”, “employment deprivation” and the “quality of working life.” To avoid complication I subsume these into a single term “work quality.”

*“[Some] can be measured with readily available data—such as **earnings, fringe benefits, educational levels of incumbents**; others are in principle measurable, but data are not readily available—such as **opportunities for advancement, work security, and levels of authority**; and some involve work attributes that are difficult even in principle to measure—such as **stress levels, degree of personal autonomy within the labor process, or opportunities for social connectedness on the work.**”*

In the past two decades, a much richer amount of data on work quality, drawn from nationally and internationally representative surveys, is now available to researchers than previously. This has enabled research to put a number on the work quality of workers – assigning workers in surveys scores based on their achievement in a range of work quality indicators; aggregating similar indicators into dimensions; and then aggregating dimensions into an index. Further, work quality indices today are increasingly synthetic: they contain individual-level data from a single survey, rather than for example a dashboard of separate aggregate indicators all drawn from separate surveys. Using this approach, an individual’s work quality score (Q^i) can be defined, quite simply, as the sum of scores in each dimension of work quality (D^{id}), aggregated according to the weights of each dimension (W^d):

$$Q^i = \sum D^{id} \times W^d$$

Dimension scores themselves are the sum of all indicator scores (X^{ij}) within that dimension. These indicators can be assigned a weight within the dimension, in which case the notation is similar to the above, but it is more common for all wellbeing indices to equally-weight every indicator in a dimension (for a discussion, see Decancq and Lugo, 2013), in which case the dimension score is very simply the sum of all indicator scores divided by the number of indicators in the dimension (N^{jd}):

$$D^{id} = \frac{\sum_d X^{ij}}{N^{jd}}$$

This method of index construction allows for a wealth of different types of analysis, with workers’ work quality comparable at the indicator-, dimension- and index-level

by the scores they receive in these respective areas. Higher work quality is denoted by higher scores, and lower by lower scores. If desired, work quality scores can also be set at a cut-off threshold, allowing analysts to look at the proportion of workers who score below these thresholds now possible – as has become common in “employment deprivation” research (e.g. see González et al., 2021).

Most crucially, this data enables the comparison of the relationship between work quality scores and any other variable of interest, using standard statistical techniques such as regression analysis. This allows for new kinds of analysis of work quality and its relationship to other variables, in ways not possible in the early-2000s. This paper takes full advantage of the synthetic nature of the work quality index, to explore the relationship between work quality, worker choices (Capabilities) and worker commitments (Conversion Factors).

4.2.2. Unpacking the “mismatch”: work quality and worker circumstances

Despite this progress, to date, these indices have contained limited information on the circumstances of the family or household the worker lives in. These shortcomings are reflected for example in the European Working Conditions Survey, a staple of EU-level work quality research (Muñoz de Bustillo, Fernandez-Macias, *et al.*, 2011), which contains little family or household data for work quality researchers to use. Indeed, work quality – as is evident from the notation in the above section – is defined in these studies from an individual perspective: a given set of work characteristics are therefore assumed to have the same, constant effect on an individual worker’s wellbeing. This individual-focussed approach is at odds with how other research, particularly within sociology, has engaged with the interaction of work, the family, and the household. Such research would argue that all else held equal, paid work done by someone with greater “commitments” (broadly defined) in their lives would have a different effect on their wellbeing than work done by someone with few or no such commitments. A brief review of this literature follows.

One strand of this research has highlighted in general terms the problems posed for societies spending increasing amounts of time in paid work, and working more intensively, at the same time as caregiving responsibilities remain at best, stagnant and unequally distributed, and at worst, on the rise. Correll et al. (2014) note three

opposing trends in paid work in recent decades: rising hours of work, and increased work intensity in the growing number of “professional and managerial” jobs which require “long hours, intense emotional engagement, and constant availability” (p. 4); rising precarity of work and low hours for the bottom-end of the labour force; and the continued prevalence of caregiving responsibilities for those in the home, which women in particular now have to increasingly reconcile with paid work. As a result (p. 5), “a mismatch persists between the needs of today’s labor force and the structure and expectations of today’s workplace.” Moen (2015, p. 176) also writes of a “mismatch” between “existing work time, life course and career development policies and practices” and “transforming economies, technologies, households, work and workforces.” As a result, modern families increasingly “manage two careers, two sets of work shifts and retirement exits, singlehood, single parenthood, and more generally family and personal care work in addition to paid work (and leisure) over the life course” (pp. 175-176).

I suggest one underlying reason for this mismatch is the twin development of, first, increasingly market-mediated forms of employment relations (e.g. see Kalleberg et al., 2000), leading to the growth of non-standard forms of employment with characteristics which are less accommodating to those with commitments to the family; and, second, cultures of “work devotion” (e.g. see Blair-Loy and Williams, 2017) in modern workplaces, potentially driving some of the growth in work intensity and long working hours. As de Laat (2023) highlights, this has meant that whereas previously work and family devotion were “seen as conflicting forces”, today’s shifts in the demographics of labour markets “call into question the extent to which these cultural models are experienced as competing”: families increasingly have to reconcile devotion to work and family at the same time. Whilst many papers in this field discuss this in the context of childcare for women, many of these papers’ same arguments apply to caregiving or personal health demands more broadly – Shuey and Jovic (2013), for example, highlight how people with disabilities tend to work in lower-quality jobs than those without them, scoring worse in terms of earnings, fringe benefits, work security, and the prevalence of non-standard work arrangements. This has inevitable implications for their wellbeing vis-à-vis other workers. Likewise, although most of the above discussion is focussed on the US perspective, the UK has seen similar trends in

terms of rising work intensity (Green *et al.*, 2022), precarity (Kalleberg, 2018), and low and unstable working hours (Blanchflower, 2019). Data on UK time use also shows that when you combine paid work with time spent in unpaid caregiving, women on average spend more of their waking hours doing work than men (42.7% vs. 40.8%).⁵¹

Some empirical research has sought to quantify this mismatch – usually by introducing data on family and household circumstances into a usually individual-focussed work quality debate. Perhaps the most comprehensive treatment of this topic comes from Jacobs and Gerson (2001), who – arguing that trends in working time need to be investigated from a family rather than an individual perspective – combine data on the paid work of all family members to resolve some paradoxes in debates over rising working hours at the time. They conclude that the modern labour market has changed, not in terms of the quantum of *individual-level* hours spent in work, but in terms of “the proportion of workers who experience the conflicts associated with a dual-earner (or single-parent) situation.” (p. 47). Davies and Frink's (2014) more recent study of the separation of work and home in the US lands at a similar conclusion, suggesting that the end of home-based production as a result of the industrial revolution has led to a situation where ostensibly “family-friendly” workplace arrangements “do not necessarily challenge the accepted separation of work and home”, effectively exacerbating work-family conflict amongst a labour force with greater commitments by “enabl[ing] work time to intrude on personal and family time” (p. 34). Further attempts to combine work quality and worker circumstances include McGovern et al's (2004) UK study, who control for workers' family and personal characteristics to see whether non-standard employment relationships are associated with low-quality work, and Donnelly et al's (2022) paper investigating work insecurity at a household rather than individual level, and its effect on household-level mental health during the Covid-19 pandemic.

Despite the above studies, the tendency is a chasm between generally individual-level multidimensional work quality research, vs. studies investigating the mismatch between work and family commitments. Due to lack of available data, studies in the

⁵¹ Own calculations using UK Time Use Survey, Table 8a, Average daily time (minutes) spent doing specified activities, all adults: by labour market status, March 2024 (ONS, 2024f). Filtered only to adults in employment to April 2020 (column 1).

latter group have hitherto tended to focus on one specific aspect or indicator of work and its association with worker commitments or circumstances, rather than considering its relationship with work quality more broadly. A rare exception is Pocock and Charlesworth (2017), who specifically ask “what makes a good work in terms of managing work and care?” (p. 27) They suggest that workers’ needs change over the life course. They therefore stress that whilst “some worker control over working time without the sacrifice of decent pay and conditions” is “a key principle” (p. 28), so too is “access to leave at short notice”, flexitime, childcare, and “retirement earnings” in the form of a pension contribution (pp. 28-29). They therefore argue that “a quality job will permit a measure of responsiveness to worker preferences.” What makes a quality job therefore depends partly on workers’ “power resources” (pp. 29-30) as well as the commitments they manage alongside paid work. For example (p. 28), older workers “with labour market power arising from their skill and experience” may simply desire “interesting work” and “a limited term contract”, whereas job security “may be very important for those older workers with less labour market power and poor retirement supports.” Their paper, I suggest, makes a wide range of work quality indicators important in managing work and care. Whilst worker-oriented flexibility is a key element, it is not the sole element, since workers with less labour market power at any point in the life course may require higher work quality to manage commitments.

When brought together, the above studies chart a way forward towards a reconciliation between research on multidimensional work quality and the mismatch between work and worker circumstances. Following Jacobs and Gerson (2001) and Donnelly et al (2022), I propose that work quality cannot be viewed from a solely individual-level perspective: work quality indices must incorporate household and family data – considering the work done, the circumstances, and ideally the (unequal) distribution of commitments between different household members. Following Pocock and Charlesworth (2017), I suggest that all indicators of work quality, rather than just flexibility alone, are important in studying this mismatch, and that workers’ power resources are also important in helping manage work and care and change the demands workers may have about what makes a good quality job throughout the life course. I turn to how to operationalise this in the next section.

4.3. Data and methods

4.3.1. *Understanding Society and the UK QoW index*

This paper uses Understanding Society, also known as the UK Household Longitudinal Study (UKHLS), which is a large-scale longitudinal survey of a representative sample UK households, carried out annually since 2010. This survey is widely used for research on work (e.g. see Borkowska et al., 2021; Brynin and Güveli, 2012; Wheatley, 2017a; Wheatley et al., 2023), including in this journal (Wheatley, 2017a). A key advantage of the survey, which makes it well-suited to answering the research questions set out in the introduction, is the detailed data it contains not just on individuals in the sample – including their work quality – but also of their family and household circumstances, in ways not possible with surveys widely used in the work quality literature such as the European Working Conditions Survey (EWCS). Although a household longitudinal survey, its designers have created ready-made weights to allow for individual-level and/or cross-sectional analysis (Lynn and Kaminska, 2010; Benzeval *et al.*, 2020). These weights also correct for sampling and non-response biases in the survey.

As noted earlier, the survey has already been used to create an index of multidimensional work quality, the UK Quality of Work (QoW) index, which comprises all individuals in paid work interviewed in every other wave of Understanding Society from Wave 4 (2012-13) to the latest wave for which data is available, Wave 12 (2020-21) (Stephens, 2023a, 2024). This index captures a broad range of aspects of job quality discussed in existing literature, as outlined in Section 4.1.1. Figure 4.1 contains the full range of indicators, dimensions and indices and their relative weights used to calculate the QoW score for all individual workers. The focus on this paper is those who are represented in the latest Wave, Wave 12 (2020-21), of Understanding Society. The analysis sample comprises all adults in paid work, even if just for an hour a week (unweighted $n = 15,636$).

For some of the analysis in this paper, five specific indicators of the QoW index receive particular attention: Earnings Sufficiency, Composite Security, Autonomy, Employee Flexibility and Excessive Hours. This is because there are strong reasons, based on the literature, for seeing these as especially important in reconciling worker commitments. Higher earnings are clearly important to accommodate for the

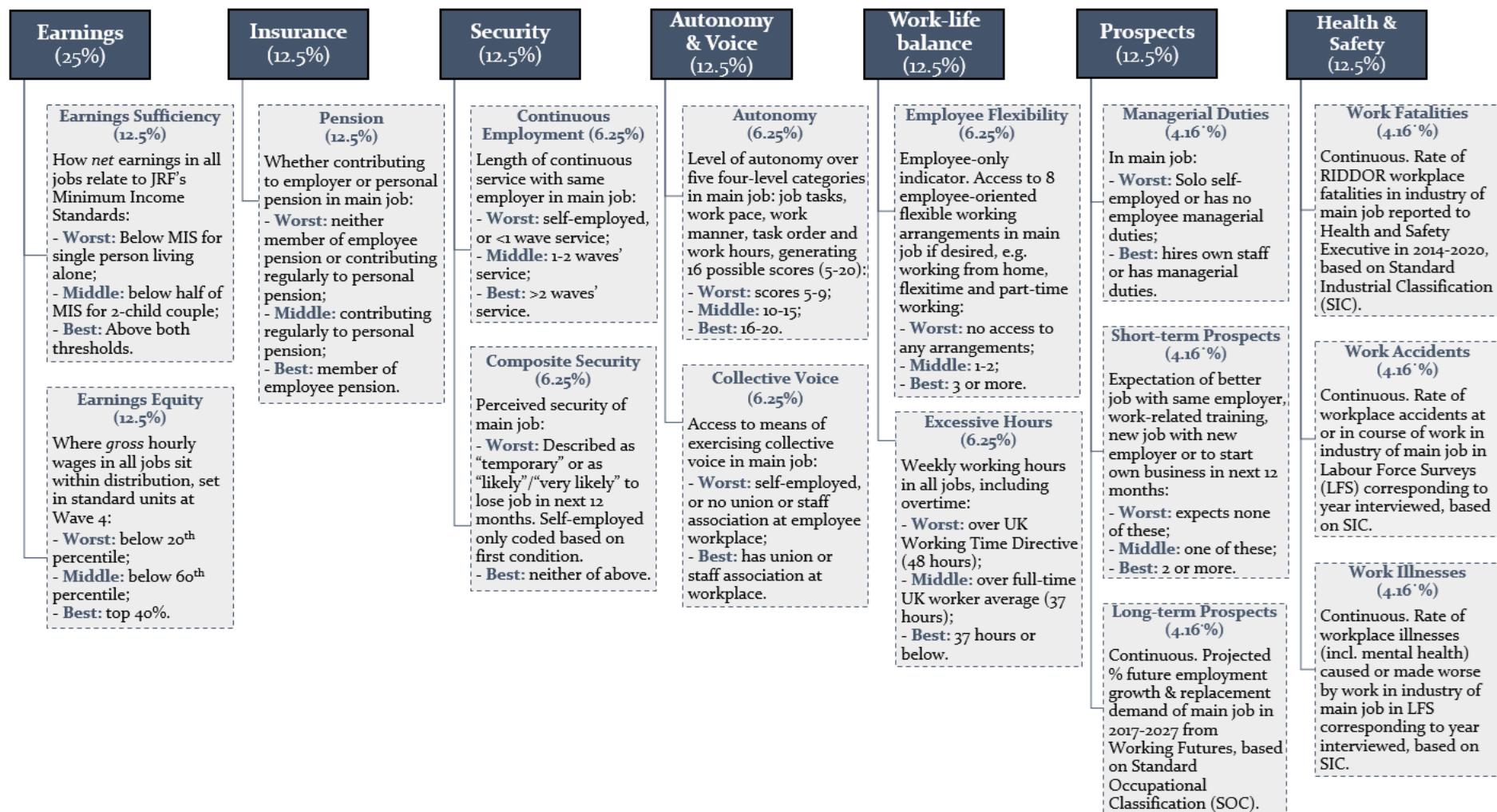
additional costs of supporting a family or managing a disability. Without job security, workers with these commitments may face repercussions from employers if they struggle to meet work demands due to commitments, and their need to support a loved one through work will increase their sense of insecurity. Workers with more available flexible work opportunities or high autonomy over the nature, pace, manner, order, and hours of their work will be better able to manage commitments alongside paid work. Conversely, excessive working hours will make it difficult to support a family whilst simultaneously, exacerbating any work-family conflict.

However, Pocock and Charlesworth (2017) demonstrate that when viewed from a life-course perspective, workers with these commitments require higher QoW across almost all indicators and dimensions. A worker needing to support an infirm or out-of-work loved one may desire a decent pension later in life to support them when they themselves will be unable to work. Continuous employment is important both for legal reasons – since, in UK law, it determines whether workers have a range of rights associated with job security, including against unfair dismissal – but also because a worker with a long-standing relationship with an employer will likely find it easier to manage any disruptions to paid work caused by managing commitments. Access to trade union and collective bargaining arrangements provides workers with rights of redress in the event unscrupulous employers act unreasonably in response to any request for adjustments, and a means to assert for better accommodations in the workplace. A worker in a managerial position of their own will be better-able to make, and argue for, accommodations, whilst better short- and long-term job prospects will provide workers who have commitments with a means to support family members who rely on them in future, even if their current employment prevents this. It is perhaps only with the final dimension (Health and Safety) that the argument is least clear – since all workers, regardless of their circumstances, benefit equally from a job with no fatalities, accidents, or illnesses. Nevertheless, taken collectively, there is therefore a basis for arguing that a higher QoW score overall is required for workers with greater commitments. Much analysis in this paper therefore explores the difference in QoW scores overall, rather than just focussing on the five indicators stated above.

There are, however, some limitations to the data used in this paper. A range of papers have argued that workplace culture and practices are especially important in

supporting workers to manage commitments (Perlow and Kelly, 2014; Thébaud and Pedulla, 2022, p. 236). There is for example a difference between having the *opportunity* to work flexibly vs. *using* a flexible work opportunity, since the latter is affected by any stigma associated with its use (Wharton, Chivers and Blair-Loy, 2008; Thébaud and Pedulla, 2022, p. 9). Higher QoW scores overall, or higher scores in task autonomy or the quantum of flexible working opportunities available, may well be correlated with the existence of an accommodating culture, but in the absence of a specific indicator of workplace culture in Understanding Society it is impossible to know this using the data presented in this paper. This paper also does not attempt to identify the distinct accommodations needed for workers with different Conversion Factors – for example, someone with a disability may require different accommodations as someone with caring responsibilities, and many people within these two groups will require different accommodations depending on the nature of the disability or responsibility. Nevertheless, there is scope for future studies to build on the analysis of this paper by carrying out analysis to support tailored assumptions about the specific accommodations needed and/or introducing indicators of workplace culture into Understanding Society.

Figure 4.1. Indicators, dimensions and percentage weights of the UK Quality of Work (QoW) index. Figure reproduced from (Stephens, 2024).



4.3.2. *Conceptualising the mismatch: the Capability Approach*

Now the paper has identified a work quality index, I outline how we can begin to quantify this mismatch using the data available in Understanding Society. In order to do this, we need an approach to conceptualising the relationship between work quality, worker circumstances and worker wellbeing. As noted in the introduction, I suggest that the CA – pioneered by Nussbaum and Sen (1993), but now widely applied across literature on the sociology of work (e.g. see Beck, 2018; Egdell and Beck, 2020; Fernandez-Urbano and Orton, 2021; Gascoigne and Whiteside, 2009; Hobson, 2018; Monteith and Giesbert, 2017; for a brief discussion of the CA in this journal, see Moen, 2015) – offers the basis for doing this.

The central argument of the CA is that human wellbeing cannot be equated with the possession of resources alone – be it monetary income, or in this case the pecuniary and non-pecuniary characteristics of work. Rather, the CA argues three considerations are important to measuring human wellbeing:

- Our **achieved wellbeing**, defined according to the combinations of valued “beings and doings” (Functionings) which we have achieved with the resources we have. These include the achievement of anything people have reason to value, such as supporting loved ones, living in a decent home, or pursuing leisure. In the case of work quality, this will include Functionings both inside the space of work itself, such as the Functioning to work in a meaningful work, as well as Functionings outside the space of work which work enables or prevents individuals from having – such as Functionings to achieve a family life through a good work-life balance; or to obtain a high standard of living using earnings.⁵²
- Our “**freedom to achieve wellbeing**” (Robeyns, 2017, p. 119), defined in terms of the range of combinations of Functionings we are able to achieve (our Capability Set). Put another way, it is possible for someone to achieve few Functionings from work whilst simultaneously having a wide range of choices over different combinations of achievable Functionings, for example a wealthy pensioner in a

⁵² For a fuller discussion of the intrinsic vs. instrumental role of work in the Capability Approach, refer to Stephens (2023b).

job with low levels of remuneration, low hours and low job security who engages in work as a supplemental activity to add meaning to their lives.

- The different **rate of conversion of resources into wellbeing**, due to the differing individual, family, social, and environmental circumstances of individuals. Sen (1994, p. 334) calls these Conversion Factors, and illustrates their importance through the example of pregnant women who, self-evidently require more resources (in this case, food) to achieve the Functioning of being well-nourished as those who are not pregnant. Other literature has broadened this to consider social or environmental Conversion Factors such as “gender inequality within a household” (Kimhur, 2020, p. 261).

All three of these are operationalised in this paper, in the ways outlined in the introduction. First, the QoW index, described in Section 4.3.1, provides a measure of workers’ achieved wellbeing, conceptualised using the CA as the achievement of Functionings (for a conceptual discussion, refer to Stephens, 2023b). Second, the same dataset also contains an additional index measuring the range of choices these same workers have over different Functionings, inside or outside the workplace (proxies for the Capability Set (CS)) (see Table 4.4). This enables us to consider the interaction of choice, which I suggest is correlated with Pocock and Charlesworth’s (2017) concept of power resources: it provides a measure of the means workers have to access work, throughout the life course, which best accommodates to their circumstances.

However, it is the third of these– Conversion Factors – which enables us to quantify any “mismatch” between QoW, Capabilities, and worker circumstances. When applied to work quality, this concept tells us that a given level of QoW, even after accounting for the choices workers have, does not affect all workers’ wellbeing equally. Rather its effect varies depending on the individual, family, social and environmental characteristics of the worker. Workers with commitments to care, family, health and otherwise have a lower rate of conversion of work resources into QoW, and thus wellbeing, in the ways discussed in Section 4.3.1.

4.3.3. *Indicators of Conversion Factors*

This paper operationalises eight Conversion Factors using individual, family and household data from Understanding Society. All but one of these Conversion Factors are categorical with 3 or 5 possible values between 0-1, with workers assigned values within this range according to which category they belong to, with 0 denoting not possessing the Conversion Factor at all, and thus the highest possible rate of conversion on this Conversion Factor, and 1 denoting the lowest possible rate of conversion. One Conversion Factor is a dummy variable with just two possible values, 0 (no Conversion Factor) or 1 (has the Conversion Factor).

The ‘level’ column of the table describes the level at which there is no variance in scores on these Conversion Factors: ‘household’ means scores are the same for every member of a given household; ‘family’ means they are the same for any family⁵³ within a household; and ‘individual’ means they vary at the individual level, with different individuals even within family or household having different scores. As can be seen, scores for most of these Conversion Factors vary at an individual rather than household level, meaning that it is possible to identify some within-household and within-family inequalities in the distribution of for example childcare or unpaid caregiving responsibilities.

To ease understanding, similar Conversion Factors have been placed into three groupings. The first of these groupings comprises two Conversion Factors associated with children and childcare. Conversion Factor 1 (CF.1) captures the number of their own dependent children the individual has in their household;⁵⁴ it does not vary within any family living within the household, based on the age of the child, or based on the within-family distribution of childcare responsibilities. CF.2 supplements this by partly capturing within-family distribution of childcare responsibilities: it is based on a question asking those responsible for children (usually women) about whether they

⁵³ In the UK, the family is termed a “benefit unit” in many surveys. However the precise difference between a family and a household depends on the specific country of study.

⁵⁴ This uses the Department for Work and Pensions’ definition of a dependent child. The author queried this with the Understanding Society team and, due to data limitations, this variable does not capture any dependent children outside the household. It is not possible to disaggregate this down to the specific ages of the children (Understanding Society does have a variable on the ages of children in a household, but not dependent children).

use childcare, and if not, what they do to manage childcare alongside paid work. Where the parent says their children use childcare, are old enough to look for themselves or their partner looks after them, they score in the middle score for this Conversion Factor. Where none of these apply, they score the highest.

The second grouping comprises Conversion Factors associated with having greater care and support requirements. CF.3 captures the hours⁵⁵ devoted any unpaid caregiving inside or outside the household by the individual. Although usually capturing caregiving to adults the variable will capture caregiving to for example disabled children. In addition to this, CF.4 indicates whether there is any adult in the household (other than the worker interviewed) with a long-standing illness, impairment or disability; and CF.5 indicates the number of non-working adults in the household. These three Conversion Factors deliberately double-count some families: because the focus on this paper is in describing the relationship between work quality and Conversion Factors, the focus here is on identifying any workers with any additional commitments, who may not be captured by the other Conversion Factors.

The third grouping comprises three Conversion Factors associated with individuals' own health. CF.6 is a dummy variable capturing whether the individual worker themselves, as opposed to others in their household, has a long-standing illness, impairment, or disability. The other two capture more short-term physical (CF.7) and mental (CF.8) health problems, using a composite of two pairs of variables in Understanding Society on the frequency with which the worker's mental or physical health affected their accomplishments or how carefully they worked in the last four weeks. Supplementary analysis found that the three, whilst positively correlated, are not as strongly correlated as might be assumed: mental and physical health severity are not the same thing, and both capture something different to an individual's long-term health.

Collectively, these Conversion Factors bring us closer to quantifying the different commitments workers have alongside paid work. However there are some limitations.

⁵⁵ This is based on a categorical variable of hours devoted to unpaid care. There are more categories than presented here but some are merged based on the distribution of the underlying data. Respondents are also able to answer "don't know, but usually more than 20" or "don't know, but usually less than 20." Both of these are allocated to the 10-34 hours category.

Because the underlying data comes from a single country rather than a group of different societies, there is a particular absence of any social or institutional Conversion Factors widely discussed in CA literature – such as a country’s “rights”, “care leave benefits”, or “care services” (Hobson, 2011, p. 158). Nor do Conversion Factors perfectly capture rates of conversion associated with the things they are designed to measure; a better childcare variable, for example, would capture the quantum of hours devoted to childcare by different household members, whilst CF.5 would distinguish between those households with non-working adults who have the means to provide for themselves – such as a pension income or assets – vs. those who do not. These Conversion Factors help enable some of the first analysis of the mismatch between work quality and worker circumstances, but they do not claim to offer the final, definitive answer on how to measure this mismatch. They provide the foundations on which future research can build.

Table 4.1. List of Conversion Factors used in this study.

Grouping	Conversion Factor	Level	Description
Children and Childcare	CF.1: Dependent children.	Family.	Categorical. Number of own dependent children in household aged 0-15. Distinguishes between: <ul style="list-style-type: none"> • No dependent children (0) • One dependent child (0.25) • Two dependent children (0.5) • Three dependent children (0.75) • Four or more dependent children (1).
	CF.2: Childcare.	Individual.	Categorical. Distinguishes between: <ul style="list-style-type: none"> • Has no dependent children in household (0). • Has own dependent children in household, either uses childcare or partner looks after them /children old enough to look after themselves (0.5). • Has own dependent children in household, does <u>not</u> use childcare, and – when asked for the reason they do not use childcare – does <u>not</u> say children either looked after by partner or are old enough to look after themselves (1).
Care and Support	CF.3: Unpaid care.	Individual.	Categorical. Number of hours usually devoted to unpaid care per week for sick, disabled or elderly person inside or outside the household. Distinguishes between: <ul style="list-style-type: none"> • Provides no unpaid care (0) • Provides unpaid care, 0-4 hours/week (0.25) • 5-9 hours/week (0.5) • 10-34 hours (0.75) • 35 or more (1).
	CF.4: Adults with long-standing illness, impairment or disability in household.	Household.	Categorical. Number of adults, other than the respondent, with a long-standing (> 1 year) illness, impairment or disability. Distinguishes between: <ul style="list-style-type: none"> • None in household (0) • One (0.5) • Two or more (1).
	CF.5: Non-working adults in household.	Household.	Categorical. Distinguishes between: <ul style="list-style-type: none"> • No non-working adults in household (0). • One (0.25) • Two (0.5)

			<ul style="list-style-type: none"> • Three (0.75) • Four or more (1).
Personal Disability and Health	CF.6: Long-standing illness, impairment or disability.	Individual.	Dummy. Set at 1 if respondent has their own long-standing (> 1 year) illness, impairment, or disability; 0 otherwise.
	CF.7: Recent work-limiting physical health severity.	Individual.	Categorical. Combines two 5-level variables on how regularly physical health affected accomplishments and how carefully worked in last 4 weeks, from “none of the time” (0) to “all of the time” (1). Retains the same categorisations as in the severity questionnaire, without any transformations.
	CF.8: Recent work-limiting mental health severity.	Individual.	Categorical. As above. Combines two 5-level variables on how regularly mental health affected accomplishments and how carefully worked in last 4 weeks.

4.4. Findings

4.4.1. *The relationship between QoW and Conversion Factors*

To answer RQ1, Figures 4.2a-4.2c describe the relationship between mean worker scores on the QoW index overall and on five specific QoW indicators discussed in Section 4.3.2, and their scores on each of the three groupings of Conversion Factors. The appendix contains a full correlation matrix for all Conversion Factors and QoW index indicators (Figure 4.4).

Figure 4.2a shows that there is an inverse u-shaped relationship between QoW and the child-related Conversion Factors: a smaller number of children, or having children but using childcare / not having responsibility for childcare, is associated with higher QoW, but mean QoW is similar to workers with no children for larger families or where the individual worker does not use childcare. This reversion, however, is not uniform across all QoW indicators: workers' scores on four of the five QoW indicators presented do improve continuously with increased Conversion Factor scores, with this increase especially dramatic for the Dependent Children Conversion Factor in two of the indicators (Excessive Hours and Employee Flexibility). It falls considerably for Earnings Sufficiency. Overall, this suggests that workers with lower rates of conversion based on children and childcare responsibilities are partly successful in accessing jobs which accommodate to these commitments. However they do this at the expense of their Earnings Sufficiency and other QoW indicators.

The relationship is less positive for the care and support-related Conversion Factors, where there is no "u-shaped" association with QoW index scores: on average, higher scores on these three Conversion Factors – and thus a lower rate of conversion of QoW into wellbeing – are associated with lower QoW overall. Again, however, the relationship varies depending on the specific Conversion Factor, and the specific QoW indicator. Unpaid care (CF.3) is associated with better job security and more sociable hours, but worse autonomy (save for those doing 35 or more hours of unpaid care), broadly similar levels of access to flexible work and markedly lower Earnings Sufficiency. The presence of household members with long-standing illnesses (CF.4) is associated with similar job security and flexible working and slightly more sociable hours but lower autonomy and earnings sufficiency. The presence of non-working

adults is associated with slight improvements in excessive hours up to a point, but broadly similar scores in the other indicators save for earnings sufficiency.

Finally, for the personal disability and health-related Conversion Factors, increased Conversion Factor scores are generally associated with lower QoW index scores, but the relationship is relatively small for the first two Conversion Factors. The presence of long-standing illnesses (CF.6) is associated with slightly lower QoW, lower job security, lower autonomy and – in a repeat of a pattern across all Conversion Factors – markedly lower earnings sufficiency. Flexibility and excessive hours scores are, however, better. QoW index scores are slightly lower for those with more severe physical health issues (CF.7), although job security and earnings sufficiency are noticeably lower. There are noticeably stronger associations between QoW and the recent mental health Conversion Factor (CF.8). Strikingly, milder mental health issues are associated with higher QoW, but the relationship sharply reverses as mental health problems become more severe. Average job security and earnings sufficiency both decline considerably as the severity of mental health issues increases. Smaller declines can be seen with respect to autonomy and the availability of flexible working opportunities (although the difference becomes non-significant for the latter for those with the most severe mental health issues). Only workers' average scores on excessive hours improve with mental health severity.

Taken together, these show that with the exception of the children and childcare grouping of Conversion Factors, higher Conversion Factor scores – that is, a lower rate of conversion of QoW into wellbeing – is associated with *lower* QoW scores. The strength of this relationship differs for different Conversion Factors and QoW indicators, but the data supports the conclusion that there is a “mismatch” between individual work quality and worker circumstances. It should be emphasised that according to the CA, this relationship is the opposite of what it would need to be for these workers to achieve the same wellbeing of workers with a higher rate of conversion. Indeed, even a null relationship between Conversion Factors and QoW – such as that seen with respect to the largest families, or those with no childcare – means that on average, workers with these Conversion Factor scores have lower wellbeing than workers with lower Conversion Factor scores.

Figure 4.2a. Weighted mean worker scores on the QoW index overall, and on five specific QoW indicators, for the **Children and Childcare** grouping of Conversion Factors. Standard errors in error bars. Wave 12 (2020-21).

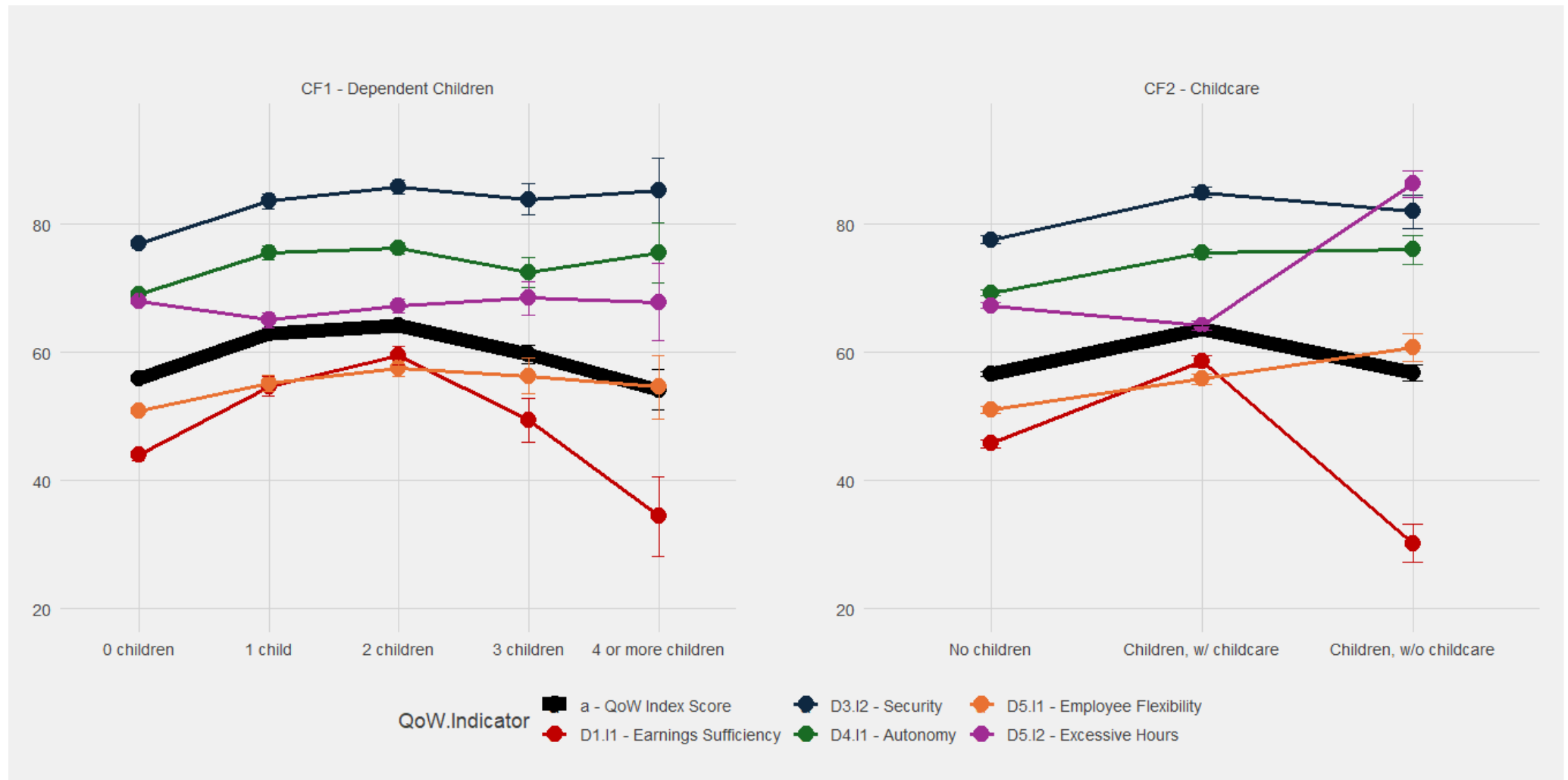


Figure 4.2b. Weighted mean worker scores on the QoW index overall, and on five specific QoW indicators, for the **Care and Support** grouping of Conversion Factors. Standard errors in error bars. Wave 12 (2020-21).

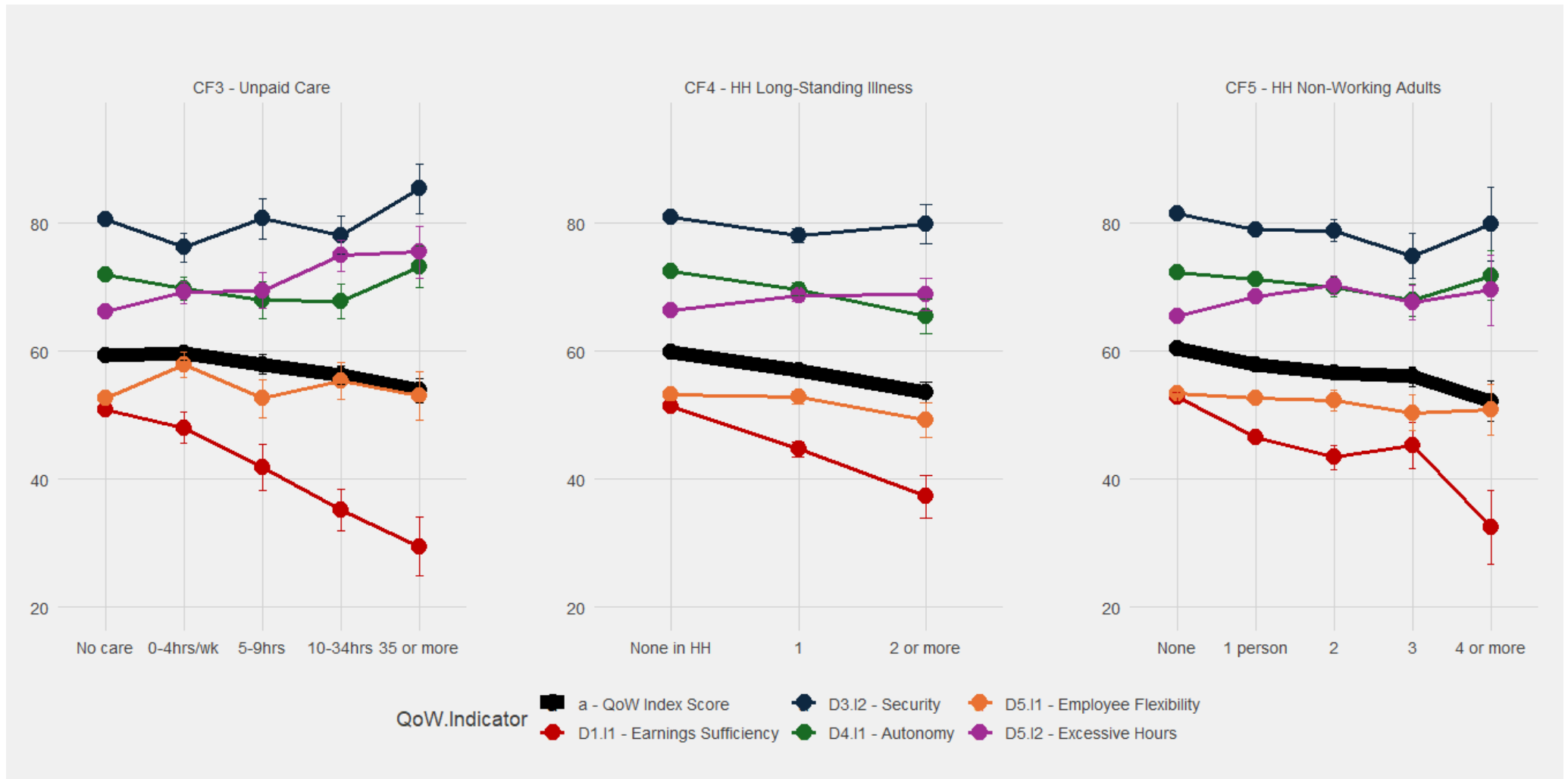
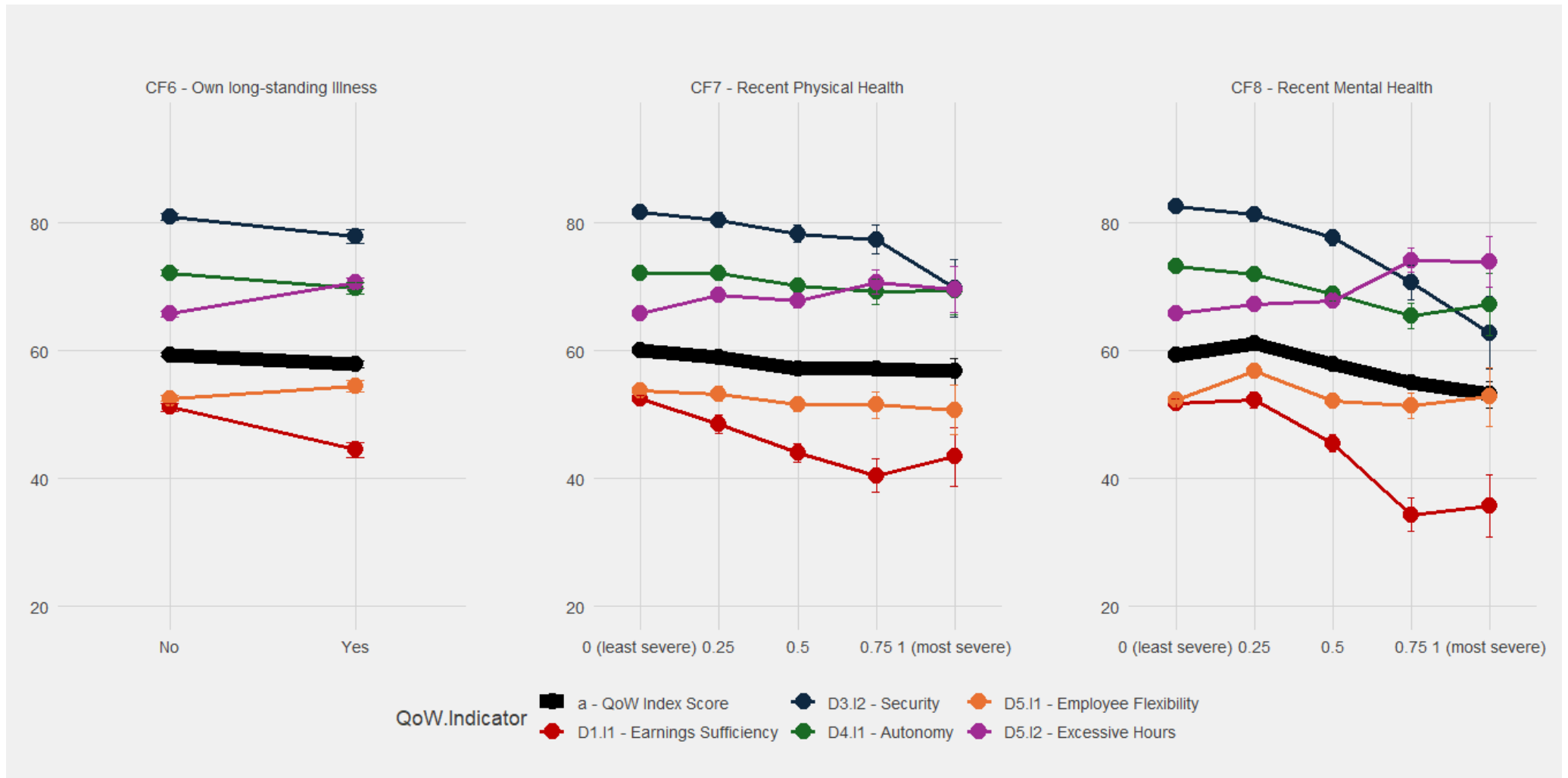


Figure 4.2c. Weighted mean worker scores on the QoW index overall, and on five specific QoW indicators, for the **Personal Disability and Health** grouping of Conversion Factors. Standard errors in error bars. Wave 12 (2020-21).



4.4.2. *The interacting role of worker choices over alternative opportunities*

Turning to RQ₂, I now explore whether workers' CS scores are related to these Conversion Factors in their own right. Table 4.2 presents outputs from three sets of linear regressions of the relationship between the eight Conversion Factors and three different outcome (y) variables: workers' QoW index scores (Model 1), workers' CS scores (Model 2), and the interaction of QoW * CS scores (Model 3). Note that the purpose of these regressions is simply to *describe* rather than *predict* the relationship.

The table shows that with the exception of the children and childcare-related Conversion Factors, higher Conversion Factor scores are associated with lower rather than higher CS scores (Model 2) as well as QoW scores (Model 1). When the outcome variable is substituted for the interaction of QoW and CS, the negative coefficients are larger than for Model 1 for five Conversion Factors – Unpaid care (CF.3), non-working adults (CF.5), long-standing illness (CF.6), recent physical health (CF.7), and recent mental health (CF.8) – and the positive coefficients are smaller for the dependent children (CF.1) and childcare (CF.2) Conversion Factors. Put another way, workers with *both* low quality-work *and* constrained choices over alternative opportunities – in the form of lower QoW and CS scores, respectively – tend to have a disproportionately lower rate of conversion for most Conversion Factors.

To investigate this further, Table 4.3 splits the working population into three groups depending on the relationship between their QoW and CS scores: those in the top 40% of the QoW and CS distribution (“Good work, wide choices”); those in the bottom 40% of the QoW distribution but top 40% of the CS distribution (“Bad work, wide choices”); and those in the bottom 40% of the QoW and CS distribution (“Bad work, constrained choices”). The rows provide descriptive information on demographics, Conversion Factors, and employment relationship of these individuals.

The analysis finds that the most marginalised workers of all – those in bad work with constrained choices – tend to have a lower rate of conversion of QoW into wellbeing than the least marginalised (“Good work, wide choices”). A higher proportion of those with dependent children lack childcare arrangements, have unpaid caring responsibilities, have a household member with a long-standing illness, or have a long-standing illness themselves. On average, they live in households with

more non-working adults, and have higher recent physical and mental ill health severity scores. The only exception, in line with the findings of the previous subsection, concerns the number of dependent children, where the least marginalised workers have more children on average.

Again, the theory presented earlier in this paper would argue that these workers would need a higher rate of conversion of QoW into wellbeing in order to compensate them for their marginalised position relative to other workers: they already have low QoW, and have fewer choices of what else they could do or be outside their current work activity. Despite this, the most marginalised workers of all tend to have a lower rate of conversion compared with the general population of workers, thus further lowering their wellbeing. The next section will explore these relationships in further detail, by various sub-groups of workers.

Table 4.2. Results from three sets of regressions of the relationship between QoW and CS Index scores and each of the eight Conversion Factors. Wave 12 (2020-21).⁵⁶

	Model 1 (y = QoW Index score; 0-100 scale)	Model 2 (y = CS score; 0-100 scale)	Model 3 (y = QoW Index * CS scores; then rescaled back to 0-100)
CF.1: Dependent Children	+11.07*** (1.63)	-0.634 (1.20)	+6.07*** (1.66)
CF.2: Childcare	+8.91*** (1.37)	-0.51 (1.00)	+4.93*** (1.38)
CF.3: Unpaid Care	-3.77(.) (1.95)	-4.02** (1.39)	-6.30*** (1.91)
CF.4: HH Long-Standing Illness	-6.00*** (1.50)	-3.54*** (1.13)	-4.60** (1.56)
CF.5: HH Non-Working Adults	-7.10*** (1.91)	-4.42** (1.38)	-7.52*** (1.81)
CF.6: Own Long-Standing illness	-1.51(.) (0.90)	-2.30*** (0.65)	-2.98*** (0.89)
CF.7: Recent Physical Health	-4.31** (1.51)	-8.34*** (1.09)	-9.09*** (1.52)
CF.8: Recent Mental Health	-3.87* (1.56)	-10.79*** (1.15)	-9.27*** (1.60)

⁵⁶ Standard errors in parentheses. Asterisks denote statistical significance: (.) p = <0.1; * p = <0.05; ** p = 0.01; *** p = 0.001. All models carried using a weighted survey design.

Table 4.3. Descriptive characteristics three sub-groups of UK workers, Wave 12 (2020-21). Colour-codes denote whether the most marginalised workers (“Bad work, constrained choices”) score significantly higher (↑), the same (⇒), or lower (↓) than least marginalised (“Good work, wide choices”).

		“Good work, wide choices” (top 40% QoW <u>and</u> CS)	“Bad work, wide choices” (bottom 40% QoW, <u>but</u> top 40% CS)	“Bad work, constrained choices” (bottom 40% QoW <u>and</u> CS)
Weighted proportion of paid workers (%) (and n# respondents)		18.0% (2,640)	5.3% (777)	12.0% (1,757)
Demographics	Age (#Mean)	47.3 (0.31)	54.3 (0.7)	46.9 (⇒) (0.51)
	Female (%)	50.7%	55.7%	55.9% (↑)
	Non- white UK ethnicity (%)	17.1%	14.4%	22.5% (↑)
Conversion Factors	CF.1: Dependent children (#Mean; sample-wide)	0.89 (0.03)	0.54 (0.06)	0.68 (↓) (0.04)
	CF.2: Has children but no childcare (%; amongst those <u>with</u> children)	5.8%	17.3%	15.2% (↑)
	CF.3: Has unpaid caring responsibilities (%; sample-wide, any n# hours)	14.5%	22.2%	18.8% (↑)
	CF.4: Other HH member has long-standing illness (%; sample-wide)	21.2%	25.0%	28.7% (↑)
	CF.5: HH Non-Working Adults (#Mean)	0.53 (0.02)	0.66 (0.03)	0.68 (↑) (0.03)
	CF.6: Has long-standing illness (%)	22.0%	24.7%	32.3% (↑)
	CF.7: Recent physical health severity (#Mean, 0-1)	0.14 (0.00)	0.16 (0.01)	0.23 (↑) (0.01)
	CF.8: Recent mental health severity (#Mean, 0-1)	0.15 (0.00)	0.14 (0.01)	0.24 (↑) (0.01)
Employment relationship	Gig economy (%)	0.01%	5.9%	4.7% (↑)
	Self-employed (%)	1.7%	46.7%	25.3% (↑)
	Zero hours contract (%)	0.00%	2.3%	3.0% (↑)

4.4.3. Implications for labour market inequalities by gender, ethnicity and the employment relationship

Finally, I address RQ₃ by investigating the implications this has for labour market inequalities: do different rates of conversion in the population increase or narrow the inequalities in work-related wellbeing between different sub-groups? There are some inherent challenges in representing these inequalities with the new data and indicators presented in this paper. One way to represent these differences would simply be to describe the different scores on each individual Conversion Factor by various sub-groups, leaving it to the reader to make their own judgment about the implications of these differences for labour market inequalities. This would, however, be unsatisfactory for two reasons. First, it would not account for the interaction of QoW and CS scores with Conversion Factors. For example one sub-group might have a similar rate of conversion as another sub-group, but relatively poorer QoW scores. Presenting their Conversion Factor scores alone would give the appearance of no labour market inequalities. Second, it would not account for the cumulative effect of high scores on several Conversion Factors. For example, one sub-group might have marginally lower rates of conversion for each Conversion Factor, but they might be disproportionately more likely than another sub-group to have a low rate of conversion on numerous Conversion Factors simultaneously.

I suggest that the best way to account for this in future research is by equivalising workers' QoW and CS scores based on their Conversion Factor scores, and analysing inequalities in these before and after equivalisation. This would effectively mean dividing the sum of QoW and CS scores by some equivalisation scale, based on an aggregation of Conversion Factors. Equivalisation is a standard method in research on income poverty, with poverty statistics around the world usually converting all households' income into an equivalence scale before calculating poverty rates (for a discussion, see Townsend, 1983, pp. 262–267). This is done by simply dividing household income by a given equivalence scale. The modified OECD equivalence scale is widely used for these purposes (Chanfreau and Burchardt, 2008), and is set at 1 for a single adult living alone (meaning such individuals see no change in their equivalised income), and then increases for every additional adult or child in the household such

that all else held equal, those households will have a lower equivalised income. To date, equivalisation is rarely discussed or applied in other contexts. Equivalence scales usually only equivalise based on the presence of children or adults in the household, with “other variations in needs” – such as disability, care and health – “rarely acknowledged.” (Zaidi and Burchardt, 2005, p. 89; for a CA-based discussion of Conversion Factors and disability, see Rosano et al., 2009).

However, it is not possible to generate an equivalence scale with which to aggregate Conversion Factors. This is because an equivalence scale needs to be developed with reference to a given outcome, such as the effect of each Conversion Factor on subjective wellbeing (Kuklys, 2004) or some measure of the standard of living (Zaidi and Burchardt, 2005). This is easier to do with income than for a non-pecuniary measure such as QoW or CS scores since income is a continuous variable and is cardinal. In addition, for household or family-level Conversion Factors there is some basis for arguing that, where an individual worker freely chooses to for example adjust their QoW to accommodate to their commitments, the QoW of other household members should come into consideration in any equivalisation. Again, this is easy to do with respect to earnings, since one could equivalise based on the sum of household or family earnings. It is much more contentious with respect to the non-pecuniary indicators of QoW such as workplace flexibility or even health and safety, where the scores of others clearly cannot compensate for lower QoW.

In light of these limitations, this paper adopts a more simplistic approach to illustrate the impact of Conversion Factors on labour market inequalities. Each individual worker’s equivalised wellbeing (E^i) is determined by the sum of their QoW (Q^i) and CS (C^i) scores, divided by the sum of their Conversion Factor scores (F^i):

$$E^i = \frac{Q^i + C^i}{\sum F^i}$$

This methodology is sensitive to the weighting of the Conversion Factors, all of which are equally weighted, and to the process for assigning CF scores in different categories (see Table 4.1) – hence the need for future research to develop an equivalisation approach. One might, for example, challenge the rate at which CF scores

increase for dependent children or the way the unpaid care categorisations have been cut, or argue that the lack of childcare should have a higher weighting.

To be transparent about this sensitivity, Figures 4.3a-c present the cumulative effect of dividing the sum of QoW and CS scores by each Conversion Factor in turn. They show the difference in weighted mean QoW, QoW + CS and equivalised QoW + CS for sub-groups of workers in three categories: by gender (Figure 4.3a), ethnicity (Figure 4.3b), and the employment relationship (Figure 4.3c). Where the distance between the means of any given pair of sub-groups widens as the reader scans down the figure, this means the Conversion Factors widen labour market inequalities relative to looking at QoW or CS scores alone. Where they narrow, this means Conversion Factors narrow labour market inequalities. To ease comparison, scores are rescaled to a 0-100 scale at every stage.⁵⁷

Taking gender first, Figure 4.3a shows that the mean difference in QoW between men and women widens after the different rate of women is accounted for. In other words, womens' lower rate of conversion is not compensated by having a higher work quality and wider labour market choices than men. When only their QoW index scores are compared, at the top of the figure, women have a slightly lower QoW than men. This difference widens with the addition of CS scores. It widens further once childcare, unpaid care and recent mental health are introduced.

Turning to ethnicity, Figure 4.3b shows only two ethnic groups have QoW scores which are significantly worse than white UK workers on average: Pakistani and Bangladeshi workers. After accounting for CS scores and equivalising for Conversion Factors, the inequality is widened for the Bangladeshi and Pakistani ethnic groups, and an inequality vs. white UK workers emerges for Indian, Black African and Black Caribbean workers. The introduction of Conversion Factors therefore not only accentuates labour market inequalities by ethnicity, but introduces new inequalities where these did not exist before.

Finally, Figure 4.3c shows the opposite occurs with respect to the employment relationship. The self-employed, those on zero hours contracts and gig economy

⁵⁷ Note that despite this rescaling, average scores continue to decline as you go down each figure because there continue to be workers with no Conversion Factors (thus the top score never changes, as these workers' QoW + CS scores are divided by 1 at every stage).

workers have significantly worse QoW scores than employees on average, but the inequality narrows once CS scores are introduced. This is unsurprising, since Table 4.3 earlier showed that workers in bad work with wide choices are disproportionately more likely to be self-employed and work in the gig economy than the most marginalised (“Bad work, constrained choices”), and only slightly less likely to use a zero hours contract. The inequality continues to narrow as scores are equivalised based on Conversion Factors, although it can be seen that this mostly occurs due to employees’ children (CF.1) and childcare (CF.2) Conversion Factors.

Figure 4.3a. Cumulative change in gender inequality in QoW and CS scores. Mean standardised (0-100 scale) QoW and QoW + CS scores for men vs. women after accounting for each Conversion Factor. Scores calculated by dividing individual scores by each Conversion Factor score one-by-one. Greater distance between dots at y axis = greater inequalities. Standard errors in error bars.

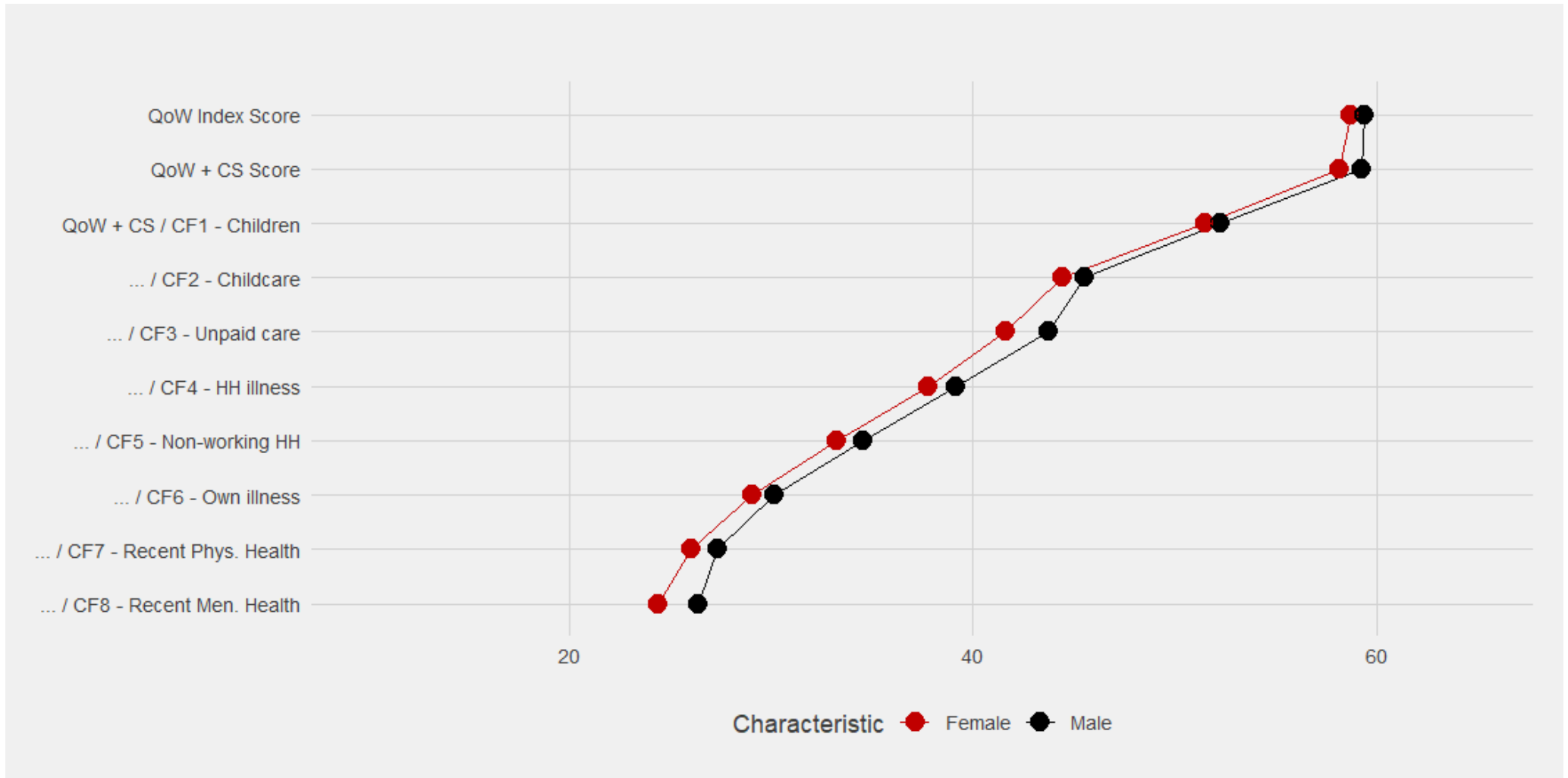


Figure 4.3b. Cumulative change in ethnicity inequality in QoW and CS scores. Mean standardised (0-100 scale) QoW and QoW + CS scores for six ethnic groups after accounting for each Conversion Factor. Scores calculated by dividing individual scores by each Conversion Factor score one-by-one. Greater distance between dots at y axis = greater inequalities. Standard errors in error bars.

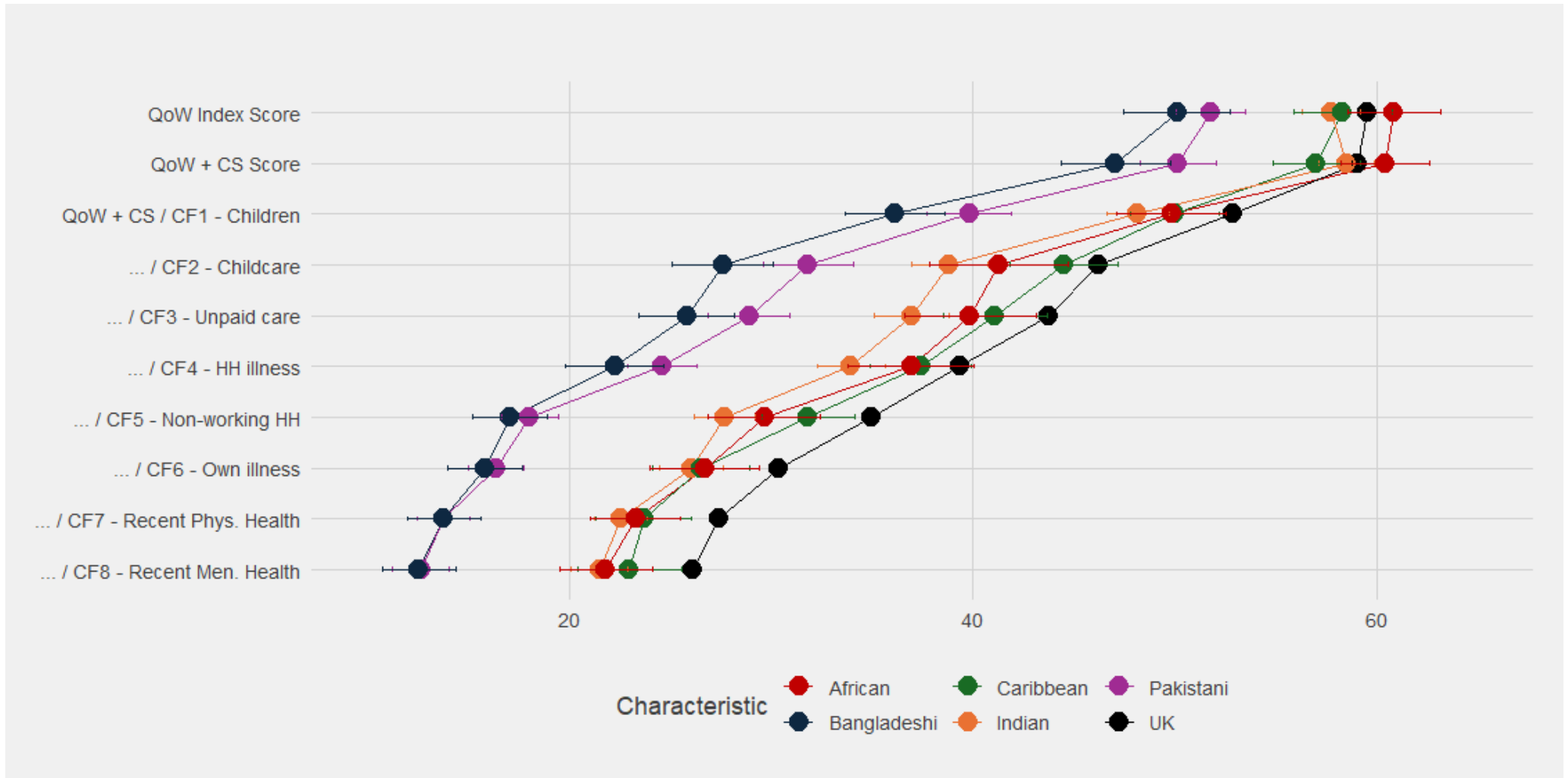
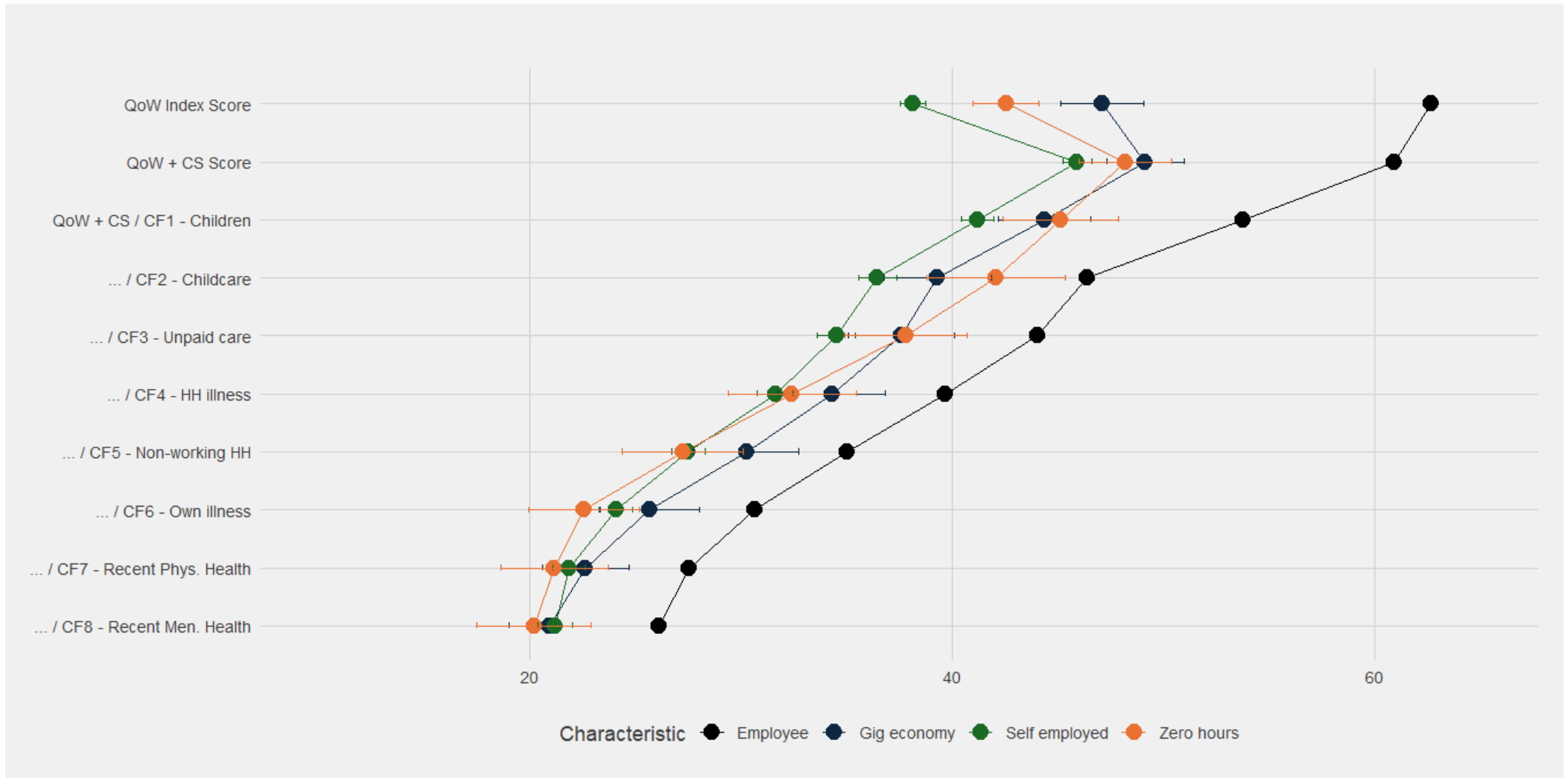


Figure 4.3c. Cumulative change in inequality in QoW and CS scores by **employment relationship**. Mean standardised (0-100 scale) QoW and QoW + CS scores for four groups of workers after accounting for each Conversion Factor. Scores calculated by dividing individual scores by each Conversion Factor score one-by-one. Greater distance between dots at y axis = greater inequalities. Standard errors in error bars.



4.5. Conclusions

This paper has sought to address a key issue in existing literature on multidimensional work quality: the exclusive focus on the individual worker, without considering the *circumstances* under which they work – the homes they live in, the families they support, and the health- and disability-related burdens they have to endure whilst working. A great deal of literature, particularly though not exclusively within sociology, writes of a “mismatch” between work quality and worker circumstances, stressing that as labour market participation rates have increased, the modern worker increasingly has to manage intense workloads alongside competing responsibilities at home. Owing to limitations of data and a lack of conceptual underpinning, this literature has to date not been reconciled with studies of multidimensional work quality.

I have proposed the CA as a conceptual framework which can help reconcile these two groups of literature, and put a number on this mismatch. Worker circumstances – such as caring responsibilities, childcare, other household members’ needs, and their own disabilities or physical and mental health issues – should be seen as Conversion Factors: they reduce the rate of conversion of work resources into wellbeing, thus requiring workers with a lower rate of conversion to have higher work quality to achieve a given level of wellbeing. New data, using Understanding Society, helps us quantify this mismatch for the first time, providing data on the relationship between workers’ work quality – measured according to their scores on a UK QoW index – and their Conversion Factors. This paper does not claim to make any causal inference about this relationship: rather it has *described* this relationship as far as possible given the constraints of the data, and the relative novelty of the research topic. There is scope for future research to build on this methodology in several ways and to introduce new data to further study the relationships. Potential ways forward are discussed in the preceding sections.

This paper has found that on average, workers with the lowest QoW have a lower, rather than higher, rate of conversion of QoW into wellbeing. Given that these workers already have low wellbeing achievement from their work, this relationship is deeply concerning, and exacerbates the difference in QoW we observe at the individual level: it means that these workers have even lower wellbeing than their individual QoW

scores would suggest they do. This inequality is further exacerbated once we consider the choices workers have over different activities other than their chosen work, with the most disadvantaged workers of all – those in low QoW, with constrained choices – having a disproportionately lower rate of conversion than those with low QoW alone.

These findings have significant implications for inequalities in the UK labour market, as outlined in the final subsection of this paper: inequalities by gender and ethnicity widen once we account for the role of Conversion Factors. There is scope for future research to build on this methodology in several ways and to introduce new data to further study the relationships. Potential ways forward are discussed in the preceding sections. This paper, it is hoped, provides the conceptual and empirical basis on which to quantify the “mismatch” between work quality and worker circumstances, and studying the implications these have for labour market inequalities both in the UK and around the world.

Figure 4.4. Correlation matrix of workers' CF scores with each QoW indicator, from PCA. Uses Spearman correlation coefficients.

CF8.Recent.MentalHealth	-0.08	-0.07	-0.02	-0.04	-0.09	-0.05	0	0.03	0.03	-0.03	0.05	0.02	0.04	0.02	-0.02
CF7.Recent.PhysicalHealth	-0.09	-0.08	-0.02	0	-0.06	-0.02	0.01	0.04	-0.02	-0.02	-0.02	0	0.03	-0.02	-0.05
CF6.LongStanding.Illness	-0.07	-0.04	0.01	0.02	-0.04	-0.04	0.04	0.06	0.03	-0.04	-0.03	-0.01	0.03	0	-0.04
CF5.Non.Working.HH.Members	-0.08	-0.06	-0.08	-0.05	-0.04	-0.04	0	0.04	-0.02	-0.06	-0.01	-0.03	-0.01	-0.03	0.01
CF4.Other.HH.Illness	-0.09	-0.1	-0.07	-0.06	-0.03	-0.05	-0.01	0.02	-0.01	-0.06	-0.01	-0.05	-0.02	-0.03	0.01
CF3.Unpaid.Care	-0.07	-0.03	0.01	0.03	-0.02	-0.04	0.06	0.05	0.03	-0.02	-0.02	0.01	0.06	0.01	-0.06
CF2.Childcare	0.12	0.16	0.15	0.13	0.09	0.09	0.04	0.02	0.07	0.12	0.03	0.08	0.05	0.07	-0.04
CF1.Dependent.Children	0.14	0.17	0.14	0.13	0.09	0.09	0.04	0	0.07	0.13	0.03	0.08	0.04	0.06	-0.03
	D111.Earnings.Sufficiency	D112.Earnings.Equity	D211.Pension	D311.Continuous.Employment	D312.Composite.Security	D411.Autonomy	D412.Collective.Voice	D511.Excessive.Hours	D512.Flexibility	D611.Managerial.Duties	D612.ShortTerm.Prospects	D613.LongTerm.Prospects	D711.Work.Fatalities	D712.Work.Accidents	D713.Work.Illness

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Conclusions

Work Quality and Work-Related Wellbeing: A Reinterpretation

This thesis has argued for a re-framing of the way we understand work and wellbeing. Our paid work is never carried out in a vacuum. It is embedded in the personal, familial, and social context in which we live. This calls for a distinction between work *quality* on the one hand, and work-related *wellbeing* on the other.⁵⁸ Measuring the latter requires us to go beyond studying and measuring work characteristics, in the way work quality indices currently do: it is about the interaction of work characteristics with the individual's circumstances. The CA, I have argued, provides the framework needed to capture this due to its clear distinction between three things: achieved wellbeing, freedom to achieve wellbeing, and the rate of conversion of resources – in this case, work characteristics – into wellbeing. The three empirical papers of this thesis have operationalised these three things. In so doing, they have identified new inequalities in the experience of work in modern Britain. On the one hand, peoples' choices and rates of conversion are not simply a function of their work quality scores, with a great deal of heterogeneity in the working population. On the other, this process enables the identification of the most disadvantaged workers of all: those workers who simultaneously experience poor work quality, constrained choices, and low rates of conversion of work into wellbeing.

These findings have significant academic and policy implications. As discussed in Papers 3 and 4, there is already a great deal of concern in existing literature about the “circumstances” (broadly defined) of workers, and their relationship with the characteristics of the work people do. Worker “choice” vs. “constraint” has emerged as a key concern in debates about the quality of work, particularly of those in new non-standard employment relationships – with attitudes ranging from sceptical accounts of the constraints faced by these workers (e.g. see Bales et al., 2018; Briken and Taylor, 2018) to the Taylor Review's (2017, p. 16) relatively positive characterisations of the choice-enhancing potential of flexible work. In addition, recent decades have seen growing concern about the increasingly burdensome “commitments” faced by a

⁵⁸ This distinction can be seen most clearly in Figure 1.1, and is also discussed in the introduction during the section on Paper 1.

modern workforce now expected to manage paid work alongside support to the family and household (Correll *et al.*, 2014; Moen, 2015). This thesis helps reconcile literature on work quality indices, worker choices, and worker commitments – providing a novel means to conceptualise and measure these important aspects of the labour market experience of modern workers. For the first time, this has provided quantitative data on the circumstances of these workers: the work they do, the choice they have over the work they do, and the additional commitments they face whilst doing this work.

The rest of this concluding chapter is split into four sections. The first two sections summarise the main contributions of this thesis, starting with the conceptual contributions before going on to address the empirical contributions. The next section discusses the conceptual and empirical limitations of this thesis and charts some ways future research could overcome these. The fourth and final section adopts a broader focus, discussing next steps for social and public policy before concluding with some brief final reflections.

Conceptual Contributions

The Dual Importance of Work to Wellbeing: Navigating the Instrumental vs. Intrinsic Debate

Within the work quality sub-discipline, there is continued ongoing debate about the intrinsic vs. instrumental role of work in wellbeing. Put another way: is work an intrinsic aspect of wellbeing in itself, or the means to the achievement or non-achievement of wellbeing? As noted in Paper 1, existing literature offers a full spectrum of views – from an exclusive emphasis on the instrumental role of work as a “characteristic providing activity” (Suppa, 2019) to a focus on the intrinsic importance of work, such as the “meaningfulness” of work activity (Weidel, 2018).

This thesis helps navigate this debate, using the CA-based framework introduced in Paper 1. In this paper, I argue that any sufficiently comprehensive application of the CA to work quality must recognise the *dual role* of work: it is at once intrinsically and instrumentally important to wellbeing. Some work characteristics (or resources) directly lead to the achievement of Functionings inside the same space to which these

work characteristics belong⁵⁹ – such as potentially a Functioning to engage in meaningful work, or to carry out paid work activity in-and-of-itself. These Functionings can be defined as intrinsic work Functionings. In other respects, work characteristics enable or impede the achievement of Functionings outside the space of work – such as Functionings related to having a family, being healthy, or participating in civil or political life.

Bringing this together, I offer three contributions to help navigate this intrinsic vs. instrumental debate.

First, I have outlined issues with adopting either extreme. A sole focus on intrinsic work Functionings would neglect the pernicious and degrading effect the worst forms of work has on the achievement of many Functionings outside the space of work. These are put perhaps most persuasively by Sayer (2012), who highlights how work affects people at every stage, and in every area, of their lives – with the worst jobs inhibiting peoples’ brain development from their earliest years. Conversely, however, if work is viewed solely in instrumental terms, that would mean no Functionings related to work can be part of a Capability Set. This would neglect the crucial role which peoples’ freedom to work, and to engage in meaningful work, plays in their wellbeing, in ways discussed in further detail in Paper 3. Amongst CA scholars, this is perhaps best described by Bueno (2022) in his useful distinction between Capabilities *through* work, Capabilities *in* work and Capability *for* work.

Second, instrumentally important should not be equated with “unimportant.” There is a tendency in many applications of the CA to assume that any subject of the researcher’s focus must be intrinsically important, as a Functioning in itself. This potentially reflects the greater role intrinsic functionings might play in applications of the CA to areas outside work, such as education (e.g. see Robeyns, 2006). Yet a characteristic of work which has a large instrumental impact on the achievement of Functionings outside the space of work could be *more important* than a characteristic

⁵⁹ To be clear, this is not the same as saying that these work characteristics or resources are themselves Functionings; a resource in the CA cannot be at the same time a Functioning. Philosophically, there is a distinction between saying “resource X enables the achievement of Functioning Y in the same space as X” and “resource X is a Functioning.” This, I suggest, still means that the Capability Theory proposed in Paper 1 is broadly compatible with Suppa's (2019) framework for conceptualising work as a characteristic-providing activity.

which has a lesser effect on the achievement of intrinsic work Functionings. This can be seen once we navigate the process of identifying important Functionings. This process starts with a philosophical (e.g. see Nussbaum, 2011) and/or participatory (e.g. see Alkire, 2005, pp. 5–6) exercise. Yet once we agree lists of Functionings through such an exercise, establishing *the effect* of a group of resources on the achievement of these Functionings is a separate, and in principle empirical, exercise. For example, following Alkire’s process, we may come to agreement that meaningful work is an important Functioning. This may lead us to identify characteristics of work associated with the achievement of meaningful work, and to introduce indicators or them (or of their correlates) into a work quality index. However, after continuing the empirical exercise, the researcher may reasonably conclude that these indicators, whilst important, may have a relatively small weighting in the index relative to indicators which capture those work characteristics associated with the achievement of Functionings outside the space of work – such as work-life balance, earnings, or job security. There is no contradiction in this process: the philosophical or deliberative exercise may have agreed intrinsic work Functionings, but the empirical exercise following from that may identify that Functionings outside the space of work have a greater effect on workers’ wellbeing.

Third, at least so far as work quality and work-related wellbeing are concerned, Functionings cannot clearly be translated into indicators or dimensions. Suppa (2019, p. 13) has argued for a need to “distinguish the multidimensionality of labour activities carefully from the multidimensionality of human wellbeing.” I would extend his argument to even the indicator level. This means, in turn, that indicators and dimensions do not neatly split between intrinsic vs. instrumental. Even earnings cannot be seen from an exclusively instrumental, pecuniary perspective. Indeed, during the course of this thesis, I have found that the CA has much more to say about the way earnings enable wellbeing achievement than might be assumed. Of course, the instrumental effect of earnings is clearly very important, since most of us rely on earnings to achieve any kind of livelihood. Yet our earnings *relative* to other workers also says something about the value society places in our job. This – in addition to various non-pecuniary aspects of the job such as the employment relationship, employment conditions, and task autonomy – says something about the

meaningfulness of this activity, and therefore contributes as a minimum to the achievement of the intrinsic work Functioning of meaningful work. The instrumental role is perhaps best captured in the Earnings Sufficiency indicator of the QoW index whilst the intrinsic role is best captured in the Earnings Equity indicator, but this is to over-simplify the complexity of this relationship: in reality, the line between intrinsic vs. instrumental is blurred at the indicator level, and becomes even more blurred once we abstract further to the dimension and index level. This has implications for the way we build indices of work quality using the CA. Dimensions or indicators cannot be equated with Functionings, and certainly not with Capabilities. As argued in Paper 2, they instead reflect groupings of work characteristics based on the similar effect they have on the achievement of Functionings.

Worker “Choice” and “Commitments”: A Framework for Conceptualising their Role in Work-Related Wellbeing

The contributions outlined in the preceding subsection help us chart a way forward in the measurement of the Functionings workers achieve from work, in their vector of achieved Functionings. However, the most significant conceptual contribution of this thesis lies elsewhere. As I have set out the literature reviews in Paper 3 and Paper 4, a great deal of literature already highlights the importance of worker “circumstances” (broadly defined) to their wellbeing – particularly their “choice” over different activities within and outside the labour market; and the “commitments” workers have to manage alongside paid work in the context of increasing paid labour force participation for women. Yet this literature adopts a wide range of approaches to conceptualising these circumstances, with worker “choice” or “commitments” rarely defined clearly. In turn, indices of multidimensional quality of work have thus far been unable to operationalise these circumstances. We consequently know little about the choice workers have over alternative activities, the commitments they face whilst working, and how these relate to the quality of their work.

This thesis has provided a conceptual contribution to addressing these issues. In all four papers of this thesis, I have set out how the CA can provide a framework for reconciling literature on multidimensional work quality and worker circumstances – paving the way towards a fuller, more accurate understanding of workers’ wellbeing.

The CA does this through its distinction between three things: achieved Functionings from work characteristics; freedom to achieve different combinations of Functionings outside of the worker's current activity; and the different rate of conversion of work characteristics into these Functionings. These have always been an integral part of the CA, yet this thesis introduces a new framework for applying them to the study of work quality, before operationalising this framework for the first time.

Some particular features of this framework warrant re-emphasis in the conclusion, since they distinguish it from other conceptualisations of work and wellbeing. As is apparent from Papers 3 and 4, this framework adopts a broader definition of the indicators determining worker "choice" and "commitments" than some other accounts of work. Paper 3, adopting a "broad" definition of the Capability Set,⁶⁰ argues that a wide range of indicators should serve as proxies for the Capability Set – such as the worker's financial capital, their social connections, their skills, their work histories, and their own perceived self-efficacy – and that these relate strongly to Bourdieu's (1983) three forms of capital. This gives choice an objective rather than subjective definition, very much distinct from the emphasis on worker self-assessments of choice which predominate UK policy debates about new forms of platform labour (e.g. see CIPD, 2017; Taylor, 2017). Likewise, many accounts of worker "commitments" emphasise the role of childcare- and family-related burdens, and focus only on those commitments within the household or family (e.g. see Moen, 2015, p. 176). Paper 4 argues that the concept of Conversion Factors is broader than this: it is about any factors which affect the rate of conversion of work characteristics into wellbeing. This encompasses, amongst other things, caring responsibilities inside and outside the household; long-standing illnesses, impairments or disabilities; short-term work-limiting disabilities and physical health commitments; and the burdens created by non-working household members.

A further contribution, which naturally flows from the above, is that the framework goes beyond considering work quality or work-related wellbeing purely from within

⁶⁰ To recap, Paper 1 introduces two alternative definitions of the Capability Set – narrow vs. broad – when applied to work-related wellbeing. The choice of which to adopt depends on the aims of the application of the CA. It is this "broad" definition which is operationalised in this thesis, since this best aligns with the aims of measuring work-related wellbeing.

the workplace itself. This distinguishes it from modern Marxist accounts of work, such as Labour Process Theory, which place emphasis on the role control at the workplace level and Taylorist methods of de-skilling play in constraining workers' choices and inhibiting their wellbeing (see in particular Braverman, 1974; Gandini, 2019; Tarrabain and Thomas, 2024). Control is undoubtedly a key determinant of constraint: employers necessarily constrain workers' choices when they for example limit workers' freedom to decide the nature, pace and manner of their work; when they use new technologies as a means of "emotional labour", to force workers into compliant employment relationships (Gandini, 2019, p. 1048); or when they compel workers into insecure, unsociable and long working hours. Yet this, on its own, is an incomplete account. This thesis argues that constraint can also take place even in considerably less controlling working environments – such as when the worker has limited choices over alternative labour market activities, or an insufficient financial or social safety net. This calls for a more comprehensive assessment of constrained choices which accounts for both (a) the role employment characteristics themselves play in constraining choices and (b) the circumstances of the worker. Ultimately, as argued in Paper 1, it is this choice over alternative activities which determines the worker's power to shape work around their own lives; low work-related wellbeing can therefore occur under various working conditions and types of job. This distinguishes the CA from some accounts of work which place a primacy on the characteristics of work itself, without also considering the implications for workers' wellbeing of significant changes we have witnessed in the circumstances under which modern workers negotiate access to work – such as the growth of increasingly market-mediated employment relationships (Kalleberg, 2011).

The Capability Approach: Towards a More Radical Conceptualisation of Work and Wellbeing

The two contributions outlined above culminate in a distinct contribution to the way the CA conceptualises work. As argued in Paper 1, there is a gulf between conceptual vs. empirical applications of the CA. The former, conceptual, applications provide rich accounts of work in modern societies; and are well-integrated with debates of the conceptualisation of work outside the CA and across the wider social sciences. Perhaps

in consequence, they emphasise the role of a wide range of factors in determining workers' wellbeing. However, they tend not to operationalise these theories, and nor are many of these conceptualisations carried out with the intention of measuring work quality or workers' wellbeing; the aims of these applications of the CA are instead disparate and varied. As argued in Paper 1, these approaches also lack a shared framework for identifying important Functionings (see Robeyns, 2017).

The latter, empirical, applications have mirroring advantages and disadvantages. They have successfully embedded themselves in the field of empirical work quality research, such that many multidimensional indices of work quality engage to at least some extent with the CA – even in cases where they do not claim to rigorously apply the approach (Muñoz de Bustillo, Fernandez-Macias, *et al.*, 2011, pp. 137–138). Over the past two decades, they have succeeded in developing measures of various non-pecuniary aspects of work in ways not possible at the turn of the 20th Century, and building greater consensus about methods of indicator selection and aggregation. Yet conceptual accounts of work to the CA have cause to criticise these indices for their lack of conceptual underpinning, and consequent failure to operationalise some important aspects of workers' wellbeing – such as the role of the life course in work quality (Bartelheimer and Moncel, 2009; Belardi, Knox and Wright, 2021a); the constraint workers face in their choices (Suppa, 2019; Bueno, 2022); or the mediating role of workers' distinct family (Pocock and Charlesworth, 2017) or institutional (Kalleberg, 2018) context.

Underpinning many of these empirical limitations is a disproportionate, and oftentimes exclusive, focus on the vector of achieved Functionings – rather than the possible combinations of Functionings achievable to the worker or the different rate of conversion of resources into wellbeing. This limitation is common to many applications of the CA: whilst a strand of research in the CA has sought to measure Capability Sets (e.g. see Gaertner and Xu, 2006; Pattanaik and Xu, 1990), this has tended to have been discussed in more general terms rather than advanced in specific research areas such as work quality. This focus on the vector of achieved Functionings limits the contributions the CA has been able to make to the field of work quality. It has helped contribute to a healthy scepticism of subjective measures of work quality amongst most scholars in the field (Muñoz de Bustillo and Fernández Macías, 2005;

Brown, Charlwood and Spencer, 2012; Felstead *et al.*, 2019), and has played a key part in the drive to measure non-pecuniary aspects of work (e.g. see Green, 2009). Yet as argued in both the introduction and Paper 1, neither of these contributions in themselves are unique to the CA (e.g. see Gheaus and Herzog, 2016; Spencer, 2010, chap. 7).

This thesis is, in its essence, an argument for a more radical application of the CA which introduces two additional considerations into the study of work: the Capability Set and Conversion Factors. This enables the identification of new inequalities in work which would not be discoverable in other theories: the constrained choices many in the worst forms of work face about alternative work opportunities; and the way many of these same workers have to manage competing commitments alongside paid work activity. These hitherto hidden inequalities critically impinge on the wellbeing the most disadvantaged workers achieve from paid work. This brings empirical applications of the CA to work much closer to conceptual applications. Alongside this, to address the limitations of conceptual accounts of work and make them more amenable to operationalisation, the thesis introduces a clearer and more rigorous framework for applying the CA, drawing from Robeyns' (2017) framework for developing Capability Theories. This framework gives the CA its own distinct value: it demonstrates what specifically the CA adds, which other theories of wellbeing do not.

Empirical Contributions

New Data and Indicators of Work Quality

The first empirical contribution of this thesis is a practical one. Paper 2 introduces some of the most comprehensive data to date on the multidimensional quality of work in the UK, comprising 7 dimensions and 15 indicators. Some of these indicators operationalise well-studied concepts in work quality such as task autonomy and employee-oriented flexibility. Others are more novel contributions, taking full advantage of the data available in Understanding Society and other UK surveys. For example, the Earnings dimension makes an important distinction between Earnings Equity and Earnings Sufficiency. The Insurance dimension comprises an important indicator on workplace or personal pensions – an often-neglected feature of work quality that does not feature in many indices, but which is increasingly important in

the UK context. The Security dimension makes use of Understanding Society's longitudinal data to develop an indicator on length of continuous employment. The Prospects dimension incorporates data on workers' long-term employment prospects, using Working Futures data, into a work quality index for the first time. Finally, the Health and Safety dimension introduces the first data on occupational fatalities, accidents and illnesses into Understanding Society, addressing what has up to this point been a key limitation of work quality data in this survey.

Alongside the QoW index, Papers 2 and 3 introduce new indicators of (proxies for) workers' Capability Sets, and Conversion Factors. Some of these make use of important life-course data – such as workers' parental NS-SEC, and the QoW scores attained throughout their working lives, and previous spells of non-employment – thus helping to meet aforementioned demands for a life-course approach to job quality in conceptual accounts of work in the CA. Others provide some of the first data on the family and caregiving commitments of workers, and the health and disability-related demands they have to manage alongside paid work.

It is however the *synthetic* nature of these indicators which help make this data especially valuable for future researchers. The papers of this thesis have frequently highlighted the benefits of synthetic indices, compared with non-synthetic data such as dashboards. To reiterate, they enable (a) comparison of workers' performance *within* different indicators and dimensions (Leschke and Watt, 2014, p. 2), and (b) analysis of the relationship *between* work quality and other variables of interest, such as individual workers' age, ethnicity, region of residence, or public policy outcomes. Subsequently, we have seen the development of cross-national synthetic indices in for example Europe (Leschke, Watt and Finn, 2008; Muñoz de Bustillo, Fernandez-Macias, *et al.*, 2011) and Latin and Central America (e.g. see González *et al.*, 2021; Sehnbruch *et al.*, 2020; Soffia, 2018). These have opened up new forms of analysis, uncovering differences in work quality between countries and providing crucial new data on the relationship between workers' achievements on different indicators and dimensions of work quality, and countries' performance on various economic indicators. However, they tended to lack the sample size to explore *within-country* inequalities in work quality (as acknowledged by e.g. Leschke and Watt, 2014, p. 2), and contained limited data on workers' household or family circumstances.

The data in this thesis marks a third wave in the study of work quality: a synthetic index, with a sufficiently large sample size to analyse within-country inequalities in work, and with crucial data on workers' wider circumstances. This builds on the developments of the two waves preceding it, which were a necessary precondition for the development of this third wave of work quality analysis. The QoW index enables future research to analyse the relationship between work and other variables, in ways which were not possible in preceding decades. This offers future researchers a strong foundation on which to build; I will return to this later in this conclusion.

Weighting Dimensions: Building Consensus Around Trends and Inequalities in Work Quality

In addition to new data, this thesis also contributes to debates about how to analyse trends and inequalities in work quality in ways which are robust to a range of different weighting methods. A common concern about multidimensional indices is that findings may be highly sensitive to different relative weights between dimensions. The Alkire-Foster method used for multidimensional poverty indices (Alkire and Foster, 2011b; Alkire *et al.*, 2015), and increasingly used also for employment deprivation-based work quality indices (e.g. see González *et al.*, 2021; Hovhannishan *et al.*, 2022), weights dimensions equally – which has been criticised in other areas of social research (Decancq and Lugo, 2013; Greco, 2018). To date, there has been limited research into the impact of different weighting methods in work quality research specifically.

Paper 2 makes a significant contribution to filling this gap in the work quality literature, by presenting the results from four widely-used weighting methods discussed in wellbeing literature. In so doing, this paper connects debates about weighting work quality indices with this broader wellbeing literature, and generates some of the first data on what work quality in the UK looks like under different weighting methods. This enables some novel analysis of the sensitivity of findings about inequality and change in UK work quality. Save for the hedonic weighting method, there is a consistency in inequalities in work quality between most of the same sub-groups, and a polarisation in work quality over time. Indeed, even hedonic weighting finds that work quality has declined considerably for self-employed workers in the UK. The methodology introduced in this paper has the potential to provide the

basis for greater agreement about trends and inequalities in work quality, by presenting researchers with a set of reasonable potential weighting methods to use in their own indices.

Worker Capabilities and Conversion Factors: New Inequalities in Work

Finally, a consistent theme of this thesis has been that workers' wellbeing needs to be assessed in three distinct ways: workers' achieved Functionings from work (QoW), workers' Capabilities (CS Scores), and workers' Conversion Factors. This distinction would of course not matter if workers' Capabilities and Conversion Factors were simply a function of their QoW. A central prediction of Paper 1 was that this will not be the case: the most advantaged workers, with the widest Capability Sets, will *not* uniformly access high-quality work, but will instead access the most suitable work for them at various points in their life course because they have the power to shape work around their own lives, rather than the needs of employers.⁶¹ By contrast, the most disadvantaged workers, with the narrowest Capability Sets, access these same jobs in a context of constraint rather than choice. Nor did Paper 1 predict that these most disadvantaged workers would uniformly have a lower rate of conversion of work into wellbeing; it instead suggested that an important sub-group of the most disadvantaged workers may have a disproportionately lower rate of conversion, potentially because their constrained choices give them little option but to accept jobs which do not compensate them for their lower rate of conversion. This makes QoW at best an imprecise, and at worst a misleading, measure of work-related wellbeing.

The findings of Papers 3 and 4 are consistent with these predictions. Paper 3 finds there is a relationship between low-quality work and constrained choices, but this is far from uniform across the workforce: a minority of those in the lowest-quality work – in which the self-employed are over-represented – appear to access these jobs as a free choice. Nor is the relationship uniform across different levels of work quality, or different types of employment relationship: in line with what is predicted in Paper 1, workers' CS scores are more heterogenous the lower down the distribution of QoW, and in non-standard employment relationships. In a similar vein, Paper 4 finds a general relationship between lower QoW and a lower rate of conversion of work into

⁶¹ This can be seen most clearly in Figure 1.2.

wellbeing: put another way, those in lower-quality work tend to score more highly on almost all Conversion Factors than those in higher-quality work (with the exception of the number of children). Yet, again, this is far from uniform. In addition, workers' CS Scores are also predictive of their rate of conversion in their own right, even when one controls for workers' QoW scores. This means those workers in the most disadvantaged situation in the labour market – in low-quality jobs, with constrained choices – tend to have a lower rate of conversion than the most advantaged (in high quality jobs, with a wide range of choices). This will exacerbate the difference in their work-related wellbeing, in ways that work quality indices currently do not capture.

Collectively, these findings demonstrate the need to measure workers' Capabilities and Conversion Factors alongside their QoW. At least as far as the modern UK labour market is concerned, the introduction of the Capability Set and Conversion Factors enables the identification of an important sub-group of workers who simultaneously experience low QoW, constrained choices and a low rate of conversion.

Limitations and Next Steps

Strengthening the Foundations of Research into Worker Wellbeing: A Future Path for Normative and Participatory Applications of the CA

Whilst this thesis has made a significant contribution to thinking on the conceptualisation of work, some significant gaps remain. Paper 1 takes steps towards developing a Capability Theory of QoW along the lines proposed by Robeyns (2017), but it does not claim to meet all the requirements needed for a Capability Theory – it merely takes steps “towards” a complete Capability Theory. This can be seen particularly with the discussion in the paper of the intrinsic vs. instrumental role of work. To advance research further, we need a list of important Functionings for the specific purpose of measuring QoW. This would likely considerably overlap with, but be distinct from, existing lists of important Functionings. Developing such a list would either require (a) much deeper philosophical reflection than this thesis has been carried out – with the introduction of additional normative theories, of the kind done by Nussbaum to identify her Central Capabilities (for a discussion, see Jaggar, 2006) – or (b) a process of engagement with citizens, along the lines of Burchardt and Vizard's (2011) list of Capabilities for the purpose of equality and human rights monitoring. A

further, related, omission is the limited discussion in this thesis of a human needs-based approach to work quality, in favour of a broader wellbeing-based goal. This contrasts with many other accounts of work quality, particularly Spencer (2010) and Yeoman (2013).

In the absence of a more thorough treatment of these conceptual issues, Paper 1 sketches out a potential way forward: arguing that the instrumental role of work likely outstrips its intrinsic role, and proposing a future deliberative means for identifying intrinsic work Functionings based on Alkire's (2005, pp. 5–6) and Sen's (2004) more participatory criteria. This advances thinking on the intrinsic vs. instrumental role of work in the CA in the ways discussed earlier in the conclusion, but is still far short of meeting Robeyns' (2017) call for deeper and more rigorous consideration of the normative basis for identifying important Functionings. Future research should fill this gap by introducing additional normative considerations, and conducting participatory engagement to identify important lists of Functionings for the specific purpose of measuring QoW. In an encouraging development, recent work quality research has made inroads into identifying a list of Functionings through philosophical and deliberative exercise with food delivery drivers (Ghirlanda, 2024). This has the potential to redress this limitation in time.

An associated limitation is that this thesis does not attempt to empirically demonstrate the association between each of these indicators and a measure of Functioning achievement or non-achievement. Instead, it follows the approach used in existing work quality indices: identifying indicators and dimensions based on a review of social science literature (Muñoz de Bustillo, Fernandez-Macias, *et al.*, 2011, pp. 51–59). Pursuant to this, Paper 2 identifies important indicators and dimensions of work based on consideration of their effect on Functionings, along the lines proposed in Paper 1. Appendix F complements this by giving an account of how these dimensions and indicators affect the achievement of Functionings. Notionally, it may in future be possible to fill this empirical gap with high-quality longitudinal data across an entire life course. Let us imagine a scenario where, through participatory engagement, a list of important Functionings for the purpose of measuring QoW has been agreed. Let us then imagine that we identify indicators which measure these, in much the same way as Anand et al (2009) identified indicators of Central Capabilities

using BHPS data. In such a scenario, it would be possible to test the arguments made in Paper 2 in a much more direct way than is possible currently, due to the limitations of panel data. If future research were to overcome this, it would play a crucial role in completing the Capability Theory: clearly linking QoW indicators with Functioning achievement.

Existing QoW Indicators: Prospects for Future Refinements

This thesis has made important inroads into measuring QoW with the introduction of new indicators and new dimensions. But the QoW index is not designed to be static: it should evolve with changes in societal preferences, improvements in data availability, and changes in the legal and social context. Here I discuss the limitations of each dimension of the QoW index, and comment on how they will likely need to be refined in future. Some of these would require changes to future questionnaires in Understanding Society.

As noted earlier, the Earnings dimension marks a significant improvement in the way many work quality indices capture earnings due to its distinction between Earnings Sufficiency and Earnings Equity. However the approach for generating scores for both of these will need to evolve. The cut-offs for the Earnings Sufficiency indicator will change in line with changes in societally-agreed Minimum Income Standards developed by the Joseph Rowntree Foundation (JRF). Future improvements could also be made to develop regionally-specific societally-agreed minimums, especially improving the way MIS thresholds account for different housing costs in different local areas. There may also be potential to deviate from a cut-off approach and account for workers' proximity to the different cut-offs, following a fuzzy set theory approach (for an application to poverty, see Cheli and Lemmi, 1995). The cut-off approach to the Earnings Equity indicator will also need to be refined in future due to further compression in the wage distribution since Wave 12 of Understanding Society. In 2019, the Government instructed the Low Pay Commission to set the National Living Wage at two-thirds of median earnings for workers aged 21 and over by 2024 (DBT, 2024b). This was indeed achieved this year, and the new Government has since issued new guidance to the Commission that it should maintain the National Living Wage at two-thirds of median earnings and begin the process of removing different wage bands for

younger adults (DBT, 2024a). This will likely lead to a further narrowing of the gross wage distribution in later updates to the QoW index. This may call for refinements of the thresholds of the Earnings Equity indicator, or even a deeper reconsideration of what purpose this indicator should serve in the future UK labour market.

The Insurance dimension contains a categorical indicator on (employee-only) pension enrolment or (self-employed or, if not enrolled on a workplace pension, employee) payment into a personal pension. This is an improvement on existing indices, but is an inexact proxy for the underlying thing it is trying to measure: the sufficiency of the worker's retirement earnings from all their workplace and personal pensions. Some workers who score poorly on the Pension indicator will do so for legitimate reasons, potentially opting out in their current job because of their already high expected retirement earnings. Others who score well may be in a low-quality pension with limited expected retirement earnings; there is no way of knowing for sure, because the indicator tells us nothing about the type of pension these workers receive such as defined contribution vs. defined benefit. A recent initiative has linked data on NEST pension records of a small number of Understanding Society respondents (1,672) since Wave 11 (Understanding Society, 2023a). If this could inform an imputation for other respondents, this data may enable the development of a more refined pension savings-based pension indicator in future. In addition, the Insurance dimension should ideally include other insurance-based functions of work. There is a particular absence of a QoW indicator on the extent to which workers' and their families' livelihoods are protected in the event of an illness or injury. This could include, for example, an indicator on whether the employer offers employees support beyond Statutory Sick Pay.

Both indicators of the Security dimension would benefit from future refinement. At the time of writing, Continuous Employment remains a particularly important indicator in the UK context given the strong link between continuity of employment and workers' legal rights against for example unfair dismissal. This will however change if the newly-elected Government follows through with its plans to give UK workers full protection against unfair dismissal from day one of employment in the Employment Rights Bill (Prime Minister's Office, 2024). This may potentially create a job security landscape more in line with continental European countries, increasing the

polarisation between employee and self-employed job security. The Composite Security indicator, meanwhile, is more subjective than it should be, as it is based on workers' self-assessment of the security of their own job. As the UK legal context changes, a future Security dimension might include one indicator on objective job security, prompting workers specifically about the nature of their employment contract (e.g. fixed-term, seasonal, e.t.c.) before then asking about their subjective job security based on their perceptions of their likelihood of dismissal or running out of contracted work opportunities.

The Autonomy and Voice dimension contains good data on autonomy, which will likely continue to be a mainstay of work quality indices even as modern labour markets continue to evolve. However the Collective Voice indicator gives an inexact picture of union coverage in modern UK workplaces (for a discussion, see BEIS, 2022). It does not tell us which workplaces are subject to formal collective bargaining arrangements, because the wording is overly-broad and prompts for staff associations as well as unions. Conversely, for most of the time series it under-states the level of union coverage in the UK, since only those who say "yes" to having a collective arrangement are asked if they are members of a union. A revised indicator, developed with better data, would potentially separate out union membership, formal collective bargaining coverage, and the availability of non-unionised means of exercising worker voice into three distinct indicators. This would capture a fuller spectrum of ways workers can exercise their voice in the workplace, both collectively and individually, in ways discussed in literature on worker voice (see in particular Wilkinson et al., 2014; for a discussion within the CA, see Regier, 2024).

The Work-Life Balance dimension contains an employee-only indicator on the number of flexible working opportunities available in the workplace (Flexibility). This makes this dimension unique, since all other indicators of the QoW index have data for all workers regardless of their main job (indeed as discussed in Paper 2, a number comprise data on multiple jobs). Whilst the reasons for this routing decision by Understanding Society are understandable, it has created a challenge since whilst on average the self-employed may be assumed to score better than employees, this cannot be assumed to be universally the case, and the extent to which they score better is open for debate. They may for example be delivery drivers or joiners, who are only able to

earn by working away from home. They may in practice be in a demanding employment relationship, in hoc to a contractor who expects consistent work and offers little-to-no flexibility. A revised question on workplace flexibility could encompass both employees and the self-employed, by slightly tailoring the wording for self-employed workers. The indicator should also continue to revise the flexible working opportunities prompted for as workplaces continue to change – there is for example no prompt for *the number* of days a week a worker is permitted to work from home, and the data on 4-day working is insufficient to enable more careful analysis of exactly who is taking advantage of this working opportunity, and to what extent.⁶² Improving this would help provide survey-based evidence of the effects of a 4-day week, to supplement existing quantitative and qualitative data from trials (Autonomy UK, 2023). The Excessive Hours indicator will likely also need to be changed in future. The “Middle” cut-off is pegged specifically to the mean working hours of full-time employees in ONS data (ONS, 2024a), whilst the “Worst” cut-off is based on the UK Working Time Directive. Both cut-offs should be revised if and when social norms about working hours change.

The Prospects dimension effectively combines two related but distinct concepts: first, the prospects for advancement within the particular workplace; and second, the resilience of the job to future technological changes. The latter in particular has been neglected in work quality indices to date. However, all three of the indicators relate to these twin concepts in an imprecise way. With better data, the Managerial Duties indicator would be broadened to capture a wider range of skills which may be associated with better job prospects. The Short-Term Prospects indicator is a composite of several variables which, taken together, help to capture prospects for advancement within the workplace, but it adopts too short a time horizon (just one year): a future indicator could prompt workers to assess their likely opportunities for

⁶² To elaborate, Understanding Society does include “working a compressed week” (jbflex5) as one of its flexibility-related variables, and this is one of the variables I use to generate the Employee Flexibility indicator. However the survey contains insufficient information to identify the length of the working week covered. Using better working hours data, future research should also more carefully delineate between those who (a) consistently work a lower *quantum* of time, for the same wage and (b) those who simply work the same hours but during a compressed period of the week. Most contemporary discussion of the 4-day week assumes (b) as the policy goal, which marks a contrast with what historical improvements in working hours have been able to achieve (for discussions, see Spencer, 2022; Spencer, 2024).

promotion over a longer period of time, both inside their current job and in their future career overall. The Long-Term Prospects data contains vital new objective data on job prospects, but is only as good as the data it is based on, which is sourced from the Department for Education's Working Futures data (DfE, 2020; Wilson *et al.*, 2020). Because sample sizes are too low for many smaller occupations, Working Futures aggregates this up at the 2-digit SOC level, which comprises a relatively small number of occupations – just 25. The indicator is a composite of replacement demand plus employment growth of the occupation from 2007-2017, yet in practice replacement demand exceeds employment growth, meaning most occupational differences are led by differences in replacement demand. Just one occupation – secretarial and related occupations – has a negative projected employment change plus replacement demand over the coming decade (see Table E.1). This means most workers in the index bunch towards a very narrow range of scores in this indicator. In future, the QoW index could be refined to provide more detail on the prospects of occupations, ideally at a greater level of granularity. There may also be scope to introduce data on the skill level of the job itself (which may not always be related to the occupation), thus integrating objective data on prospects with the Managerial Duties indicator. There have been some encouraging developments in this respect: the ONS, for example, has recently published data on the skill levels and level of skills mismatch by SOC, by linking it with American O*NET occupational data (ONS, 2024g). Future updates to the QoW index will be able to take advantage of this and other new skills-based data, in ways not possible earlier.

Finally, as noted previously, the Health and Safety dimension introduces important new data on occupational fatalities, accidents, and illnesses into Understanding Society for the first time. This will be of use to a wide range of researchers and not simply work quality scholars. Yet some refinements may be required in future updates to the index. The Work Illnesses data from the LFS is designed to capture mental as well as physical health problems caused or exacerbated by the workplace since this is included as a specific prompt in the question, but it likely under-reports this in practice because workers themselves may be reluctant to accept that a job caused or exacerbated a mental health problem (see Appendix D for a discussion). Finally, future time series data on the Work Accidents indicator may be affected by changes to the

reliability of LFS data since the Covid-19 pandemic (again, refer to Appendix D for a discussion). This may necessitate future refinements to this and other indicators, should the QoW index be updated beyond Wave 12.

Missing Dimensions of QoW

In addition, there are also three more substantial missing dimensions of work quality.

Perhaps the most significant omission is a dimension on meaningful work. A lack of available data meant it was impossible to operationalise this in its own distinct dimension, yet this thesis does offer some ways forward, based on the CA, to improve the way meaningful work is measured. In Paper 1, I argue that meaningful work should be considered a Functioning in-itself, as one of a number of Functionings inside the space of work. Indeed, without a comprehensive account of meaningful work within the CA, there is a risk of the CA conceptualising work more as a “pain” or “disutility” in line with classical economic approaches to work (for a discussion, see Spencer, 2010, chap. 2).⁶³ Consistent with this, I draw from research within the CA which has argued for meaningful work to be regarded as a Functioning in itself (Weidel, 2018), with an emphasis – following Marx – on workers’ alienation from the means of production in determining the meaningfulness of work activity. I also draw from accounts of meaningful work outside the CA, for example within sociology (Sennett, 2009) and economics (Spencer, 2015). Empirical evidence further finds that factors associated with alienation – such as managerial and workplace environments – do indeed play a key part in determining why workers themselves regard their work as “useless.” (Soffia,

⁶³ To expand, I suggest that the CA offers two competing approaches to work as it relates to classical economic ideas of work as a ‘disutility.’ This is aligned to how I discuss work in Paper 1, but warrants some elaboration here. The first approach would view work solely as instrumentally important in enhancing or impeding the achievement of Functionings outside the space of work; it would grant work no intrinsic importance (e.g. see Suppa, 2019). This approach does not quite equate to viewing work solely as a ‘disutility’, since it grants that high-quality work enables Functionings related to for example civic participation, social standing, and the exercise of practical reason – however a critic of this approach might question whether a worker chooses to engage in such jobs as a positive choice, to enhance their Functioning achievement, vs. merely to avoid the opportunity cost of *not* being able to achieve said Functionings. A second approach, which I ascribe to in this thesis, would grant that intrinsic Functionings inside the space of work do exist: work is at once constitutive of wellbeing, and serves as a means to the achievement or non-achievement of wellbeing. This second approach offers a more comprehensive rejection of the idea of work as a ‘disutility’; it grants that meaningful work can be valued by citizens, for its own ends, since this is what it means to be a Functioning.

Wood and Burchell, 2021). This suggests that alienation should play a key defining role in meaningfulness of work.

However, some unresolved debates over the CA's specific contribution to meaningful work prevent its operationalisation. It is an open debate whether alienation defines meaningfulness in its entirety or is simply a constituent part of it. Drawing from wider research on meaningful work (Ciulla, 2000; Yeoman, 2013; Veltman, 2016; Yeoman *et al.*, 2019), I would tentatively suggest that any CA-based conception would take a broader view of the factors which determine meaningfulness: one's relationship to the means of production is strongly related to meaningfulness, but workers' own perceptions of the stake they have in the workplace, and the role their work plays in wider society, relate to meaningfulness in complex ways. Nor, I suggest, should meaningfulness simply be regarded as a function of the industry worked in or the type of work carried out – as Graeber's (2018) widely-cited “bullshit jobs” thesis implies.⁶⁴ I also suggest that there should be more discussion within the CA about whether meaningful work should be a political goal for *all* jobs, as argued by Yeoman (2014), or a Capability which all workers should have the *opportunity* to achieve. This also links with wider debates about the extent to which meaningful work is possible in capitalist economies and is reconcilable with goals of efficiency (for a discussion, see Spencer, 2024). In summary, better data, and deeper consideration of what this data should measure, is needed to operationalise this dimension. Future surveys should ideally contain specific questions on the meaningfulness of work activity, including as a minimum workers' real and perceived alienation and the value their work has to society.

The second missing dimension of the QoW index is related to work intensity. This is a significant omission given that as noted in the introduction, research has found that since the 1990s work intensity has risen in the UK economy (Green, 2001, 2004; Burchell, Ladipo and Wilkinson, 2002; Green *et al.*, 2022). This lack of data on work

⁶⁴ One example helps illustrate this. Both-Nwabuwe *et al.* (2017, p. 1) cite a famous (though possibly apocryphal) exchange between President John F. Kennedy and a cleaner he noticed whilst visiting NASA's space centre in 1961. “What are you doing?”, Kennedy exclaimed. “Well Mr President”, came the reply, “I'm helping put a man on the moon.” I suggest this serves as an illustration that we cannot necessarily infer the meaningfulness of work from the occupation worked in or task done; the NASA cleaner regarded their activity as playing a central role in achieving a national mission.

intensity is perhaps the key remaining omission in Understanding Society data. Now that this thesis has introduced data on health and safety and employment prospects into the survey, this makes the development of work intensity data in Understanding Society increasingly urgent. Its inclusion in subsequent iterations of the QoW index would enrich our understanding of the relationship between work intensity, workers' circumstances, and other indicators and dimensions of work quality.

There is also a third and final, and more cross-cutting, missing dimension (or series of dimensions) related to the treatment of workers in non-standard employment relationships – especially workers in platform and gig economy labour. This thesis contains some of the most comprehensive data on platform workers' work quality – as Gundert and Leschke (2024, p. 697) highlight, “very few academic papers on working conditions in platform work draw explicitly on job-quality frameworks.” Indeed, the three papers they review do not study platform labour at an economy-wide level, but in the context of specific firms – mirroring an issue I highlighted in Paper 3. Yet despite this contribution, there is valid criticism of whether standard job quality frameworks properly capture the work quality of platform workers and others in non-standard employment relationships, or whether – as also found by Gundert and Leschke (2024) – some of the questions in these frameworks are ill-suited to their specific employment relationship. A related issue is that these workers themselves may have been misled about the nature of their work at the point of their interview: Leschke and Scheele (2024) find platform workers' firms are often not transparent and at times even provide misleading information about the working conditions and nature of the contract before workers apply, with the extent of transparency positively associated with one key measure of work quality (collective bargaining agreements). These issues may mean the actual work quality of these workers' is even lower than presented in the QoW index. As modern labour markets continue to evolve, future research could address this by including tailored dimensions of QoW for workers in these non-standard employment relationships, asking some bespoke questions about their work environment – such as the extent of “emotional labour” (Erickson and Ritter, 2001) they experience or the certainty platform and/or self-employed workers have over the availability of future work.

The Capability Set and Conversion Factors: Future Refinements and Additions

This thesis provides the first data on the Capabilities and Conversion Factors of UK workers, but necessary compromises have had to be made with the data and indicators. A brief discussion of four sets of potential improvements follows – starting with refinements and then additions to the Capability Set indicators, before discussing refinements and additions to Conversion Factors.

First, a range of refinements would improve the accuracy and quality of the Capability Set indicators. The economic capital indicators (EC.1, EC.2, and EC.3) will underestimate the assets available to some of the most advantaged workers: a worker with a large pension who is not yet drawing down on it, a large financial investment yet to mature, several properties, or an expectation of a large inheritance will not necessarily score highly in these indicators. Better data on the capital of a representative sample of the UK population would help introduce more exact measures of economic capital. The social capital indicators (SC.1, SC.2, and SC.3) could be improved with specific measures of peoples' work-related social connections: NS-SEC is a static indicator based on workers' background, and is only an approximation of for example the range of job opportunities a worker might be able to access through social connections. Such an improved indicator would ideally need to capture the *range* and *quality* of jobs workers can access through their social networks, since there is some evidence a certain level of social connections can have a detrimental impact on migrant workers' job quality (Kalter and Kogan, 2014; Leschke and Weiss, 2020) – for example, Polish and Romanian migrants who knew people in Denmark when migrating to the country had worse earnings trajectories than those with fewer or no connections (Felbo-Kolding and Leschke, 2023, p. 889).

Second, better and more comprehensive longitudinal data on work histories would enable the development of additional Capability Set indicators. The current indicator using work histories (SC.3) only captures data from a minimum of two previous episodes of employment of respondents. Due to panel attrition and non-response, the merging of more than two waves of data tended to increase non-response considerably – hence why existing indicators capture data from at most two previous waves. This is a key issue affecting many panel surveys; addressing it – potentially by imputing data on work histories based on respondents' full work histories – could significantly enrich

our understanding of life-course job quality, shedding light on the actual choices available to, and made by, workers across the labour force.

Third, with future improvements to the data, the existing Conversion Factor indicators could be refined. The indicator on dependent children (CF.1) does not capture dependent children the respondent supports outside the household. Childcare (CF.2) is an inexact measure of childcare responsibilities, and would better be substituted by an indicator on the actual quantum of time each family member devotes to childcare. The three care-related indicators (CF.3, CF.4, and CF.5) may underestimate the intensity of support given by some workers. For example, some workers with a non-working household member may not be so severely affected by this in cases where that member is financially self-sufficient and does not require care – indeed, such household members might be able to provide childcare and other assistance to workers, tempering the effect of other Conversion Factors. The use of three somewhat overlapping indicators was, as emphasised in Paper 4, a deliberate decision made in light of these data limitations. Finally, the indicators of physical and mental health (CF.6, CF.7 and CF.8) are heavily dependent on workers recognising the severity of their health issues and how they affect their work. This may be a particular problem for mental health severity, where someone whose work has been impacted by a severe mental health problem may internalise this as an issue with their work ethic or commitment, and thus not report an issue when surveyed. A study comparing administrative and survey-based mental health data in Canada found under-reporting indeed does occur, with the difference in rates between data sources higher for more stigmatising conditions (Mason *et al.*, 2023).

Fourth, the Conversion Factors could be improved by the addition of sub-national, social and environmental Conversion Factors. At the sub-national level, there is an absence of any indicators on local labour markets, which doubtless function as a severe impediment to workers in the most deprived areas – such as the travel-to-work distance or the quality of local childcare provision. In addition, as mentioned in Paper 4, the single-country nature of this study prevents the use of Conversion Factors which differ between countries such as the nature of a social security system or prevailing societal norms. All these issues could be addressed by integrating national surveys

with sub-national data, and applying this thesis' methodology to an international dataset such as the Comparative Panel File.

Combining Capabilities, Conversion Factors, and QoW: The Limits of Aggregation and Causality

I introduce three ways of understanding work-related wellbeing in this thesis. It is only in the final subsection of Paper 4 that I synthesise these together, by summing workers' QoW and CS scores and dividing these cumulatively by their Conversion Factors. Even in the section where I do this, I stress the limitations of this synthesis: it rests on assumptions about the allocation of Conversion Factor scores and the relative weighting of Conversion Factors which may not hold in practice; and takes no account of any role the QoW and CS scores of other household members should play in work-related wellbeing.

In light of these limitations, in the final section of Paper 4 I chart a way forward for future research. In principle introducing Conversion Factors into our analysis of QoW and CS scores should be considered an equivalisation exercise, involving similar considerations to those presented by Kuklys (2004) and Zaidi and Burchardt (2005) for equivalising income based on the circumstances of people with disabilities. In practice, considerable challenges remain associated with the nature of QoW and CS Scores, how they can be assumed to be "shared" between household members, and the means by which an equivalence scale is generated. This thesis takes the first tentative steps towards a synthesis, and helps future researchers navigate this contentious area of study.

A further, associated, limitation is the absence of causal inference in this thesis. Indeed the closest this thesis comes to making a causal inference is in Appendix A, where I explore the relationship between QoW and job- and life- satisfaction using panel data. This thesis has uncovered striking relationships between QoW, CS Scores and Conversion Factors, but data on the causal relationship between these factors would require better work histories data across the life course. In time, there would also be scope for future research to carry out causal analysis of the factors driving the relationships presented in these papers. One potential hypothesis, alluded to in Paper 1, would be that those with constrained choices are forced into low-quality jobs over

time. Further, due to their constrained choices, they have limited power in the labour market and are therefore unable to access jobs which compensate for their low rate of conversion. In future, this data could play a crucial role in explaining labour market segmentation. It could for example explain why Eastern European migrants have historically obtained jobs at the bottom of the hierarchy even when controlling for their demographics, employment and occupation, as found by Felbo-Kolding, Leschke and F. Spreckelsen (2019): their constrained capabilities could be the causal link needed to explain why they reduce their reservation wages in the ways the authors highlight, limiting these workers' ability to "carry out a lengthy job search for a suitable job" (p. 2834). The framework and data introduced in this thesis could potentially aid in understanding what drives this relationship throughout peoples' working lives, by providing crucial new data estimating the range of choices available to workers and the circumstances of these workers.

Worklessness and Wellbeing

Amongst the biggest omissions in this thesis is a comparable index on the rest of the UK adult population: namely, those not in paid work. As previously highlighted in Paper 1, in one of his few discussions of work quality Sen, 1997 (p. 159) called for a synthesis of the working and non-working population when assessing wellbeing – citing for example how the relatively narrower wage inequality of many European countries vs. the United States should be considered in the context of the latter country's higher labour force participation rate. This is a significant problem, because improvements in QoW could be achieved by simply excluding a part of the labour force from participation in the labour market. Consider, for example, the case of discrimination: a labour market where employers systematically failed to accommodate to worker commitments, or who discriminated against disadvantaged workers with certain characteristics, would potentially have high QoW purely because said workers were forced to opt out of employment.

This thesis has made inroads into addressing this limitation of work quality indices, with the incorporation of some data on workers' prior spells out of work. Within the QoW index itself, the Continuous Employment indicator of the Security dimension accounts for breaks in employment: if a worker has been out of work in the past two

waves, this will affect their score on that indicator. The CS Index includes an indicator on the number of periods out of paid employment since last surveyed, whilst one of the Conversion Factors accounts for non-working adults in the household. These new indicators make some inroads into addressing the issue Sen highlighted, but do not go the whole way.

Going forward, I suggest that the only solution will be to also take a multidimensional approach to worklessness, generating an index of the wellbeing of people not in paid work to be analysed alongside the QoW index. Across welfare systems the agenda for more vs. better jobs is often in tension (Bothfeld and Leschke, 2012), but integrated datasets measuring both will be vital in studying the implications of the choices policymakers make between the two, and the effects of any neglect of any part of the labour force. This would help integrate literature on work quality with the literature on hidden unemployment discussed in the introduction (Beatty, 1996; MacKay, 1999; Beatty, Fothergill and Macmillan, 2000; Blanchflower, 2019). Ultimately, the technical challenges of building such a worklessness index were too great for a single thesis. There is scope to develop such an index in future, also using Understanding Society data, and to analyse trends in this index alongside trends in QoW in the UK at both a cross-sectional level and using longitudinal data on workers' trajectories inside and outside of paid work.

Next Steps for International Research on Work Quality and Workers' Wellbeing

A final limitation is the single country context of this thesis. The reasons for this focus on the UK are discussed in the introduction and Paper 4. It has enabled the analysis of within-country inequalities in work quality and work-related wellbeing in ways not possible using other surveys, but it leaves a gap in our understanding of how the findings of this thesis translate into other contexts. One important next step would be to replicate this analysis using a cross-national household panel dataset such as the CPF, in time building an international dataset on workers' QoW, Capabilities, and Conversion Factors.

One of the merits of conducting a single-country study is it has enabled greater reflection on the importance of country-specific indicators than would have been possible in a cross-national study. As discussed in detail in Paper 2, the QoW index

contains some indicators of QoW which are bespoke to the distinct societal, policy, and legal context of the UK. For example, neither the pension enrolment nor the continuous employment indicators translate well in country contexts where there may be different expectations of the relative contribution the state vs. workers should make to retirement, or where legal rights at work do not depend on continuity of employment. Other indicators also use cut-offs which are tailored to the UK country context, and would need to be revised in a cross-national study: for example the Earnings Sufficiency thresholds are specifically informed by the JRF's Minimum Income Standards for the UK, whilst the Excessive Hours thresholds are based on the distribution of full-time workers' hours and the UK's Working Time Directive laws. Finally, other indicators use underlying data which is specific to the UK: the three Health and Safety indicators and the Long-Term Prospects indicator are all based on UK Standard Industrial- and Standard Occupational- Classifications, respectively. The process of translating these into cross-national contexts in a consistent way is not straightforward.

Despite being a single-country study, there is therefore much in this thesis to inform future cross-national studies of work quality, highlighting some challenges in the development of future cross-national indices together with ways to overcome them. Based on the findings of this thesis, I suggest there is scope for future research to investigate in greater depth the distinct legal and social environment of different countries, to create work quality indices which are appropriate to these diverse contexts. To reflect these different contexts, I suggest there is particular scope for the number of Conversion Factors to be significantly expanded in cross-national studies to incorporate those institutional- and society-wide factors affecting the rate of conversion which receive wide discussion in existing literature (e.g. see Hobson, 2011, p. 158). This would enable us to explore differences in work-related wellbeing between different countries.

Work Quality in Social and Public Policy

“Good Work” in UK Public Policy: Four Contributions

The findings of this thesis support calls for a re-framing of UK policymaking, towards a greater focus on improving broader pecuniary and non-pecuniary aspects of work.

As highlighted in the introduction, over the past decade-and-a-half UK labour market policy has been characterised by a narrow focus on three policy objectives: raising minimum wages, increasing the employment rate, and reducing gaps in employment between sub-groups such as the disabled and non-disabled (McKnight and Cooper, 2020, pp. 93–94). The first of these objectives has had success, with an improvement in the position of the lowest earners in the earnings distribution (Resolution Foundation, 2023). The other two objectives have been undermined by the post-pandemic changes in the UK labour market which were also discussed in the introduction to this thesis: falls in the employment rate (ONS, 2024d), rises in economic inactivity (ONS, 2024d), and an increase in reported sickness (ONS, 2023c). Beyond these three objectives, the past decade has seen only very limited efforts to improve broader non-pecuniary aspects of work.

Early signs suggest that the newly-elected Labour Government will continue to pursue these three policy objectives, but will also additionally focus on improving work quality, economic growth, and productivity. Its election manifesto committed to the highest sustained economic growth in the G7, together with “good jobs and productivity growth in every part of the country” (The Labour Party, 2024a, p. 13). Since the election, it has made a commitment to achieve the highest employment rate in the G7, at 80% of the working population (DWP, 2024a; The Labour Party, 2024b); re-committed the Low Pay Commission to a minimum wage set at two-thirds of median hourly earnings (DBT, 2024a); and set out plans to improve workers’ rights in a new Employment Rights Bill (Prime Minister’s Office, 2024). However, the precise form this focus on work quality will take, and particularly how it will be reconciled with other policy goals, is still unclear and unsettled. For example, will “good jobs” be an intrinsically-important policy focus for its own sake, or will it only be important insofar as it achieves economic growth, employment growth, and productivity growth? What indicators of “good jobs” should be focussed on beyond the hourly wage, and how will good work be spread to “every part of the country?”

This thesis offers four contributions which may help give these commitments further definition and shape.

Firstly and most obviously, this thesis presents a case for making work quality an intrinsic policy goal in itself. It should be regularly measured and analysed, and the

Government's welcome commitment to deliver "good jobs" should be substantiated with specific targets to improve both work quality, and the availability of good work, across the country. This is not to discount the role work quality will likely have to play in achieving the separate goals of raising employment, productivity, and growth, but this thesis has demonstrated how work is both constitutive of, and instrumental to, the more fundamental goal of increasing wellbeing. Where work that is productive is found to be low-quality, or where those placed into employment end up in low quality work, policymakers should ask *why* this is the case, and revise their approach to increasing the quantity and productivity of jobs accordingly.

Secondly, achieving good work requires more than a focus on minimum wages or the banning of the most exploitative forms of work – as important as these are. This thesis has found that over the past decade, an improvement in the position of workers at the bottom of the wage distribution has not translated into a corresponding improvement in workers' Earnings Sufficiency, much less any improvement in their achievement in most non-pecuniary indicators of QoW. Banning the most exploitative forms of work, whilst necessary, will not improve the situation of the vast majority of workers. Improving work quality more broadly requires a deeper focus on the factors driving low-quality work. Although this thesis has avoided making any causal inferences, the analysis in Papers 2 and 4 suggests that a particular issue may be a difficulty which workers at the bottom end of the labour market face in accessing jobs with genuine worker-oriented flexibility. This, accompanied by the greater commitments these workers face in terms of the family and household, potentially forces these workers to reconcile commitments by reducing their working hours and thus their Earnings Sufficiency. Greater availability of worker-oriented flexible working opportunities may help address this, enabling these workers to achieve an improvement in a broader range of indicators of QoW. Alongside this, policy should not neglect the vital importance of improving broader aspects of work quality, many of which have declined in recent decades – particularly in terms of improving job security, task autonomy, and employment prospects, and reducing work intensity.

Thirdly, the experience of workers in non-standard employment relationships, particularly the self-employed, must be central to the work quality agenda. There is presently a risk that only those workers who are classed as employees benefit from

plans to deliver job security and end zero hours contracts in the Employment Rights Bill. This is because rights associated with continuity of employment are only applicable to employees, and those on zero hours contracts are generally not self-employed.⁶⁵ The self-employed are also neglected in many studies of work quality because of a lack of data: as noted in Paper 2 neither ASHE nor the LFS contain data on self-employed earnings, meaning that these workers' labour market experiences often do not feature in accounts of the benefits of the National Living Wage.

This thesis has found that some workers in non-standard employment relationships are indeed high-paid, in good-quality jobs and – as Paper 3 demonstrates – have a wide range of choices over other labour market opportunities. Paper 4 finds the labour market inequalities between the self-employed and employees are further narrowed once we consider Conversion Factors. Yet these workers' experiences should not be used to mischaracterise the situation of all such workers – to do so would be to repeat the mistakes the Taylor Review made almost a decade ago. Indeed, Paper 4 finds the self-employed have lower work-related wellbeing than employees on average even after accounting for their Capabilities and Conversion Factors. Both Paper 3 and Paper 4 show self-employed workers are over-represented amongst the sub-group of workers with both low QoW and constrained choices. Overall, these papers show that it is with respect to their QoW – and not their choices or Conversion Factors – that self-employed workers score disproportionately worse than employees.

To address this, UK policymakers should remove barriers that make self-employed QoW lower than employees. In some instances, this could be achieved by extending employee rights to self-employed workers. For example, to address the low and stagnant rate of personal pension enrolment found in Paper 2, NEST or personal pension automatic enrolment could be extended to self-employed workers – as was implemented in Chile's pension system as part of reforms passed in 2008 (Kritzer, 2008). This could come alongside stronger legal protections for the self-employed, as recommended by trade unions (Fabian Society, 2023) – such as alignment with employees' rights on discrimination, whistleblowing, sick pay, and leave; and mechanisms to support unionisation and collective bargaining. These would likely

⁶⁵ This is both legally the case (CIPD, 2021, p. 4), but is also aligned with how Understanding Society structures its survey: only employees are asked about their use of zero hours contracts.

improve the QoW of the self-employed relative to employees, reducing polarisation in the labour force. However, in many instances, it will instead mean effectively granting employee status to many self-employed workers who have an exploitative employment relationship with their employers – extending to them the full legal protections available to the majority of workers.

Fourthly and most fundamentally, the conceptual framework advanced in this thesis has the potential to shape future thinking about labour market policy at a more foundational level. Throughout this thesis I have argued for an objective rather than subjective definition of work quality and work-related wellbeing: subjective feelings about work, whilst important, can potentially give a misleading account of the effect work has on peoples' lives. This consideration should particularly inform debates over the regulation of novel employment relationships: even in cases where workers in such jobs report high levels of satisfaction (e.g. see CIPD, 2017), this satisfaction may be a manifestation of adaptation.

The implications of this for discourse about modern work, and wider policymaking, are considerable. For example, a self-employed worker earning a decent amount of money may, at the point of being surveyed, not consider the risk of should their contracts dry up, or they fall ill – and suddenly find they never had any real protections against risk. Likewise, the platform labour private hire vehicle driver plying their trade on several apps, with a strong base of satisfied clients, may do well for a time – but not if they get systematically down-voted by some unreasonable customers, or find a sharp fall in demand from a global pandemic. These two hypothetical examples may partly explain the fall in self-reported self-employment and rise in inactivity seen since the pandemic (Blackburn, Machin and Ventura, 2022): it is conceivable that many of these workers have realised the poor support their work offered them in times of crisis, and are now unable to get back on their feet in what for them is a new and more precarious labour market. In short, labour market policy should be informed by evidence of the objective reality of work: considering the effect work has on workers' achieved and achievable wellbeing, and the actual circumstances of those accessing these types of jobs. It should avoid the kind idealised assumptions about jobs which I criticised in Paper 1. This should pave the way towards a labour market policy which is grounded

on the achievement of good work for all in the labour force, rather than just a small and advantaged subset of workers who best align with these ideal-types.

Enhancing Capabilities: Re-Framing Active Labour Market Policy Goals

This thesis also makes a more conceptual contribution to what Active Labour Market Policy (ALMP) goals should be. ALMP in the UK, as in other Western countries, is characterised by ever greater conditionality – with prospective workers increasingly expected to obtain any job, even if not desired, or face the risk of being sanctioned and prevented from claiming welfare benefits (DWP, 2022a). Many CA scholars have argued that ALMP should adopt a wider range of goals for people beyond employment – such as “active citizenship” (Laruffa, 2020, pp. 6–7). The newly-elected UK Government looks set to continue to pursue paid employment as the central objective of ALMP. However it has signalled a slight relaxation of the aforementioned “ABC” (“Any job first, Better job next, and then onto a Career”)⁶⁶ policy, and set out plans to devolve more delivery of ALMP to Local Authorities (DWP, 2024a). However, the precise shape these changes will take is still unsettled.

The conceptual elements of this thesis build on existing CA-based criticisms of ALMP. When applied to ALMP, the Capability Theory introduced in Paper 1 suggests the potential need for a re-framing of ALMP goals towards enhancing the Capabilities of prospective workers: supporting workers to expand the range of labour market opportunities they can undertake. This theory would further predict that in cases where these workers with narrow Capability sets leave their jobs and access employment support, an “ABC” approach to ALMP will, all else held equal, further reduce the power of these workers. This is likely to further constrain their choices over other labour market opportunities: forcing them to accept low-quality jobs which are ill-suited to their circumstances, and likely continuing cycles inside and outside of paid work. The empirical findings in qualitative research of ALMP are consistent with what this theory would predict (Patrick *et al.*, 2011; Beck, 2018; Fernandez-Urbano and Orton, 2021; Jones, Wright and Scullion, 2024), and Paper 3 finds that those in the lowest-quality work have more constrained choices, and thus less power, than other workers in the labour market. The data introduced in this thesis could help enable

⁶⁶ Further details of this policy were briefly summarised earlier in this thesis, in the introduction.

further quantitative tests of this prediction, assessing the effectiveness of current ALMP policies and proposing ways to improve them. In future, Government should apply ALMP as an opportunity to increase the bargaining power of workers in the labour market: using it to enhance the range of choices workers have, strengthening their hands in negotiations, and negotiating with employers to broker high-quality jobs rather than any job at any cost.

Exploring the Relationship between Work Quality, Work-Related Wellbeing, and Other Public Policy Goals

Finally, there is a further, more empirical, implication of these findings for public policymaking. The synthetic nature of the data in this thesis will enable researchers to study the associations between work quality and/or work-related wellbeing and other public policy goals. It provides a solid foundation for future empirical research, using a nationally representative dataset.

This data may especially help in studying the association between QoW and the Government's wider policy goals, discussed in the previous subsection, of rising employment, increasing productivity, and delivering sustained high economic growth. There is for example some causal evidence linking both worker subjective wellbeing to productivity (Bellet, De Neve and Ward, 2019; Layard and de Neve, 2023) and a range of job quality indicators to firms' economic success (Ton, 2014, 2023), but this research has tended to have been carried out at the firm level rather than on representative samples of the population. Other research, mentioned in the introduction, has explored associations between some work quality indicators and GDP (Green, 2025, chap. 3) and unemployment (Sehnbruch *et al.*, 2020, pp. 12–13), but usually at an economy-wide level. The QoW index brings us close to analysing these associations using individual-level data from a synthetic index.

For similar reasons, the data in this thesis will help enable further study of associations between QoW and subjective wellbeing measures such as job- or life-satisfaction in the UK labour market. Although this thesis has presented strong arguments against an exclusively subjective definition of work quality, satisfaction is nonetheless important to public policymakers because of its strong association with workers' behaviour (Brown, Charlwood and Spencer, 2012, pp. 1011–1012) – such as their

likelihood of leaving their jobs (Green, 2010). A closer understanding of the factors driving the associations between QoW, subjective wellbeing, and labour market behaviour may help governments in improving work quality whilst simultaneously achieving their wider objectives for the economy and workforce.

Ultimately, bringing the above together, a specific measure of QoW provides the benchmark on which to test the success of any public policy where “good work” features as an intrinsic goal. This may prove particularly important in an increasing AI-driven age: Acemoglu and Johnson (2023) argue that a key defining objective of governments as they seek to harness the power of new technologies should be the provision of more “good jobs” (p. 2) – which they define using at least one non-pecuniary dimension (meaningful work); and argue as vital for sustaining democratic societies in an era of increasing political polarisation (for a criticism of some of their definitions, see Spencer, 2024b). If “good jobs” are indeed to be the defining objective, we must urgently start to measure the phenomenon. This makes the task of developing synthetic multidimensional indices of work quality and work-related wellbeing, at an internationally comparable level, an even more pressing task.

Final Reflections

This thesis has proposed a re-framing of the way we understand paid work and wellbeing in the labour markets of today. Building on existing literature on work quality, it has argued that low work-related wellbeing is partly about the inability to achieve important “beings and doings” (Functionings) from work characteristics, in one’s current job. This makes it objective rather than subjective, and gives a role for important non-pecuniary aspects of work. This low Functioning achievement from work is best measured through synthetic multidimensional indices of work quality. I make a significant contribution to thinking of how to construct, analyse, and test these indices, using data on the UK labour market.

Having established this, I then propose that work-related wellbeing is also about constrained choices (Capabilities) as well as low-quality work: it is the disempowerment of being unable to access work as a free choice, on your own terms, in a context where you have a wide range of other opportunities inside and outside the

labour market. The extent of constraint is distinct from the quality of the worker's job: a low-quality job can be accessed as a free choice, or because one has no other options.

Finally, I then proposed that we must consider the different rate of conversion of work into Functionings and Capabilities, based on workers' personal, social and environmental characteristics (Conversion Factors). Work-related wellbeing is lowest of all for those where low work quality, constrained choices, and a low rate of conversion of work into wellbeing occur simultaneously. This rate of conversion will likely be lower for those workers with constrained choices and low QoW, because they lack the power to act as agents in their own working lives – thus creating what sociological literature has tended to term a “mismatch” between work quality and worker circumstances.

Using the case study of the UK labour market, this thesis has made findings which are consistent with the predictions set out above. Low work quality is indeed correlated with, but distinct from, constrained choices: those in the lowest-quality jobs and in non-standard employment relationships experience amongst the most constrained choices in the workforce, but also the greatest heterogeneity in constraint. Both low work quality *and* constrained choices are predictive of lower rates of conversion, even when included together in the same model. This paints a picture of a more unequal, and more polarised, modern labour market than workers' work quality alone would suggest.

Although at times technical and complex, I suggest that the framework proposed in this thesis has some intuitive merit, which aligns with how we discuss work quality in day-to-day conversations – as the many practical examples discussed throughout this thesis serve to illustrate. When we talk with each other about work, we tend to begin by discussing the doings and beings it enables or inhibits – whether it be the intrinsic value of the work itself, such as the feeling one has of being part of a bigger and more meaningful thing; what its pecuniary benefits achieve for us; or the way its non-pecuniary characteristics enhance or impede the fulfilment of our other life goals like family, civic life, or socialising. Any broader conversation about work in one's life starts to take a more life-course perspective, and it is here that choice becomes a central consideration: a job sacrificed as a free choice is less of a loss than one lost against one's will, just as work with some bad characteristics is different when forced upon a worker

with limited opportunities than when it is accessed by someone with genuine agency. By the end of the conversation it is the worker, and not the work, which comes to the forefront of the discussion: their lives, their choices, and their circumstances.

In the preceding pages, I have sought to bring order to this complexity: to say more than social science currently does of the rich detail of what modern work is like, whilst minimising any loss of salient details and features. This task has been made harder by the unashamedly quantitative focus of this thesis: trying to capture something of this complexity in a set of numbers over fixed points in time, using pre-determined questions from large-scale representative surveys. This quantitative focus is not motivated by any feeling of superiority of quantitative methods vis-à-vis other techniques – to the contrary, in many areas of this thesis I have demonstrated how qualitative research has been consistently better at describing the reality of work than quantitative methods have. It is instead driven by a deep concern at the lack of quantitative data which reflects this reality.

Whilst writing and researching this thesis, I have often been reminded of the saying, attributed to the statistician Frederick Mosteller – a riposte to that often-used sceptical quote about the dangers of statistics:

“Whilst it is easy to lie with statistics, it is even easier to lie without them.”

The purpose of this thesis has been to come closer, in numbers, to the lived experiences of workers in the increasingly turbulent and changing labour markets of the modern world. It has been to foreground the reality of their working lives. It was developed out of a concern that without these numbers, the true inequalities in work will go unmeasured, under-discussed, and thus unaddressed.

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Appendices

Appendix A – Alternative Weighting Methods for the QoW Index

Paper 2 operationalises three different normative processes for deriving an alternative set of weights for each indicator in the QoW index: hedonic weighting, frequency-based weighting, and data-driven weighting. The process for creating weights using these three approaches is set out in the next three subsections of this appendix. In each of these three cases, a set of alternative weights for each indicator of the QoW index is arrived at. After these alternative weights are set out, the effect of these different weights on both (a) time series trends and (b) sub-group differences in QoW index scores are then compared, vis-à-vis equal weighting and the alternative weighting approaches.

Before proceeding, some technical aspects and common misconceptions of weighting should be addressed. As is highlighted in some studies (e.g. see Leschke and Watt, 2014, p. 4), some debates about weighting can be mitigated by the way the data is presented. The emphasis of most analysis in this paper is on how dimensional scores vary by sub-group, and the different correlations between indicators and dimensions of the QoW index. Such analysis is not sensitive to the weight chosen: so long as there is agreement on the appropriateness and calculation process for each indicator and dimension (a big assumption, but one not related to the weighting), then there should be broad agreement on the conclusions. The weighting instead affects how these are then *aggregated*. This impacts three key conclusions in multidimensional analysis:

- Time series analysis of trends in index scores, both for the population as a whole and for sub-groups;
- Any analysis, using regression or other techniques, comparing the effect of various independent variables on index scores;
- In studies of poverty or deprivation, the proportion of deprived people in an index, where the relative weight of an indicator or dimension has a role in deciding this deprivation.

The third issue is less relevant to this paper, since I have avoided making a statement about deprivation or generating censored headcount ratios. The first two are very

pertinent, particularly with reference to the findings of any differences in, and polarisation of, job quality, both over time and between sub-groups.

Some limitations to the analysis in the succeeding sections should be noted. None of the weights proposed in this analysis vary by individual in the way advanced in some other weighting proposals: decisions are made to inform the weighting of indicators for the whole population. Nor are the individual indicators or cut-offs in the index changed (although some indicators are weighted zero). Finally, for simplicity, alternative weights are created at the indicator-level without the indicators being aggregated into dimensions.

A.1. Hedonic Weighting

One strand of hedonic or utilitarian research argues that subjective life satisfaction and/or job satisfaction should play a central role in our assessment of wellbeing (Kahneman, 1999; Layard, 2011). A further strand of research has emerged arguing that, even if we disagree on the role subjective factors should play in wellbeing, peoples' subjective self-assessments could nonetheless play a role in the relative weight we assign different dimensions of wellbeing. This approach is strongly advocated by Schokkaert (Schokkaert, 2007; Schokkaert et al., 2009), who argues that the relative weights of different dimensions could be derived simply by regressing the effect of these dimensions on life satisfaction (see also Decancq and Lugo, 2013, pp. 26–27). He also argues that this approach could give us an indication of the value people would assign these dimensions *if* they were asked in a participatory exercise.

In order to operationalise this proposal, it is essential that a range of observable and unobservable characteristics are controlled for – such as individual idiosyncrasies like peoples' own perspectives on life, time, and other factors which affect the relationship between indicators/dimensions and subjective life satisfaction. Schokkaert (2007, pp. 423–428) highlights religion as one such control, but he stresses that with panel data even unobservable idiosyncrasies could be controlled for in a fixed effects model. He proposes that broadly-framed questions on general satisfaction – “On the whole, are you very satisfied, fairly satisfied, not very satisfied or not at all satisfied with the life you lead?” – as best suited to this (Schokkaert, 2007, p. 417), in contrast to the more

fleeting hedonic measures proposed in other happiness literature (e.g. see Kahneman et al., 2004, p. 430).

There are normative reasons to reject this line of argument. Philosophies such as the Capability Approach (Sen, 1999; Nussbaum, 2011) emphasise the role of more objective “beings and doings” (Functionings) in determining peoples’ wellbeing, rejecting by definition subjective factors as a sole determinant of quality of life. A great deal of job quality literature has attempted to operationalise this (see for example Green, 2009; Sehnbruch, 2004), of which this present paper is a part. Schokkaert’s (2007) proposal also cannot be equated with a genuine participatory exercise on wellbeing measurement (cf. Burchardt and Vizard, 2011). Nevertheless, this method can provide a useful test of alternative weighting decisions for any job quality index, allowing us to explore the effect that a more hedonic perspective would have on the weighting decisions made in the index. If the conclusions drawn are broadly similar even with a hedonic weighting approach, then this would provide the basis for at least some agreement between competing philosophies of wellbeing as to the worth of the QoW index.

To explore the weights which could be used in a hedonic measure of job quality, this paper regresses the effect of each indicator in the QoW index on two measures of life satisfaction, both of which closely resemble Schokkaert’s (2007, p. 417) preferred measures of wellbeing. Both wellbeing questions are asked on the same (1-7) scale, and all the variables are all standardised. This means that the coefficients of both models can be directly compared:⁶⁷

- Job satisfaction: “On a scale of 1 to 7, where 1 means ‘completely dissatisfied and 7 means ‘completely satisfied’, how satisfied or dissatisfied are you with your present job overall?”
- Life satisfaction: Asked as part of five questions on more general life satisfaction, with people asked to “choose the number which you feel best describes how dissatisfied or satisfied you are with the following aspects of

⁶⁷ Standardisation is necessary because otherwise, the different effect sizes (coefficients) could be determined by the nature of the indicators and thus it would not be possible to use them to inform a weighting decision. Standardisation is done by dividing the values by their standard deviations, using the ‘standardize’ (sic) function in R’s jtools package. For a discussion of standardisation using this package, see Gelman (2008).

your current situation” about “how you feel about your life.” They are also asked to place this on the same 1-7 scale as for job satisfaction from 1 (completely satisfied) to 4 (neither satisfied nor dissatisfied) through to 7 (completely satisfied).

Simply regressing these against the indicators using cross-sectional data, for any given time period, would not be informative about the effect these characteristics have on subjective satisfaction. Without introducing controls, any differences observed could reflect a difference in an uncontrolled variable: simple cross-sectional differences in job or life satisfaction between jobs with different characteristics clearly reflect differences in the people doing those jobs, rather than the jobs themselves. It is also likely that these differences cannot be controlled using simply observable characteristics: as Schokkaert (2007) highlights, individuals will have unobservable idiosyncrasies and personality characteristics which affect the way job characteristics impact their subjective satisfaction.

I take advantage of the panel construction of Understanding Society to account for such unobserved factors. I create a balanced panel of people who are represented in all five waves used in the survey.⁶⁸ I then create a linear first-difference individual fixed effects model to explore the effect of changes (Δ) in indicator scores on job and life satisfaction over time, of the following form:

$$\Delta Satisfaction^{it} = \beta_0 + \Delta\beta_1 Indicator^{it} + \Delta\beta_2 Age^{it} + \Delta\beta_3 Region^{it} + \Delta\beta_4 Children^{it} + \Delta\beta_5 WorklessAdults^{it} + \Delta\beta_6 CaringResponsibilities^{it} + \Delta u^{it}$$

$\Delta Satisfaction^{it}$ is the change in job satisfaction or life satisfaction for individual i at time t minus their satisfaction at time $t-1$, in any given wave, i.e.: $\Delta Satisfaction^{it} = Satisfaction^{it} - Satisfaction^{i,t-1}$. After accounting for individual and time fixed effects, this change is held to be explained by six observable characteristics – the change in QoW indicator scores for individual i at time t ($\Delta\beta_1 Indicator^{it}$); and five controls for things which could change over time and be correlated with a change in

⁶⁸ In common with analysis of this type, the restriction to only people who responded in each of these five waves makes the panel unrepresentative of the UK population. This justifies the decision of a fixed effects analysis. A Hausman test, not presented here, reinforces this, and found significant differences between a fixed effects and a random effects model using the data.

job characteristics: age of respondent ($\Delta\beta_2 Age^{it}$), region of residence ($(\Delta\beta_3 Region^{it})$, number of dependent children in the individual's household ($\Delta\beta_4 Children^{it}$), number of workless adults in the household ($\Delta\beta_5 WorklessAdults^{it}$) and whether the respondent has within-household caring responsibilities ($\Delta\beta_6 CaringResponsibilities^{it}$) – together with an error term of other unobserved characteristics which change over time (Δu^{it}). The effect that these indicators have on changes in satisfaction gives us a sense of the *causal* impact of a change in indicator scores on a change in job or life satisfaction, and thus the relative weight that should be assigned to these indicators in a hedonic index of job quality. It should be noted, however, that there is no reason to assume that these models account for the role of adaptation in satisfaction. For example, where a decline in one's labour market position leads to adaptation in the form of higher job or life satisfaction, this would be captured in the model.

Table 3.3 presents the regression outputs for four sets of regressions: two sets with life satisfaction as the outcome variable, the first (1) a set of 15 separate regressions with each of the QoW indicators separately and the second (2) a single regression with all QOW indicators included; and two sets of regressions with job satisfaction as the outcome variable, again done on all QoW indicators separately (3) and then together (4). The use of separate regressions has been done to test the risk of multicollinearity and double measurement where the QoW indicators are highly correlated, which would make some of the estimates insignificant. The indicator scores have been standardised to allow for consistent comparison of the coefficients.

Table A.1. Linear first-difference one-way (individual) fixed effects regressions of effect of changes in standardised QoW indicator scores on life satisfaction and job satisfaction. Asterisks denote significance: (.) = 0.1, * = 0.05, ** = 0.01, *** = 0.001.

	Life Satisfaction		Job Satisfaction	
	Excl. other indicators	Incl. other indicators	Excl. other indicators	Incl. other indicators
	(1)	(2)	(3)	(4)
Earnings Sufficiency	0.029** (0.011)	0.023(.) (0.012)	0.00 (0.011)	0.01 (0.018)
Earnings Equity	0.035*** (0.009)	0.026** (0.009)	0.007 (0.009)	0.011 (0.021)
Pension	0.003 (0.008)	-0.001 (0.008)	0.007 (0.008)	0.015 (0.013)
Continuous Employment	-0.006 (0.005)	-0.009 (0.005)	-0.094*** (0.006)	-0.249*** (0.013)
Composite Security	0.049*** (0.009)	0.049*** (0.009)	0.137*** (0.009)	0.181*** (0.012)
Autonomy	0.04*** (0.007)	0.039*** (0.007)	0.119*** (0.007)	0.232*** (0.014)
Collective Voice	0.009 (0.009)	0.006 (0.009)	0.014 (0.01)	0.019 (0.012)
Employee Flexibility	0.016* (0.007)	0.011(.) (0.007)	0.039*** (0.007)	0.057*** (0.012)
Excessive Hours	0.026*** (0.008)	0.027*** (0.008)	0.019* (0.008)	0.033* (0.015)
Managerial Duties	-0.01 (0.01)	-0.014 (0.01)	-0.039*** (0.011)	-0.047*** (0.014)
Short-term Prospects	-0.002 (0.006)	0.00 (0.006)	-0.06*** (0.006)	-0.105*** (0.011)
Long-term Prospects	-0.009 (0.013)	-0.009 (0.013)	-0.039** (0.014)	-0.104* (0.05)
Work Fatalities	0.018 (0.016)	0.01 (0.017)	-0.041** (0.016)	-0.308* (0.132)
Work Accidents	0.023(.) (0.013)	0.021 (0.014)	-0.008 (0.013)	0.012 (0.061)
Work Illnesses	-0.012 (0.012)	-0.011 (0.012)	-0.023(.) (0.012)	-0.054 (0.046)
Individuals	6,982		6,985	
Observations	24,504		25,118	

Table A.2. Summary of hedonic weights for each indicator of the QoW index.

Indicator	Significant life satisfaction estimates (*2)		Significant job satisfaction estimates		Sum of significant & consistent estimates	Weight
	(1)	(2)	(3)	(4)		
Earnings Sufficiency	0.058	0.046	-	-	0.104	6.49%
Earnings Equity	0.07	0.052	-	-	0.122	7.61%
Pension	-	-	-	-	-	0%
Continuous Employment	-	-	-0.094	-0.249	-	0%
Composite Security	0.098	0.098	0.137	0.181	0.514	32.06%
Autonomy	0.08	0.078	0.119	0.232	0.509	31.75%
Collective Voice	-	-	-	-	-	0%
Employee Flexibility	0.032	0.022	0.039	0.057	0.15	9.36%
Excessive Hours	0.052	0.054	0.019	0.033	0.158	9.86%
Managerial Duties	-	-	-0.039	-0.047	-	0%
Short-term Prospects	-	-	-0.06	-0.105	-	0%
Long-term Prospects	-	-	-0.039	-0.104	-	0%
Work Fatalities	-	-	-0.041	-0.308	-	0%
Work Accidents	0.046	-	-	-	0.046	2.87%
Work Illnesses	-	-	-0.023	-	-	0%

Positive estimates mean that an improvement in an indicator between waves is associated with an increase in subjective life or job satisfaction. The data suggests significant positive impacts of Composite Security, Autonomy, Flexibility and Excessive Hours, with particularly large coefficients for the job satisfaction regressions. The Earnings indicators have a significant positive effect on life satisfaction but not on job satisfaction, whilst Work Accidents has a small positive effect in one of the life satisfaction models. All of the controls (not presented here) except for the presence of non-working adults in the household have a significant effect for job and/or life satisfaction. There are also some significant negative associations, where an *improvement* in an indicator is associated with *lower* satisfaction; these are discussed below.

A few complexities with applying these to an index of job quality need to be navigated. The decisions made on these are set out below:

- The effects need to be aggregated together to create a weight. I apply a two-thirds weight to life satisfaction regressions, reflecting its greater importance in determining subjective wellbeing and its closer approximation to the kind of measure proposed in Schokkaert (2007). This effectively doubles the estimates of the two sets of life satisfaction measures.
- Coefficients should only be incorporated if they are significantly related to life- and/or job satisfaction. I include estimates from either model with a higher than 10% significance ($p = <0.1$; denoted by a ‘.’) in the tables). If the effect is only significant in one model (as is the case with Earnings), then only the effect from this model will be carried over into the weighting. This is a slightly more relaxed significance threshold than conventionally used, but is I feel justified by the subject matter since it is still markedly *more likely than not* that the indicator impacts the outcome variables.
- Some of the coefficients for job satisfaction (though not life satisfaction) are both significant and negative, meaning that an *improvement* in the indicator is associated with a *decline* in job satisfaction. This is especially the case for Continuous Employment and for the indicators in the Prospects and Health and Safety dimensions. This finding is consistent with other literature which shows a converse relationship between some indicators of job quality and subjective job satisfaction (see for example Léné, 2019; Muñoz de Bustillo and Fernández Macías, 2005). This poses a challenge: should these negative effects be included in the index by effectively inverting the indicator scores, or should they simply be excluded? Since they are not significant for the more important measure (life satisfaction), a decision is made not to include them in the index rather than inverting the indicator scores.

Table A.2 contains the resulting weights for a hedonic weighting approach of the QoW index. As discussed above, these are simply the sum of the effect sizes where these are significant and consistent. This leaves seven indicators in the QoW index, with the remaining eight indicators removed. Note that because there is no Employee Flexibility indicator for self-employed workers, in line with what is effectively the method for the equal weighting approach, the additional weight for this is allocated to

the Excessive Hours indicator.⁶⁹ Finally, the hedonic indicator scores are adjusted along a 0-8 scale, so the scores can be directly compared with the QoW index scores.

A.2. Frequency-Based Weighting

Another body of literature, drawn from multidimensional poverty research, argues that the weights of an indicator should be determined by the inverted proportion of people deprived in that indicator, relative to the other indicators in an index. There is an intuitive logic to this approach: people will feel more deprived in an indicator where this deprivation is shared by fewer people in a society, and less deprived where it is a relatively common deprivation. The method for weighting indicators in this way is described in detail by Deutsch and Silber (2005), which particularly draws from Cheli and Lemmi (1995) and Cerioli and Zani (1990) (see also Decancq and Lugo, 2013, pp. 19–20).

This paper draws from these approaches to develop an alternative frequency-based weighting method for the QoW index. Again, as with hedonic weighting, there are normative reasons to reject this weighting method. Whilst many poverty lines are drawn based on the extent of deprivation in a society, one could argue that there is nothing in the frequency of deprivation that inherently impacts the effect of an indicator on wellbeing: a low frequency of aggregate achievement in a society does not necessarily translate into low Functioning achievement for the individual worker. One could also challenge whether a deprivation-based threshold is suitable for a *job quality* index: as briefly discussed in the paper, job quality and deprivation are different things, with the former more amenable to being viewed along a spectrum of achievement levels. The cut-offs for the QoW index are used to determine achievement along this spectrum, and should not necessarily be equated with deprivation thresholds. Much as with the hedonic weighting, however, these objections confuse the purpose of this

⁶⁹ This is of course a contentious compromise, but one that is brought about by the lack of available data. By grouping these two indicators into a conceptually similar dimension, the additional weight of Employee Flexibility for self-employed workers is entirely allocated to Excessive Hours. This method is therefore retained for all the weighting approaches presented here: where a method suggests a particular weight should be applied for Employee Flexibility, the weight for Excessive Hours for self-employed workers is the Employee Flexibility weight plus the Excessive Hours weight.

weighting exercise, which is chiefly to explore the sensitivity of this paper’s findings to different reasonable weighting decisions.

Notwithstanding these caveats, to implement frequency-based weighting, I start by calculating an approximation of the fuzzy proportion of deprived individuals for each indicator in the QoW index. This is done by taking 1 minus the mean score (m) in any given indicator (j) as at Wave 4 (2012-13): $1 - m_{j4}$. The choice of Wave 4 is deliberate: given that the scores, and thus deprivation levels do change over time on some indicators, it would be misleading to use a pooled mean from all waves or indeed a mean from any later wave. Selecting the earliest wave of analysis allows us to assess whether any improvement has been in the indicators which an advocate of frequency-based weighting would most want public policymakers to focus on: namely, those indicators which the lowest proportion of people score low on at the start of the time series.

Weights then need to be applied to every indicator in a way which assigns a greater weight to indicators with lower fuzzy proportions of deprived individuals. In line with the method used in the Totally Fuzzy Approach (see in particular Deutsch and Silber, 2005, p. 150), this is calculated as an inverse of the aggregate level of deprivation across all indicators. As they propose, the normalised log (ln) is used so as to smooth the variation between scores. For example, the weight for indicator j, W_j , is calculated as:

$$W_j = \frac{\ln \frac{1}{1 - m_{j4}}}{\sum_{j=1 \text{ to } k} \ln \frac{1}{1 - m_{j4}}}$$

Table A.3 sets out the weights, in percentage terms, for each indicator using this frequency-based weighting approach (column 4). For transparency, these are set alongside the weights were the normalised logs not used (column 3). It can be observed that the highest weight is allocated to Work Fatalities since only a very small proportion of workers operate in industries with a high rate of fatalities, although log normalisation has the effect of markedly reducing the weight from what it would have been. There is a closer alignment of the weights of the other indicators, ranging from Managerial Duties (5.1%) to Composite Security (8.29%).

A.3. Data-Driven Weighting

Finally, data-driven weighting is an increasingly common method used in multidimensional indices of wellbeing. This is most often done using Principal Component Analysis (PCA) (e.g. see Noorbakhsh, 1998; McGillivray, 2005; Cascales Mira, 2021). PCA is a data reduction technique which transforms the indicators of an index into an equivalent number of principal components: linear composites of the indicators, uncorrelated with each other. Each of these components explains an amount of variance in the data in descending order, with the first principal component explaining the most variance. Each contains a linear weighted combination of the indicators, called factor loadings: a higher factor loading signifies a greater presence of the indicator in that principal component. The commonly-stated purpose for PCA has been summarised by Decancq and Lugo (2013, pp. 20–21):

“The use of principal component analysis is often motivated by a concern for the so-called problem of double-counting. In many empirical applications, the indicators of wellbeing are found to be strongly correlated and capturing the same latent dimension.”

This can be useful, since sometimes indices are not transparent about the extent to which the different indicators or dimensions are correlated. Weights can be assigned using PCA by either taking each indicator’s factor loadings either the first principal component (see for example Greco, 2018, p. 464); or an average of the factor loadings weighted by the contribution of each principal component to the variance. There are also more sophisticated versions of PCA (e.g. see Boelhouwer, 2002) or factor analysis / latent variable analysis (for a discussion, see Krishnakumar and Nagar, 2008), but I consign myself to a PCA-based weighting method for this study because PCA is an efficient, easy-to-understand and widely used method adopted widely in existing research.

As with the other weighting approaches, strong normative reasons against weighting using PCA have received wide discussion in the literature. If anything, the case against PCA is stronger, since the normative grounds for adopting PCA-based weighting are often not clear. PCA will penalise indicators which do not vary across cases, and will not work as well when indicators are uncorrelated with each other (Vyas and Kumaranayake, 2006, p. 461), yet there is no logical reason why either of these

factors should have any bearing on the effect an indicator has on wellbeing. An indicator which varies little across the population might still be justified in an index, since – as proponents of frequency-based weighting might argue – a small but important proportion of the population may still be deprived in that indicator. A related issue arises for the indicators in the QoW index which assign automatic scores for self-employed workers or for whom the self-employed are excluded: Continuous Employment, Collective Voice and Employee Flexibility. Despite the justification of the approaches for these indicators, this will reduce the variance in these indicators in any PCA. Nor is “double-counting” necessarily an issue in multidimensional indices: there can be strong reasons for including two indicators where they each have a marked effect on peoples’ wellbeing. Again, however, the use of PCA in this study allows us to test the difference in weights if a popular data-driven weighting method were used for the QoW index. This is similar to the way it is used by Greco (2018). It also helps provide transparency about where any double counting occurs.

Pursuant to this, I carry out a PCA on the standardised⁷⁰ indicators of the QoW index. The PCA is conducted on the correlation matrix of the data, and not the covariance matrix. For ease of reference, Table A.4 copies the factor loadings of the first eight principal components, which together explain just over 90% of the variance, from the paper. There are more negative factor loadings than is common in PCA, and the implications of this are discussed below.

The rightmost column of Table A.4 shows the weights of each indicator in the QoW index using a data-driven weighting approach. I create these by taking a weighted average of these eight principal components. This is because the use of only the first principal component has been criticised for cases, as here, where a relatively low proportion of the variance is explained by the first component (see Somarriba and Pena, 2009, p. 117). The relatively large number of negative factor loadings poses a challenge for the weighting. Consistent with the approach used in other literature (Vyas and Kumaranayake, 2006, pp. 463–464; Greco, 2018, p. 466), negative factor loadings are excluded and thus not used to determine weightings. This yields weights which are different from equal weighting, although not dramatically so for most

⁷⁰ In line with the method used in other applications of PCA, these have been standardised so that each indicator has a mean of zero and a standard deviation of 1.

indicators save for the Earnings indicators, Short-Term Prospects and Excessive Hours. Indeed, the combined weight for the Earnings indicators – 26.9% - is very close to its 25% weight in the QoW index. There is an argument for instead inverting the negative factor loadings rather than excluding them, since PCA here is not being used for dimensionality reduction and it is an intended feature of the index for some indicators to be negatively loaded. For transparency, the weights were this latter approach taken are also included in Table A.5; these would give even closer weights for most indicators.

Table A.3. Summary of frequency-based weights for each indicator of the QoW index.

Indicator	Mean indicator score as at Wave 4	Fuzzy % of “deprived”	% weight (non-ln)	% weight (ln)
Earnings Sufficiency	0.473	52.7 ⁰ %	3.06%	5.62%
Earnings Equity	0.608	39.2%	4.12%	6.32%
Pension	0.483	51.7%	3.12%	5.67%
Continuous Employment	0.710	29.0%	5.57%	7.02%
Composite Security	0.832	16.8%	9.62%	8.29%
Autonomy	0.715	28.5%	5.67%	7.06%
Collective Voice	0.424	57.6%	2.80%	5.42%
Employee Flexibility	0.527	47.3%	3.41%	5.88%
Excessive Hours	0.655	34.5%	4.68%	6.61%
Managerial Duties	0.338	66.2%	2.44%	5.10%
Short-Term Prospects	0.342	65.8%	2.45%	5.11%
Long-Term Prospects	0.822	17.8%	9.06%	8.15%
Work Fatalities	0.955	4.5 ⁰ %	36.14%	11.36%
Work Accidents	0.600	40.0%	4.04%	6.27%
Work Illnesses	0.578	42.2 ⁰ %	3.82%	6.14%

Table A.4. Weights and factor loadings of the top 8 (>90% variance explained) principal components of the UK Quality of Work index. PCA conducted on the correlation matrix of standardised QoW index indicators, using Spearman correlation coefficients. Factor loadings > 0.3 marked green and < -0.3 marked red.

	Comp.1	Comp.2	Comp.3	Comp.4	Comp.5	Comp.6	Comp.7	Comp.8	% Weight (incl. negatives)	% Weight (excl. negatives)
Earnings Sufficiency	0.419	0.272	0.231	0.105	0.006	0.217	0.158	0.241	8.6%	14.7%
Earnings Equity	0.382	0.144	0.149	0.085	-0.058	0.396	0.051	0.393	7.2%	12.1%
Pension	0.395	-0.033	-0.232	-0.007	0.012	0.061	0.146	-0.346	6.1%	7.5%
Continuous Employment	0.338	0.023	-0.398	-0.046	-0.153	-0.063	-0.253	-0.187	6.5%	6.3%
Composite Security	0.076	0.129	-0.071	-0.503	-0.218	-0.553	0.433	0.213	5.4%	4.3%
Autonomy	-0.046	0.185	0.435	-0.243	-0.008	0.02	-0.259	-0.518	5.4%	6.0%
Collective Voice	0.297	-0.241	-0.26	-0.156	0.245	0.199	0.143	-0.197	7.7%	7.0%
Flexibility	-0.147	-0.109	0.403	-0.334	0.214	0.312	0.321	-0.145	6.5%	5.5%
Excessive Hours	-0.303	-0.308	-0.242	-0.141	-0.074	0.312	-0.309	0.276	8.3%	1.4%
Managerial Duties	0.252	0.221	0.201	0.009	-0.075	-0.194	-0.491	-0.079	6.4%	9.0%
Short-Term Prospects	0.006	-0.049	0.028	0.455	0.669	-0.341	0.106	-0.015	3.7%	4.7%
Long-Term Prospects	0.124	-0.326	0.349	0.087	-0.101	-0.289	-0.201	0.3	6.9%	5.8%
Work Fatalities	0.165	-0.541	0.145	0.079	-0.167	-0.073	0.025	-0.09	7.3%	4.5%
Work Accidents	-0.056	-0.167	0.132	0.469	-0.549	0.036	0.332	-0.277	5.4%	3.7%
Work Illnesses	-0.3	0.458	-0.167	0.266	-0.145	0.068	0.097	-0.041	8.6%	7.5%
Proportion of variance	30.8%	23.0%	13.9%	6.8%	6.0%	4.9%	3.7%	2.9%	92.1%	92.1%

Appendix B – Missing Values Analysis for QoW Index Data

At the outset, it is useful to distinguish between two types of “missingness” when dealing with longitudinal data such as Understanding Society:

- **Missing cases** occur when a respondent does not participate in a given wave of the survey. This is related to wave attrition, where respondents from previous waves attrit from the survey over time, thus becoming missing cases. These respondents will not be assigned a weight by Understanding Society in these waves, since they did not respond (this is sometimes referred to as not being “enumerated” in that wave).
- **Missing values** occur when a respondent who has missing values for a particular question which they should have been asked in that wave, but they otherwise participated in that wave. These respondents are not lost to attrition, but for whatever reason there is missing data for one or several variables of interest. These respondents will have been assigned a weight in a given wave.

Missing cases are a common issue in panel designs, and Understanding Society is no different. Analysis has found that as of Wave 11, its General Population Sample (GPS) lost 60.1%, and its Immigration and Ethnic Minority Boost (IEMB) sample – which was introduced in Wave 6 to increase the representativeness of new migrant groups and ethnic minorities – had lost 67.3%, of their respective initial wave respondents (Alvarez, James and Lynn, 2023). These are addressed by Understanding Society through weighting methods to correct for non-response biases. The weights also ensure that groups who are deliberately over-represented in the survey, such as in the IEMB, are assigned a lower weight to reflect their actual distribution in the population.

On its own, weighting can address some issues with both missing values and missing cases. It can address many of the issues caused by non-response by making the survey more representative of the population of interest, and separate studies have indeed shown that Understanding Society’s weighting methodology corrects for most sample biases (Lynn, 2011; Alvarez, James and Lynn, 2023). However, Understanding

Society advise that it is good practice to also impute missing values.⁷¹ Because missing data is unlikely to be Missing Completely at Random, imputation rather than listwise deletion would be a more appropriate way to adjust for this issue.⁷² I do not attempt to deal with missing cases, since these respondents are not assigned weights in the surveys used (presenting a considerable challenge about how to assign those weights) and they will only have data from other waves' responses to use as predictors for the imputation.

Pursuant to this, tables B.1 and B.2 show the proportion of weighted and unweighted missing cases for each indicator in the QoW index. I highlight cases where missingness exceeds 5% of respondents – a commonly-cited percentage threshold for imputation. I present both weighted and unweighted missing cases because the former gives an indication as to the effect that any missing cases could have on the analysis: the larger the *weighted* missing cases, the higher the potential difference between the observed data and the real-world labour market experience of UK workers.

The tables show that, once weights are applied, missing cases are generally below 5%, but with some notable exceptions. Missing cases are a consistent problem for the Continuous Employment indicator. This is due to the effect of attrition: because this indicator is produced using some longitudinal data, people who respond to the given wave but who did not respond to the wave immediately prior to the given wave will cause missing values for this indicator. It is also an issue for many variables in Wave 6 of Understanding Society. Other studies have shown that a change in fieldwork agency in Wave 6 caused unusually high attrition in that wave (Benzeval *et al.*, 2020, p. 20); my analysis shows this may cause issues for missing cases. It is also likely that the introduction of the Immigration and Ethnic Minority Booster (IEMB) sample in Wave 6 played a role here, with a number of new entrants in that wave were not asked some particular survey questions, with these respondents recording answers of “not available for IEMB” for some such questions.

⁷¹ Understanding Society User Support Forum, 16 May 2023, 'Using weights when variables have some or many 'missing value' codes or NAs due to missing household level data', Support Ticket #1904, <https://iserredex.essex.ac.uk/support/issues/1904>.

⁷² Understanding Society User Support Forum, 30 May 2022, 'Usual and last pay – question on imputation and missing values', Support Ticket #1708, <https://iserredex.essex.ac.uk/support/issues/1708>.

Other than this, missing values increase over the time series for Long-term Prospects and the Health and Safety indicators – the only indicators where this occurs. They exceed 5% for Long-term Prospects in the final wave. Note that the proportion of missing values is the same for the Health and Safety indicators because they are all derived from the same variable, Standard Industrial Classifications (see Appendix D). In Wave 12, the question on personal pensions used to create the Pension indicator is exceptionally not included. The relevant employee pension questions continued to be asked in that wave, and there is good coverage of that data, but this poses an issue for the treatment of employees who do not have employer pensions and self-employed workers, who will be coded “Middle” if they have a personal pension.

Figure B.1 provides a breakdown of the cumulative (unweighted) proportion of missing values in each wave. The figure shows that missingness is disproportionately concentrated in a minority of respondents, with most respondents in all waves having no missing data:

- In all but one wave (Wave 6), around 75% of respondents have no missing values for any of the indicators in the QoW index in that wave.
- Around 15% of respondents are missing in one indicator. This is almost entirely accounted for by the Continuous Employment indicator.
- Three waves show an uptick in the proportion of respondents missing in seven indicators. In every wave, 5 of these 7 indicators are the same: Continuous Employment, Pension, Short-Term Prospects, Autonomy and Collective Voice. This is particularly pronounced in Wave 6 (10%) and Wave 4 (6.4%), but is not an issue for other waves. The other two missing indicators of the seven vary from respondent-to-respondent and wave-to-wave, with no strong relationship.

In the (rare) cases where data is Missing Completely at Random (MCAR), missingness would not pose a major issue: analysis would lose statistical power due to fewer respondents, but the missing data would be the same as the non-missing data. However, missing data in Understanding Society is recognised as not being MCAR. For example, analysis has shown that rates of attrition are higher for certain subgroups than others – with “youngsters, ethnic minorities, participants with poor health” and others more likely to attrit (Alvarez, James and Lynn, 2023, p. 1). Whilst the initial wave

of Understanding Society has been found to have been closely representative of the Census population at that time, subsequent waves have become increasingly less so due to different rates of attrition within sub-groups and the introduction of booster samples to reflect later changes in the UK population (Lynn and Borkowska, 2018). My own analysis (not presented here but discussed in Appendix C) further reinforces this, showing the probability of missingness in the QoW indicators related to the characteristics of workers.

In light of the above considerations, I impute missing values for most the indicators in the QoW index. Although the focus of this imputation is indicators with >5% missing values (especially Continuous Employment) and imputing Wave 12 personal pensions data, the process is used to impute missing values for all but five of the indicators: Earnings Sufficiency, Long-term Prospects and the Health and Safety indicators. This is because Earnings Sufficiency has virtually zero missingness due to it already being imputed by Understanding Society (Fisher *et al.*, 2019). For the other three missingness is below 5% in most waves, and there are inherent challenges in imputing this data since it is determined by the occupation they are working in and the industry they are part of. Missing values for the remaining ten indicators are imputed using MICE, through a process described in Appendix C.

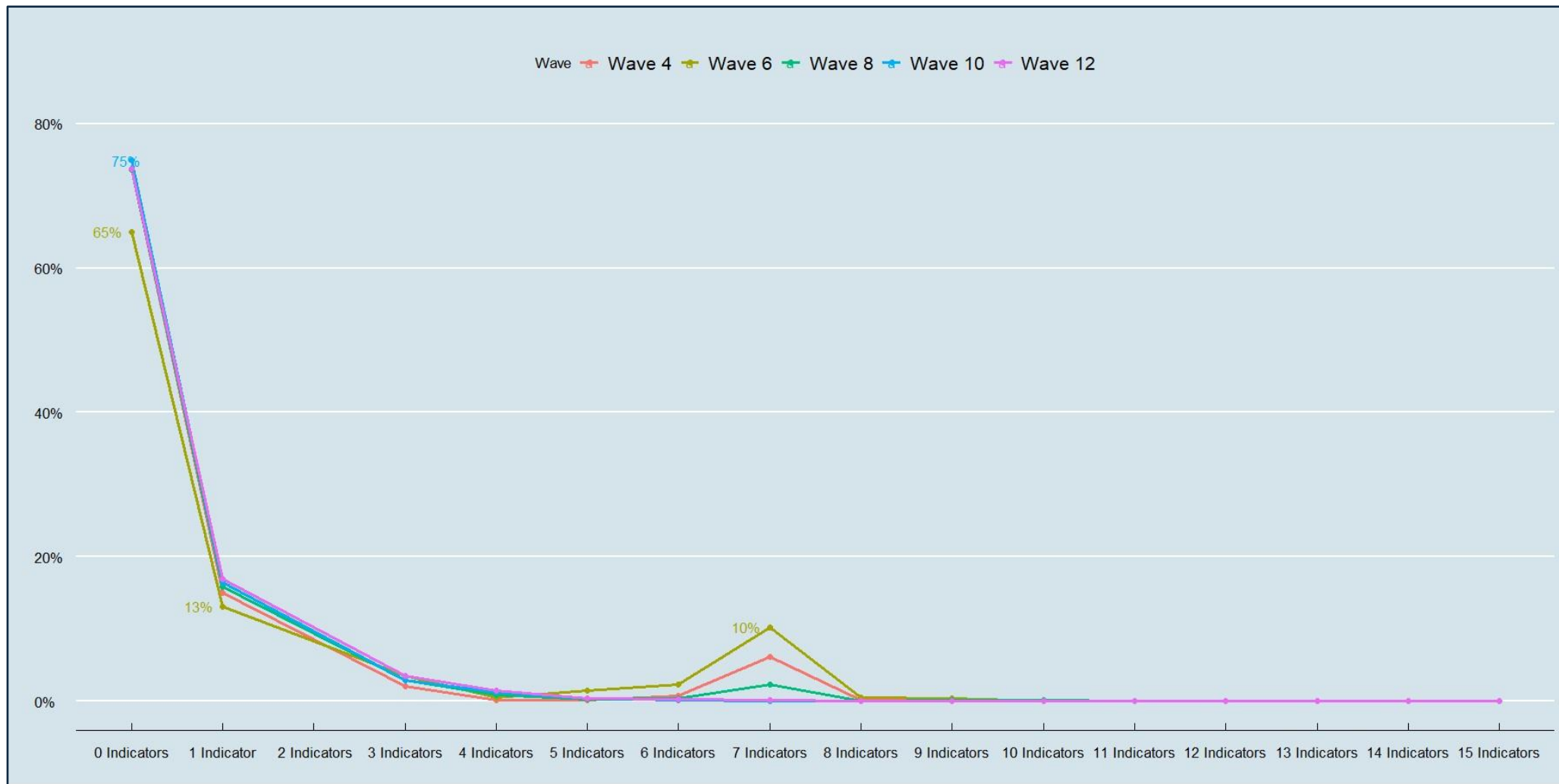
Table B.1. Weighted proportion of QoW index members with missing values in each indicator, Wave 4 (2012-13) to Wave 12 (2020-21). Cases where missingness exceeds 5% **coloured orange**. Note missingness for the Flexibility indicator is a proportion of employees only. Missingness for all other indicators a proportion of all workers in the QoW index, i.e. everyone in paid employment or away from a paid job they usually do when interviewed.

Dimension	Indicator	2012-13	2014-15	2016-17	2018-19	2020-21
Earnings	Earnings Sufficiency	0.0%	0.0%	0.0%	0.0%	0.0%
	Earnings Equity	0.7%	4.5%	1.8%	2.6%	3.2%
Insurance	Pension	1.7%	7.5%	2.9%	2.8%	No pers. pension
Security	Continuous Employment	13.4%	12.7%	11.8%	12.4%	12.9%
	Composite Security	0.1%	5.1%	0.5%	0.4%	0.6%
Autonomy & Voice	Autonomy	0.2%	3.4%	0.6%	0.6%	0.6%
	Collective Voice	2.2%	10.2%	4.5%	3.6%	3.8%
Work-life balance	Employee Flexibility	0.8%	8.3%	2.3%	2.1%	3.1%
	Excessive Hours	0.9%	2.5%	2.7%	3.1%	3.6%
Prospects	Managerial Duties	0.6%	3.5%	0.2%	0.3%	0.4%
	Short-term Prospects	0.0%	2.9%	0.1%	0.0%	0.1%
	Long-term Prospects	0.7%	1.0%	1.6%	5.2%	6.3%
Health & Safety	Work Fatalities	0.5%	1.3%	2.7%	3.7%	4.7%
	Work Accidents	0.5%	1.3%	2.7%	3.7%	4.7%
	Work Illnesses	0.5%	1.3%	2.7%	3.7%	4.7%

Table B.2. Unweighted proportion of QoW index members with missing values in each indicator, Wave 4 (2012-13) to Wave 12 (2020-21).

Dimension	Indicator	2012-13	2014-15	2016-17	2018-19	2020-21
Earnings	Earnings Sufficiency	0.0%	0.0%	0.0%	0.0%	0.0%
	Earnings Equity	0.9%	4.7%	2.3%	3.0%	3.3%
Insurance	Pension	10.5%	20.3%	7.2%	5.1%	No pers. pension
Security	Continuous Employment	19.8%	22.4%	15.6%	14.5%	13.8%
	Composite Security	7.0%	14.8%	3.6%	2.1%	1.0%
Autonomy & Voice	Autonomy	9.3%	17.1%	5.0%	3.1%	1.2%
	Collective Voice	9.2%	19.6%	7.5%	5.2%	3.8%
Work-life balance	Employee Flexibility	9.4%	20.5%	6.5%	4.4%	3.4%
	Excessive Hours	1.1%	3.3%	3.1%	3.5%	3.8%
Prospects	Managerial Duties	0.7%	3.0%	0.3%	0.3%	0.4%
	Short-term Prospects	9.1%	16.7%	4.4%	2.4%	0.8%
	Long-term Prospects	0.9%	1.8%	2.2%	5.2%	6.1%
Health & Safety	Work Fatalities	0.6%	2.4%	3.1%	4.0%	4.5%
	Work Accidents	0.6%	2.4%	3.1%	4.0%	4.5%
	Work Illnesses	0.6%	2.4%	3.1%	4.0%	4.5%

Figure B.1. Cumulative missingness. Unweighted proportion of respondents by wave with 0 (none) to all (15) QoW indicators missing (excl. Wave 12 personal pensions).



Appendix C – Multiple Imputation Method for Missing QoW Index Data

Multivariate Imputation using Chained Equations (MICE) is a well-recognised imputation method which has seen growing use in the social sciences. There is an extensive and well-supported package in R, called MICE, which can be used to impute the data (Van Buuren and Groothuis-Oudshoorn, 2011). It is also the same method used for most of the imputation of Understanding Society's income data (Fisher *et al.*, 2019, p. 31).

MICE requires missing data to be Missing At Random (MAR); it need not be MCAR for the imputation to be unbiased. This means that, where the cause of missingness can be controlled for using observable data, MICE is an appropriate method (Azur *et al.*, 2011). It should be noted that imputed data does not necessarily have to be similar to non-imputed data in order for the process to work: where missingness is accounted for by observed characteristics, then it is consistent for the imputed data to be different from the (non-imputed) non-missing data. However, MICE may introduce bias in cases where the data is Missing Not at Random (MNAR).

In practice this can be very difficult to establish, and almost impossible to achieve in virtually all cases. Graham (2009, p. 567) advocates viewing data along a spectrum of pure MAR and pure MNAR, because "MCAR, pure MAR and pure MNAR really never exist because the pure form of any of these requires almost universally untenable assumptions." Stuart *et al.* (2009, p. 1134) further argue that "MAR, while empirically unverifiable, is often a reasonable assumption to make unless substantive knowledge about the data or data collection process indicates that the missingness may depend on unobserved values."

In order to minimise the risk of MNAR, consistent with other approaches to MICE, I take an inclusive rather than a restrictive approach to including variables in the imputation model (Collins, Schafer and Kam, 2001, p. 331) – including various auxiliary variables not cogent to my analysis, but associated with missingness, in addition to my analysis variables. In order to be identified for selection, such variables should be (Collins, Schafer and Kam, 2001) (a) "potential causes or correlates of the missingness itself"; and/or (b) "correlated with the variables that have missing values, whether or not they are related to the mechanism of missingness."

The following variables were identified as potentially useful predictors for the imputation. These draw from the same indicators used for the imputation of income data in Understanding Society (Fisher *et al.*, 2019, pp. 33–34):

- Income variables:
 - Personal income
 - Household income
- Various individual characteristics, including analysis variables used in this paper:
 - Sex
 - Ethnicity
 - Age (+ age-squared)
 - Interaction terms for sex & ethnicity and sex & age
 - Region of residence
 - Number of dependent children
 - Number of non-working adults in the household
 - Individual physical and mental health
- Proxies for deprivation/disadvantage:
 - National Statistics Socio-Economic Classification (NS-SEC) of individual's first or second job⁷³ after leaving full-time education
 - Highest NS-SEC of either of their parents when individual was aged 14
 - Highest educational qualification of the individual
 - Housing tenure
- Characteristics of the job or workplace:
 - Hours worked in all paid jobs
 - Whether self-employed (for indicators where employee and self-employed coding arrangements the same)
 - The number of employees in the individual's workplace⁷⁴

⁷³ This is a composite of two variables in Understanding Society: one asking respondents the NS-SEC of their first job after leaving full-time education; and the other asking them the NS-SEC of their second job. To minimise missingness in this variable, I create a combined indicator which takes the value of the higher of the two estimates where both are present, or goes with either value where the other is not present.

⁷⁴ Similar to the above, this is a composite variable combining two separate questions for employees and the self-employed, together with a separate question on whether self-employed hire their

- Fixed effects for year (i.e. wave of interview)

In order to identify which of these variables to include in the multiple imputation models, various regressions (not presented here) of the effect of these variables on both missingness and indicator scores were run. These consisted of:

- Logistic regressions on the probability of missingness for individual variables (with Wave 12 pensions examined separately) and the scores for binary variables;
- Ordered logit regressions of the effect of these variables on both (a) the number of indicators QoW the individual is missing in and (b) scores for continuous indicators.

These found that, as predicted, the missing population has different characteristics to the non-missing population. For example, missingness is significantly related to being younger, being male, living in private rented or social housing and working for a smaller employer. The interaction terms and individual NS-SEC were insignificant in most models, giving rise to concerns about multicollinearity, and so were excluded from most models. Region of residence was also insignificant in most cases but was retained due to its importance as an analysis variable.

Three distinct types of multiple imputations were conducted for each individual indicator depending on the nature of the indicator being imputed. All were imputed using a Predictive Mean Matching (PMM) method, using 25 iterations. Note that imputation has not been carried out on the four continuous indicators in the QoW index:

- I use the same, joint process for imputing five variables where there is missing data, and of the same structure (ie all categorical or all binary), for both employees and the self-employed: Earnings Equity, Composite Security, Autonomy, Excessive Hours, Managerial Duties and Short-Term Prospects.
- An employee-only imputation is conducted for three indicators where only employees have missing data: Continuous Employment, Collective Voice, and Employee Flexibility.

own staff. Where self-employed say they do not hire their own staff, I code them the lowest score in this variable (workplace with 1-2 employees).

- The Pensions indicator treated differently. It is the only indicator where both (a) there is missing data for both employees and the self-employed and (b) the maximum scores both can get differ (0 or 1 for self-employed; 0, 1 or 2 for employees). It is also unique in having missing data due to the lack of the required survey question in Wave 12, meaning the missing data in that wave has very different characteristics to that in others. Separate imputations are carried out for employees and the self-employed, and then again for the Wave 12 data.

Table C.1 presents the (unweighted) differences between imputed and non-imputed data, broken down by employees and self-employed. There is a strong consistency in the imputed and non-imputed data for most of the indicators. Where this is not the case, there are logical reasons for this justified by the preceding observations. For example there is a general tendency for most (though not all) imputed indicator scores to be slightly worse than non-imputed scores, although with self-employed workers tending to be assigned values around the middle.

To conclude, Table C.2 brings the imputed and non-imputed data together, presenting the (weighted) uncensored headcount ratios for the full data (imputed and non-imputed) alongside the difference in brackets were the headcount ratio for the non-imputed data only used instead. The data shows that, in practice, imputation has a very minor effect on the headcount ratios. The most pronounced differences are seen with the Continuous Employment indicator, but even in this case they do not affect overall trends in the data. There are several reasons for this:

- For most variables, the level of difference is a reflection of the low level of weighted missingness for the indicators anyway. Because there are relatively few missing values in most indicators, the effect that imputation can have on the overall conclusions about trends is minor.
- As set out in Appendix B, missingness is in any event higher amongst respondents who are weighted less in the survey.

Table C.1. Cross-tabulation of difference between unweighted uncensored headcount ratio between imputed and non-imputed data, broken down by employees and self-employed. Pooled data from all waves.

Dimension	Indicator	Score	Employees		Self-employed	
			Non-Imputed	Imputed	Non-imputed	Imputed
Earnings	Earnings Equity	Worst	9.9%	11.7%	41.9%	39.4%
		Middle	49.3%	46.4%	26.5%	38.6%
		Best	40.8%	42.0%	31.6%	22.0%
Insurance	Pension	Worst	30.9%	43.1%	84.7%	83.2%
		Middle	2.6%	3.0%	15.3%	16.8%
		Best	66.6%	53.9%	--	--
Security	Continuous Employment	Worst	11.4%	14.7%	--	--
		Middle	13.2%	16.0%	--	--
		Best	75.4%	69.2%	--	--
	Composite Security	Worst	16.6%	19.1%	19.1%	22.0%
		Best	83.4%	80.9%	80.9%	78.0%
Autonomy and Voice	Autonomy	Worst	12.0%	12.2%	1.8%	2.0%
		Middle	38.7%	39.1%	11.8%	14.4%
		Best	49.4%	48.7%	86.4%	83.7%
	Collective Voice	Worst	52.7%	57.6%	--	--
		Best	47.3%	42.4%	--	--
Work-life balance	Employee Flexibility	Worst	22.2%	26.1%	--	--
		Middle	50.6%	51.0%	--	--
		Best	27.2%	22.9%	--	--
	Excessive Hours	Worst	13.6%	14.3%	22.5%	18.4%
		Middle	39.9%	35.1%	27.7%	44.6%
		Best	46.6%	50.6%	49.8%	37.0%
Prospects	Managerial Duties	Worst	64.2%	72.8%	83.4%	90.5%
		Best	35.8%	27.2%	16.6%	9.5%
	Short-Term Prospects	Worst	48.8%	42.3%	68.4%	61.3%
		Middle	35.4%	36.0%	23.0%	30.6%
		Best	15.8%	21.7%	8.6%	8.0%

Table C.2. Time series of weighted uncensored headcount ratio scores using imputed and non-imputed data combined, with differences versus using non-imputed data only in brackets, 2012-13 to 2020-21. Note that due to rounding differences may not always net to zero.

Dimension	Indicator	Score	2012-13	2014-15	2016-17	2018-19	2020-21
Earnings	Earnings Equity	Worst	19.9%	12.9% (-0.2%)	14.9% (-0.1%)	13% (0.2%)	8.5% (-0.3%)
		Middle	40.0%	48.1% (0.3%)	45.6%	48.8% (0.1%)	50.7% (0.1%)
		Best	40.1% (0.1%)	39.1% (-0.2%)	39.4% (0.2%)	38.1% (0.2%)	40.8% (0.2%)
Insurance	Pension	Worst	51.8% (-0.7%)	41.9% (-1.4%)	36% (-0.6%)	30.8% (-0.6%)	28.9%(--)
		Middle	5% (0.1%)	5.6% (0.1%)	3.9% (-0.1%)	3.7% (0.1%)	2.9%(--)
		Best	43.2% (0.7%)	52.5% (1.3%)	60.2% (0.6%)	65.5% (0.7%)	68.2%(--)
Security	Continuous Employment	Worst	23.9% (2.1%)	25.1% (3.4%)	25.1% (1.8%)	24.1% (1.8%)	23% (1.5%)
		Middle	12.6% (-1%)	12.5% (-1.2%)	12.2% (-0.7%)	10.8% (-0.6%)	10.6% (-0.8%)
		Best	63.5% (-1.1%)	62.3% (-2.1%)	62.8% (-1.1%)	65.1% (-1.2%)	66.4% (-0.7%)
	Composite Security	Worst	17% (-0.1%)	17.5% (-0.4%)	16.4% (-0.1%)	16% (-0.1%)	19.4% (-0.1%)
		Best	83% (0.1%)	82.5% (0.4%)	83.6% (0.1%)	84% (0.1%)	80.6% (0.1%)
Autonomy and Voice	Autonomy	Worst	11.5% (0.1%)	9.9%	10.3%	10.6%	10.5%
		Middle	34.3% (-0.1%)	34.0%	35.0%	36.4%	36.2%
		Best	54.2% (0.1%)	56.2% (-0.1%)	54.8%	53.0%	53.3%
	Collective Voice	Worst	59.2%	59.2% (0.8%)	60.5%	60.2%	59.8% (-0.1%)
		Best	40.8%	40.8% (-0.8%)	39.5%	39.8%	40.2% (0.1%)
Work-life balance	Employee Flexibility	Worst	24.1% (-0.3%)	22.4% (-0.4%)	22.9% (-0.5%)	21.5% (-0.3%)	21.2% (-0.3%)
		Middle	48.1% (-0.3%)	49.7% (-0.6%)	52.7% (0.3%)	52.5% (0.1%)	51.6% (0.1%)
		Best	27.9% (0.5%)	27.8% (1.1%)	24.4% (0.2%)	26% (0.2%)	27.3% (0.1%)
	Excessive Hours	Worst	14.9%	15.3%	15.0%	14.8%	13.5%
		Middle	38.5%	36.8%(0.1%)	38.2%(0.1%)	38.1% (0.1%)	39.2%
		Best	46.6%	47.9%(-0.1%)	46.8%	47.1%	47.2%
Prospects	Managerial Duties	Worst	66.5% (0.1%)	67.2% (-0.4%)	67.2%	67.4%	66.7% (-0.1%)
		Best	33.5% (-0.1%)	32.8% (0.4%)	32.8%	32.6%	33.3% (0.1%)
	Short-Term Prospects	Worst	48.7% (0.1%)	47.9% (1%)	51.2% (-0.1%)	53.5%	57.0%
		Middle	34.4%	36.0%	34.2% (0.1%)	32.3% (-0.1%)	30.8%
		Best	16.9% (-0.1%)	16.1% (-1%)	14.7% (-0.1%)	14.3% (-0.1%)	12.2%

Appendix D – Health and Safety Dimension

Workplace health and safety is recognised as an important dimension in job quality, and one that is usually not correlated with other indicators and dimensions of job quality indices. Data on health and safety is available in the European Working Conditions Survey, and is used in the European Job Quality Index (Muñoz de Bustillo et al (2011)). However, Understanding Society has no data on workplace health and safety. This paper addresses this shortcoming by introducing three new health and safety indicators into Understanding Society using data from external surveys:

- **Workplace Accidents**, using self-reported incidences of workplace accidents in the Labour Force Survey (LFS), covering the same period as is covered in the QoW index in Understanding Society (2012-2022).
- **Workplace Illnesses**, also using LFS data on self-reported illnesses caused or made worse by employers, covering the period 2012-2022.
- **Workplace Fatalities**, which is drawn from public data reported to the Health and Safety Executive under the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR),⁷⁵ covering the 6-year period 2014/15 to 2019/20.

Taken together, this data is designed to cover the full spectrum of workplace health and safety issues – from workplace fatalities covered under RIDDOR to more mild-to-severe workplace accidents and injuries in the LFS. All the data is of incidents which took place in the course of work, or was caused or made worse by a job. This data is introduced into Understanding Society through the following process:

1. A series of matrices of health and safety incidents by Standard Industrial Classification (SIC) are produced.⁷⁶

⁷⁵ See Health and Safety Executive, [Index of Data Tables – RDIND: Table 1: Work-related fatal injuries to workers \(employees and the self-employed\) in Great Britain, by detailed industry](#). Last updated August 2023.

⁷⁶ These use the SIC 2007, which is the current most up-to-date method for classifying businesses in the UK based on the type of economic activity they are engaged in.

2. These are then converted into incidences of workplace fatalities, accidents, and injuries per 100,000 workers in that industry,⁷⁷ using weighted estimates of industry size from the LFS.
3. The data from these matrices are then read into Understanding Society based on a common variable: SICs. This effectively tells us the rate of accidents, illnesses and fatalities per 100,000 in the industry in which each worker in Understanding Society works in their main job.
4. Finally, these are then turned into three equally-weighted indicators for the Health and Safety dimension in the QoW index. Because the incidence rates differ by each indicator, the standardised scores are incorporated into the index by first turning the variable scores into standard units, and then converting these scores into a 0-2 scale.

Because of the differing nature of, and sources for, the data, these are incorporated into Understanding Society at slightly different levels of aggregation of the SICs and the matrices cover different time periods. This is discussed in the below subsections.

D.1. Work Accidents and Illnesses

In Q1 (January-March) of every year, the LFS asks respondents a set of questions about any workplace accidents and injuries which have occurred over the past 12 months. These are the basis for most data on self-reported mild-to-severe workplace health and safety issues reported by the Health and Safety Executive. The QoW index uses data from two binary questions:

- **Workplace accidents:** *“Thinking of the twelve months since [full date], have you had any accident resulting in injury at work or in the course of your work?”*
- **Workplace illnesses:** *“[Apart from the accident you have told me about], within the last twelve months have you suffered from any illness, disability or other physical or mental problem that was caused or made worse by your job or by work you have done in the past?”*

⁷⁷ This is simply to align with how these incidents are reported by the Health and Safety Executive, to ease comparison with other published data.

An additional set of questions in the survey confirm whether the job which caused the accident or their illness was their main job or their second job,⁷⁸ which allows us to identify the SIC of the job which caused or made worse the incident.

I create a series of matrices of confirmed incidences of workplace accidents and illnesses by the SIC of the main job. To reflect changes over time, six different matrices of accidents and illnesses are created using data pooled into six pairs of years (see Table 1). Each matrix is used to create data for the respective wave of Understanding Society. These align directly with the time period covered in the relevant wave of Understanding Society, with just one exception: in Wave 4 (2012-13), work illnesses data is drawn from Q1 2011 rather than Q1 2013 because the relevant question was exceptionally not asked in the LFS in Q1 2013. A total of 446,749 relevant responses are captured in these matrices, ranging from 62,418 in 2020-21 to 80,744 in 2014-15.

These matrices report the weighted number of incidences of workplace accidents and illnesses for the period covered broken down by 21 different SICs. The use of pooled data from a larger sample of surveys allows matrices to be created at a higher level of granularity than is reported in some other national statistics, yet still, there are a small number of instances where there are a low number of respondents with some of the less common SICs. This occurs in the following instances; where this is the case, these are treated in a way which is consistent with the way the HSE treats these categories in their own data:

- Mining and quarrying (Category B; SICs 05-09) is kept separate despite the low (~100-200 p.a.) number of respondents with this SIC. This is in line with HSE reporting, since this is a distinct category which is difficult to merge with other data.
- Electricity, gas, steam and air conditioning supply (Category D; SIC 35) is kept separate despite the low (~200-500 p.a.) number of respondents, again due to the lack of a comparable category, and in line with the HSE's approach.
- Water supply; sewerage, waste management and remediation activities (Category E; SICs 36-39) covers ~300-600 respondents p.a., but again is kept separate in HSE reporting.

⁷⁸ These are WCHJB for workplace accidents and WCHJB₃ for illnesses.

- Arts, entertainment and recreation (R), other service activities (S), activities of households with employers/for own use (T) and activities of extraterritorial organisations and bodies (U) are merged together due to the low number of respondents, in line with HSE reporting of fatalities data.

Tables D.2 and D.3 report rates of workplace accidents and injuries by each of these SIC categories for the latest period covered (2020-21), ranking each occupational group by the number of incidences per 100,000 workers in that industry. Even without statistical analysis, it is evident that the incidence of workplace accidents and illnesses is only weakly correlated, with many industries with high workplace accidents reporting low rates of work illness, and vice-versa.

D.2. Work Fatalities

The LFS cannot provide data on workplace fatalities, since its workplace accidents and injuries data is self-reported. This poses a problem for any health and safety dimension in a job quality index because (a) workplace fatalities capture an important aspect of the *severity* of workplace accidents and (b) there is no guarantee that incidences of workplace fatalities are correlated with workplace accidents.

To create an indicator of workplace fatalities, I use RIDDOR data on employer-reported incidences of workplace fatalities. These are published by the Health and Safety Executive for each year going back to 2014/15, and broken down by a smaller number of SIC groupings – 11 – than is available in the more detailed LFS data on workplace accidents and injuries. Broadly consistent with the data on workplace accidents and illnesses, incidents reported to RIDDOR must “arise from a work-related accident, including an act of physical violence to a worker”, but “with the exception of suicides.”⁷⁹

Because a small number of incidences of workplace fatalities are reported every year, the rate of incidents is subject to considerable variation if data is broken down by year. This means that time series analysis of any change in fatalities over time is not possible. Instead, a matrix of incidences is created by pooling data for six years, covering the whole period under study. This has the disadvantage of not being able to capture changes over time in the same way as can be captured using the workplace accidents

⁷⁹ See Health and Safety Executive, [Types of reportable incidents](#), accessed 08/11/23.

and illnesses indicators (changes over time will only be captured where these arise from changes in the industrial composition of the workforce, and not any improvements in workplace safety within the same industries). Table D.4 presents workplace fatalities per 100,000 ranked by each of these industrial groupings.

Table D.1. Labour Force Survey matrices used for each wave of the QoW Index in Understanding Society.

Understanding Society wave	Labour Force Surveys used for matrices	Number of relevant respondents in LFS
Accidents – Wave 4 (2012-13)	Q1 2012 & Q1 2013	79,703
Illnesses – Wave 4 (2012-13)	Q1 2011 & Q1 2012	80,192
Wave 6 (2014-15)	Q1 2014 & Q1 2015	80,733
Wave 8 (2016-17)	Q1 2016 & Q1 2017	73,452
Wave 10 (2018-19)	Q1 2018 & Q1 2019	70,251
Wave 12 (2020-21)	Q1 2020 & Q1 2021	62,418

Table D.2. Rank of workplace accidents per 100,000 by large SIC category in LFS, pooled Q1 2020 & Q1 2021 data.

SIC 2007	Description	Industry size as % of workforce (LFS estimate)	Number of workplace accidents reported in LFS	Workplace accidents per 100,000 workers in industry
1	Agriculture, forestry and fishing	0.91%	16,999	3,746
6	Construction	6.51%	102,637	3,168
8	Transportation and storage	4.70%	59,106	2,523
9	Accommodation and food service activities	4.83%	51,505	2,141
3	Manufacturing	8.82%	83,667	1,904
5	Water supply; sewerage, waste management and remediation activities	0.72%	6,764	1,884
7	Wholesale and retail trade; repair of motor vehicles and motorcycles	11.74%	109,292	1,870
17	Human health and social work	13.67%	123,240	1,810
15	Public administration and defence; compulsory social security	7.08%	61,248	1,737
16	Education	10.96%	85,880	1,574
14	Administrative and support service activities	4.48%	34,732	1,556
12	Real estate agents	1.22%	8,558	1,404
18to21	Arts, entertainment and recreation; other service activities; activities of households as employers/for own use; and activities of extraterritorial organisations and bodies	5.86%	38,876	1,332
4	Electricity, gas, steam and air conditioning supply	0.64%	3,558	1,124
2	Mining and quarrying	0.36%	1,920	1,086
13	Professional, scientific and technical activities	8.36%	25,950	623
10	Information and communication	4.91%	8,373	343
11	Financial and insurance activities	4.23%	7,141	339

Table D.3. Rank of workplace illnesses per 100,000 by large SIC category in LFS, pooled Q1 2020 & Q1 2021 data.

SIC 2007	Description	Industry size as % of workforce (LFS estimate)	Number of workplace illnesses reported in LFS	Workplace illnesses per 100,000 workers in industry
17	Human health and social work	13.62%	123,240	6,374
15	Public administration and defence; compulsory social security	7.07%	61,248	4,988
1	Agriculture, forestry and fishing	0.92%	16,999	4,533
16	Education	11.00%	85,880	4,502
4	Electricity, gas, steam and air conditioning supply	0.64%	3,558	4,143
14	Administrative and support service activities	4.49%	34,732	3,785
18to21	Arts, entertainment and recreation; other service activities; activities of households as employers/for own use; and activities of extraterritorial organisations and bodies	5.85%	38,876	3,350
6	Construction	6.49%	102,637	3,302
11	Financial and insurance activities	4.25%	7,141	3,276
3	Manufacturing	8.83%	83,667	3,131
7	Wholesale and retail trade; repair of motor vehicles and motorcycles	11.71%	109,292	2,998
13	Professional, scientific and technical activities	8.39%	25,950	2,829
12	Real estate agents	1.22%	8,558	2,793
8	Transportation and storage	4.71%	59,106	2,787
5	Water supply; sewerage, waste management and remediation activities	0.73%	6,764	2,786
10	Information and communication	4.92%	8,373	2,552
9	Accommodation and food service activities	4.81%	51,505	2,330
2	Mining and quarrying	0.36%	1,920	1,971

Table D.4. Rank of workplace fatalities per 100,000 by large SIC in UK workforce, 2014/15 to 2019/20.

Category and 2-digit SIC grouping (2007)	Description	RIDDOR Fatal injuries, 2014/15 to 2019/20	Industry size as % of workforce (LFS estimates)	Fatalities per 100,000 workers in industry
A (01-03)	Agriculture, forestry and fishing	167	1.1%	9.33
E (36-39)	Water supply; sewerage, waste management and remediation activities	51	0.7%	4.50
F (41-43)	Construction	223	7.1%	2.00
B (05-09)	Mining and quarrying	12	0.4%	1.78
H (49-53)	Transportation and storage	86	4.9%	1.12
C (10-33)	Manufacturing	118	9.4%	0.80
D (35)	Electricity, gas, steam and air conditioning supply	7	0.6%	0.74
G,I (45-47,55-56)	Wholesale and retail trade; repair of motor vehicles and motorcycles; accommodation and food service activities	57	18.1%	0.20
J-N (58-82)	Information and communication; financial and insurance activities; real estate activities; professional, scientific and technical activities; administrative and support service activities	57	21.3%	0.17
R-U (90-99)	Arts, entertainment and recreation; other service activities; activities of households as employers; undifferentiated goods-and services-producing activities of households for own use; activities of extraterritorial organisations and bodies	14	5.8%	0.15
O-Q (84-88)	Public administration and defence; compulsory social security; education; human health and social work activities	35	30.4%	0.07

Figure D.1. Time series comparison of weighted mean **work accidents** per 100,000 in Understanding Society vs. the Labour Force Survey, 2012-13 to 2020-21.

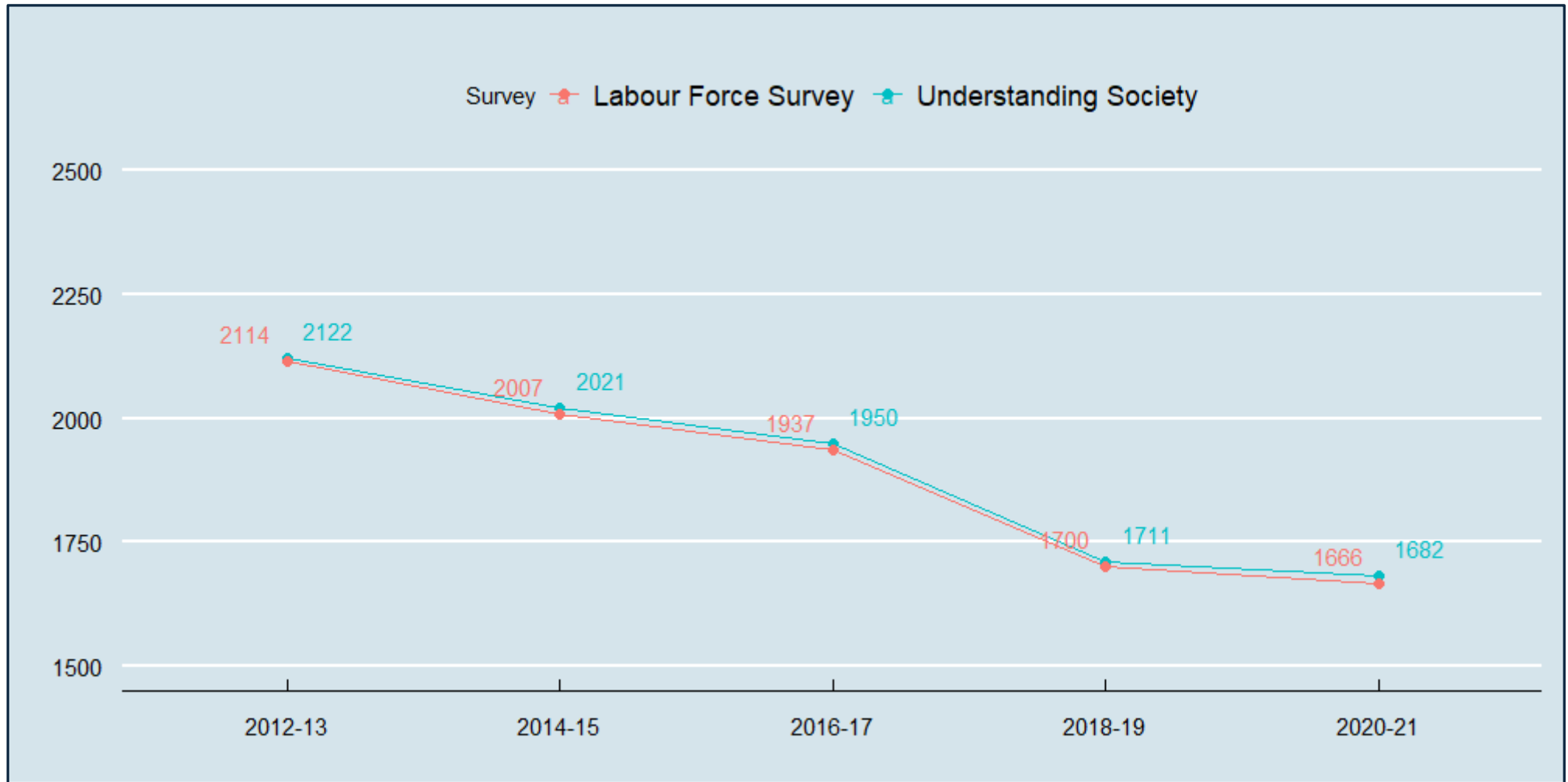


Figure D.2. Time series comparison of weighted mean **work illnesses** per 100,000 in Understanding Society vs. the Labour Force Survey, 2012-13 to 2020-21.

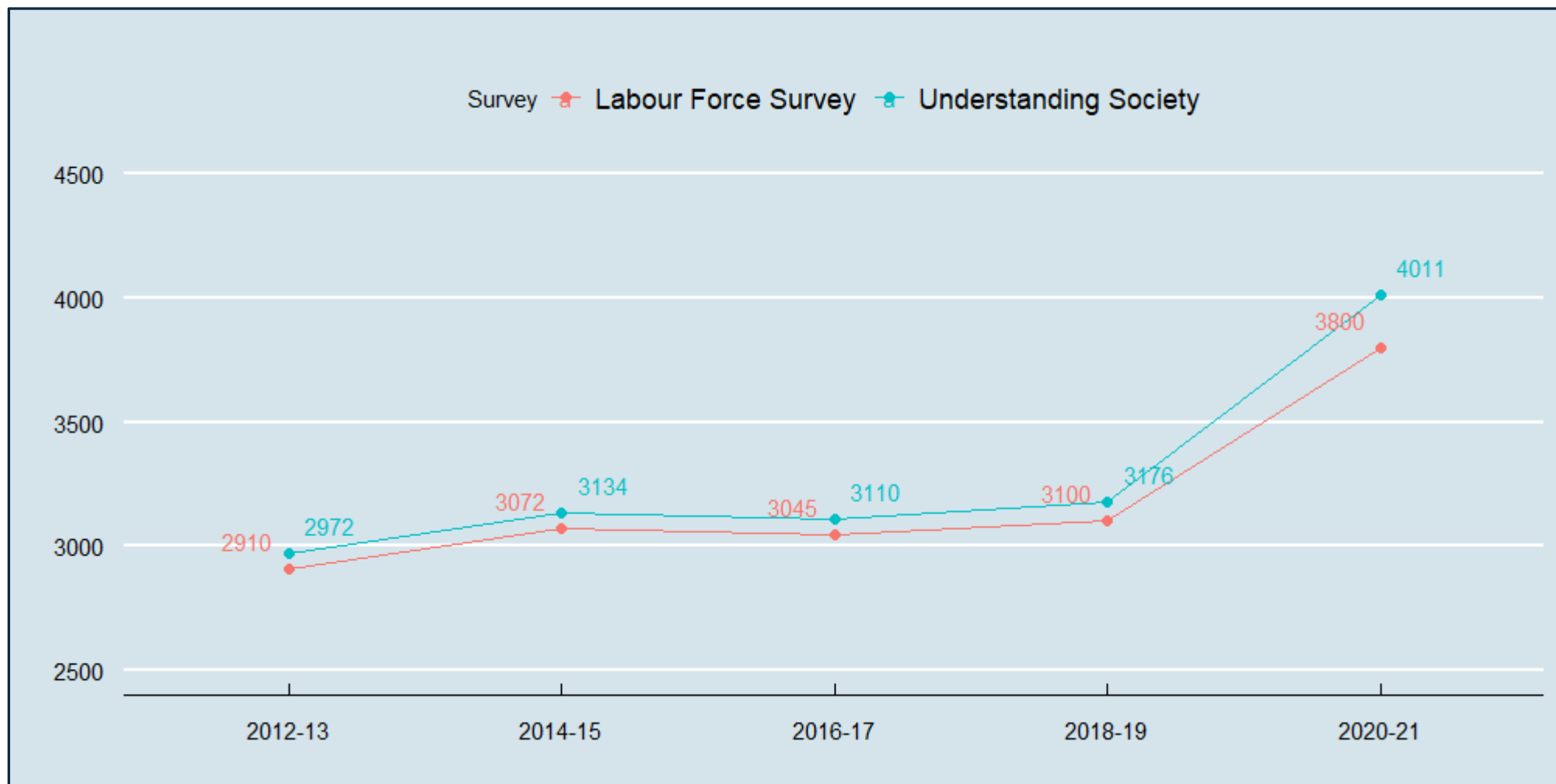


Figure D.3. Time series comparison of weighted mean **work fatalities** per 100,000 in Understanding Society vs. the Labour Force Survey, 2012-13 to 2020-21.



Table D.5. Comparison of the weighted SIC composition of Understanding Society vs. the Labour Force Survey, Wave 12 (2020-21) vs. pooled data from Q1 2020 and Q1 2021 of the LFS.

SIC 2007	Description	Industry size as % of workforce (LFS estimates)	Industry size as % of workforce (Understanding Society estimates)	Difference (LFS minus Understanding Society estimate)
1	Agriculture, forestry and fishing	0.91%	0.71%	-0.20%
2	Mining and quarrying	0.36%	0.14%	-0.22%
3	Manufacturing	8.82%	8.32%	-0.50%
4	Electricity, gas, steam and air conditioning supply	0.64%	0.56%	-0.08%
5	Water supply; sewerage, waste management and remediation activities	0.72%	0.72%	0.00%
6	Construction	6.51%	4.94%	-1.57%
7	Wholesale and retail trade; repair of motor vehicles and motorcycles	11.74%	12.57%	0.83%
8	Transportation and storage	4.70%	4.33%	-0.37%
9	Accommodation and food service activities	4.83%	4.20%	-0.63%
10	Information and communication	4.91%	3.72%	-1.19%
11	Financial and insurance activities	4.23%	3.47%	-0.76%
12	Real estate agents	1.22%	1.12%	-0.10%
13	Professional, scientific and technical activities	8.36%	7.33%	-1.03%
14	Administrative and support service activities	4.48%	4.02%	-0.46%
15	Public administration and defence; compulsory social security	7.08%	7.69%	0.61%
16	Education	10.96%	12.46%	1.50%
17	Human health and social work	13.67%	19.06%	5.39%
18to21	Arts, entertainment and recreation; other service activities; activities of households as employers/for own use; and activities of extraterritorial organisations and bodies	5.86%	4.65%	-1.21%

Table D.6. Comparison of the distribution of indicator scores for work accidents, work illnesses and work fatalities. All waves pooled together.

Indicator	Min.	1 st Quartile	Median	Mean	3 rd Quartile	Max.
Work Accidents	0	0.579	0.647	0.6435	0.719	1
Work Illnesses	0	0.396	0.733	0.5365	0.665	1
Work Fatalities	0	0.971	0.978	0.9315	1	1

D.3. Robustness and representativeness

To test the representativeness of Understanding Society data, Figures D.1-D.3 compare a time series of weighted mean workplace accidents, injuries and fatalities per 100,000 from Understanding Society vs. the Labour Force Survey. Even though the matrices used to create both indicators are the same, a difference in figures would suggest that one survey systematically under- or over-represents certain occupational groups. The data shows that Understanding Society very closely aligns with the LFS for workplace accidents. It tends to report higher incidences of workplace illnesses, although not by much, and the trends for both are broadly similar. The largest difference can be seen with workplace fatalities, although again the difference is small: the LFS reports a lower rate of workplace fatalities than Understanding Society, and the trends in both surveys are not quite the same.

Table D.5 shows that, indeed, there are differences in the representation of SICs between both surveys. Whilst in most cases the differences in these weighted proportions are minor, there are noteworthy differences in some industries. In particular, Understanding Society reports a markedly higher proportion of workers in human health and social work – an industry with significantly higher levels of workplace illnesses. This in itself would explain the differences in workplace illnesses we see when comparing Understanding Society and the LFS.

Finally, some minor technical comments on the nature of the data warrant mention:

- The denominator used for creating incidence matrices of workplace accidents vs. workplace illnesses differs slightly, which has implications for pandemic trends in workplace accidents. Workplace illnesses are measured as a proportion of those who have done work in the past 12 months, whereas workplace illnesses use a looser denominator including those off work, on furlough, e.t.c. This is partly reflected in the slightly different estimates of the size of these SIC groupings found in the two matrices (see Tables C.2-C.3). This has no implications for the methodology used to generate these matrices, but it does have implications for trends in workplace accidents during the pandemic (see below).

- As documented by the HSE, and as is apparent from Figures C.2-C.3, the pandemic has changed trends in workplace accidents and workplace illnesses. This has led to a marked rise in workplace illnesses and a fall in workplace accidents. The fall in workplace accidents predates the pandemic, but LFS data also shows a different trend during and since the pandemic: a sharp rise in workplace accidents in 2020, followed by an even sharper fall in workplace accidents from 2021 which has been sharper than the years predating it. Some of the fall in accidents is accounted for by the aforementioned issue with the denominator used for accidents, which has captured a large part of the furloughed population. However, HSE analysis has found that even if a different incidence rate is constructed using incidences per 100 million hours worked, a post-pandemic rise then fall in the rate of workplace accidents is still apparent – albeit a less sharp one than you get when using per 100,000 workers (HSE, 2021). When reading the data into Understanding Society data, I retain the use of the 100,000 workers measure. Because Understanding Society combines data from multiple years (merging 2020 and 2021) the trends are much smoother than is apparent in LFS data, with the rise in accidents in 2020 being more than cancelled out by the fall in 2021.
- A broadly consistent number (~7000) respondents in the Labour Force Survey report missing data for workplace accidents and workplace illnesses. This accounts for virtually all of the missingness. However, the ONS Social Surveys team have confirmed that this is caused by a procedure of bringing forward respondents from previous quarters to improve response rates. This has the effect of these brought forward respondents being reported missing in Q1 of the year because that question is only asked in Q1, but there is no reason to assume the characteristics of these respondents are any different to those who do not respond. This, plus supplementary analysis, confirms that these can be treated as close to Missing Completely at Random.⁸⁰ These missing data are

⁸⁰ Email exchange with the ONS Social Surveys team, 27 October 2023. Also confirmed in supplementary analysis, not presented here, of the characteristics of respondents vs. non-respondents.

therefore not imputed, and incidence rates are calculated using the data from respondents only.

- Consideration was given to more directly imputing the data into Understanding Society, for example using multivariate imputation using chained equations for a range of analysis and auxiliary variables, but this was rejected for largely normative reasons. The only feasible way of doing this would be to directly impute the accidents and illness data to impute an estimate of *whether or not an accident or illness occurred* for every Understanding Society respondent. Once done, this data in-itself would be of limited use for a job quality index: since imputation would not tell us whether the respondent *actually* had a workplace accident or illness, it would not offer the basis for a useful indicator on its own. Rather, the only use for this would be to create an incidence matrix of exactly the kind I present here anyway, albeit one based on less data than is available in the Labour Force Survey. When we seek to measure health and safety in job quality indices, we are not interested in whether an incidence occurred for a given worker: rather we are interested in what the incidences tell us about *the risk* of accidents and injuries that any worker in the same or a similar job has to live with. I suggest that with the data limitations we are faced with, this is best done by creating an incidence matrix of the kind introduced in this paper.

D.4. Indicator Creation

Unlike with other indicators in the QoW index, workplace health and safety data does not lend itself well to a cut-off approach. Similar considerations also apply to the Long-Term Prospects indicator (see Appendix E). This is because:

- There is no “acceptable” level of workplace accidents, illnesses or fatalities to assign a “Best” score: any rate above zero should be reflected in an indicator score.
- Unlike with other variables in the index where a basis for clear and rigid cut-off – be it the nature of the data, or some societally-agreed minimum standard or threshold – no such cut-off can be identified for health and safety.

- Any cut-off is highly sensitive to small changes in incidence rates. In some waves, these small changes can lead to a much more pronounced improvement/decline in workplace accidents than is apparent from the data itself.
- A clear argument can be made that any improvement or decline in incidence rates per 100,000 have an equal effect on wellbeing at any level of the distribution. This does not apply to other numerical indicators such as income, where principles such as declining marginal utility, and considerations about minimum thresholds, apply.

Because the incidence rates of accidents, illnesses and fatalities vary within each indicator, as noted at the start of this appendix, the indicators are created by standardising the scores in each indicator by turning them into Standard Units, and then converting them into a 0-2 scale to generate the scores.⁸¹ These scores from each indicator are then added together into an equally-weighted Health and Safety dimension.

The distribution of scores within each scale are contained in Table C.6. As can be seen, whilst there is a full range of scores for all indicators, the distribution of scores within each indicator is different. This is an intended feature of the standardisation, and helps ensure for example that the relatively low rate of work fatalities across most of the distribution (despite high fatalities amongst a minority) is reflected in the indicator.

⁸¹ This approach is strongly justified for work fatalities, since there is surely widespread agreement that the lower incidence of work fatalities per 100,000 needs a higher weighting than could ever be captured by generating the scores based on a combined distribution of all three indicators. It is more contestable for work accidents vs. work illnesses: although work illness rates are higher than work accidents, an argument could be made that in terms of severity both should be weighted equally. The approach taken in this paper effectively assumes this by generating the scores based on their own separate distributions, but an alternative approach could be justified pending further research on the relative severity of accidents vs. illnesses.

Appendix E – Long-Term Prospects Indicator

Despite its other advantages for a job quality index, Understanding Society lacks objective data on the long-term prospects of workers' jobs. The Short-Term Prospects indicators, whilst useful, provide a more subjective assessment of workers' perceptions about their likelihood of finding a new or better job, obtaining employer-training or starting their own business, and over a very short timeframe. However, Understanding Society does contain ample data on the Standard Occupational Classifications (SOCs) of respondents' current jobs, with few missing values for SOC 2000s within the survey.⁸² In this paper, these are used to generate a more objective indicator on long-term employment prospects over the decade 2017-2027 by SOC. By introducing this data into Understanding Society, we are able to not only follow trends in job prospects over time, but also look at differences in prospects by various sub-groups and based on various indicators in the QoW Index.

The process for introducing this data is similar to the Health and Safety dimension, but with some notable differences. It is also done solely using Understanding Society, without the use of the Labour Force Survey:

1. Data on long-term projections for every occupation is taken from the Department for Education's (DfE's) Working Futures surveys (DfE, 2020), the technical work for which is done by the Institute for Employment Research at the University of Warwick and Cambridge Econometrics (Wilson *et al.*, 2020). This reports both (a) future employment projections and (b) replacement rates for every 4-digit SOC 2010 for the period 2017-2027. This means, unlike health and safety, the basis for the data is SOCs rather than SICs. The future employment projections are based on macroeconomic forecasts about the future growth of different sectors and occupations in the UK economy, and also consider the impact of technological change such as automation on different

⁸² Understanding Society contains good data on the SOC 2000s of respondents. Missingness is low but gets progressively higher over the course of the survey, ranging from 1% of respondents in Wave 4 to 6% in Wave 12. These are contained in the variable `jbsoc00`. Respondents who change or find jobs during the course of Understanding Society are additionally coded based on the more up-to-date 2010 SOCs (`jbsoc10`). Missingness for SOC 2010 ranges from 57% of respondents in Wave 4 down to 25% in Wave 12. Because of this procedure, many respondents have SOC 2000s and SOC 2010s, as will be elaborated on later. This fact is crucial for the process I use to introduce them into Understanding Society.

sectors. Alongside this, replacement rates consider how much of the workforce in each occupation is likely to leave the workforce in future years, such as due to retirement, which also of course creates demand for occupations in that sector.

2. Like with health and safety, the data is read into Understanding Society by first creating a matrix, this time for long-term employment prospects. The matrix is created by extracting data from Working Futures for every 4-digit SOC 2010 from the DfE's public API, accessible on their 'LMI for All' website (Barnes *et al.*, 2021). In line with the latest data from Working Futures, these projections are for the period 2017-2027.
3. Data on future employment rates and replacement rates are then combined into a single indicator (see below subsection for a fuller description), which gives a projection of the future growth of that occupation for the period 2017-2027 as a percentage of the level of employment in that occupation in 2017.
4. The data are then read into Understanding Society. Because Understanding Society uses SOC 2000s, with less good coverage of SOC 2010s, this is done by first filtering specifically to the sample of respondents in the survey who have *both 2000 and 2010* SOCs. Weighted projections of future growth by 2000 SOC are then generated to generate a matrix by 2000 SOC. The data from this matrix is then used to generate projections of future employment prospects by 2000 SOC.
5. Finally, this is turned into an indicator on Long-Term Prospects following a similar process as for the health and safety indicators. Scores are standardised by first turning the variable into standard units, and then converting the scores into a 0-2 scale.

E.1. The data source

The DfE's Working Futures survey contains two useful projections for the future employment prospects of occupations for 2017-2027. These are used as the basis for the Long-Term Prospects indicator:

- **Employment change.** These estimate the future number of people employed in each occupation (including employees and self-employed) over the decade;

- **Replacement demand.** These estimate, in addition to employment growth, the future demand for workers in this occupation over the same period. Even an occupation with low-to-negative employment growth may have a high replacement demand, for example due to the occupation comprising older workers who are replacing retirement, or people leaving the occupation due to other commitments (e.g. family).

Consistent with the process used in Working Futures, these are converted into a combined indicator by simply adding the change in employment and replacement demand over the period together, as a percentage of the size of the occupation in 2017. It should be borne in mind that, for most occupations, the replacement demand is considerably higher than the employment change, and thus plays a predominant role in the indicator:

$$\text{Long Term Prospects} = \% \text{ Employment change} + \% \text{ Replacement demand}$$

Although the data is available in the API broken down by 4-digit SOC 2010, in practice the *percentage* projections for occupations within Working Futures are calculated at a higher level of aggregation of 2-digit SOC (see Wilson et al., 2020, p. 57), with only the projected *number* of workers employed in each occupation varying by 4-digit SOC. Table E.1 contains a matrix of employment prospects by the 25 2-digit SOC 2000 categories.

Although these data offer an improvement on the employment prospects data available in Understanding Society, it is important to be clear what the indicator is designed to measure. It gives an indication as to the future demand for the kind of occupation which the worker is doing: whether their current role, with the skills and attributes associated with it, is one which is likely to be “in demand” over the coming decades. A significant limitation of many existing indices of job quality is that they lack indicators of long-term employment prospects, despite extensive public discussion on work in the context of economic development and technological change.

However, the indicator has some limitations. An occupation with a high future demand may not necessarily be a “good job” for various other reasons related to the objective characteristics of a job itself. High replacement demand in an occupation, for example, may owe itself precisely to some of these characteristics. An occupation with

good prospects may have low pay and few-to-no promotion opportunities within the occupation in which the worker is working. On its own, the indicator is no substitute for a fuller assessment of the *quality* of the job being done. However, this is precisely the purpose of including it within a wider QoW index: the inclusion of additional indicators of job quality allows us to explore the relationship between prospects and job quality in much more detail than has been possible previously, allowing us to account for these issues by including them in a more holistic index.

Another feature to bear in mind is that, by its own definition, there should be at least some improvement in this indicator over time. This is because the indicator is designed to capture the future change in occupational structure, so any sufficiently representative survey should capture this by showing fewer people employed in the low-prospect occupations and more employed in the high-prospect occupations. This does not, on its own, mean this indicator should not be included in an index of job quality, because there may be significant differences *within* societies in which workers are sorted into occupations with low vs. high prospects. However, it is important to bear this in mind when exploring trends in this indicator.

E.2. Robustness and representativeness

There are some inherent challenges in comparing representativeness of this data in the same way as with the health and safety indicators. This is because for the period under study, the LFS does not contain a variable for 2000 SOC like Understanding Society: the LFS switches to updated SOCs in Q1 of the year following an update, meaning it has 2010 SOCs from Q1 2011 to Q4 2020. Only a more imprecise comparison of the two surveys is possible, by comparing prospects using SOC 2000s in Understanding Society with SOC 2010s in the Labour Force Survey. In addition to differences which could arise from SOC 2000s, differences could also arise as a result of similar issues as for the health and safety indicators – such as an over- or under-representation of certain occupational groups in one survey vs. another. Despite these considerations, Figure E.1 shows that both Understanding Society and the LFS report a very similar rate of long-term prospects, measured here as a time series of the weighted mean annualised growth in employment plus replacement rate for each SOC. Understanding Society tends to report a slightly higher rate of growth, although the trends in both surveys are

the same, showing a slight rise in the long-term prospects of jobs over the course of the time series (for reasons discussed in the preceding section, a slight rise is to be expected given the nature of the indicator). Additional supplementary analysis by sub-group, not presented here, also shows similar results between both surveys, despite the difference in SOCs used.⁸³

Finally, some alternative approaches to constructing this indicator were explored and discounted. These are discussed below:

- Consideration was given to introducing this data into Understanding Society through the LFS in a similar way to the health and safety dimension. However, as noted above, the LFS contains SOC 2010s, and not SOC 2000s, for almost all of the period studied (Q1 2011- Q4 2020). Unlike Understanding Society, the LFS also does not run different SOCs concurrently in the same survey, meaning it is impossible to compare two different groups of SOCs using the LFS. The alternative approach of introducing the data into Understanding Society based on SIC 2007s was implemented and investigated. Whilst this had broadly similar trends over time and differences between sub-groups as introducing the data using SOC 2000s, it showed markedly lower levels of variance in job prospects between different individuals and different industrial classifications. This is likely owing to the diversity of occupations within each industry, effectively averaging out differences within various industrial groups. This approach was therefore rejected.
- An exploration was also undertaken into the possibility of updating 2000 SOCs into 2010 SOCs. This was rejected as unfeasible. Whilst the ONS does publish a list of 2000 SOCs by 2010 SOCs, in practice it is not possible to update SOCs or to downgrade them without introducing considerable subjectivity and bias into the data. This is because some occupations which have one SOC in 2000 will split into two SOCs in 2010, and vice-versa.⁸⁴ Initial analysis, not presented here,

⁸³ For example, both surveys show a higher level of prospects for women, for self-employed workers, and for London vs. other regions of the UK. Differences in prospects by ethnicity and parental NS-SEC are mixed. Overall, there is much less inequality in this indicator by sub-group than there is in other indicators of the QoW index. This is reflected in the distribution indicator scores discussed in the next subsection.

⁸⁴ Note that this is the case for SOCs at every level of granularity: it applies to 2-, 3- and 4-digit SOCs, and not merely for just the lattermost. Even though there are 25 2-digit SOCs in the 2000 and 2010

found that this affects a far from trivial number of occupations, including a great deal of occupations in the health sector which represent a large number of workers. Analysis by the ONS into the relationship between 2020 and 2010 SOC further reinforces this (ONS, 2021c).

- Finally, an alternative, mixed approach was also considered for introducing the data into Understanding Society: using 2010 SOC where these were available for respondents and using the 2000 SOC matrix where these were not available. This was rejected as introducing too much bias into the results, since those with 2010 SOC will by definition be respondents who changed jobs during the course of the survey. Rather, bearing all the above consideration in mind, and given the limitations of the data, the most reasonable approach is deemed to be the one taken here: making an assessment of the prospects of each SOC 2000 based on the sample of respondents in Understanding Society with both 2000 and 2010 SOC

E.3. Indicator creation

Similar considerations as for the health and safety indicators apply to indicator creation for Long-Term Prospects. As with those indicators, it is for example difficult to identify an appropriate cut-off based on employment prospects. The scores are less sensitive to minor variation from a cut-off approach in the same way as the health and safety indicators, but such an approach would still give unwarranted weight to scores either side of any given cut-off: it is truer to say that a difference in prospects likely to have a consistent effect on job quality at any level of the distribution.

To generate the indicator, scores are therefore turned into standard units and then converted into a 0-2 scale. The indicator is added as a second indicator into the Prospects dimension, and is given equal weighting alongside the Managerial Duties indicator. Table E.2 contains the distribution of scores for Long-Term Prospects. It shows that whilst there is a full range of prospects scores, there is a skewness towards

SOCs, the allocation of workers within these 2-digit categories does change. Sometimes one 2-digit occupational code is split across two codes in the new survey, and conversely sometimes a single 2-digit code in the 2010 SOC is associated with 2 different codes in the 2000 SOC.

the higher end of the distribution. This is consistent with the Prospects matrix presented in Table E.1.

Table E.1. Rank of Long-Term Prospects by 2-digit SOC 2000 in Understanding Society. Pooled data of respondents with both SOC 2000s and SOC 2010s.

SOC 2000	SOC 2000	Long-Term Prospects (% employment growth + % replacement rate p.a., 2007-2017)
61	Caring personal service occupations	5.89%
51	Skilled agricultural trades	5.75%
23	Teaching and research professionals	5.43%
22	Health professionals	5.39%
12	Managers and proprietors in agriculture and services	5.39%
24	Business and public service professionals	5.36%
32	Health and social care associate professionals	5.28%
34	Culture, media and sports occupations	4.93%
35	Business and public service associate professionals	4.85%
11	Corporate managers	4.79%
72	Customer service occupations	4.73%
62	Leisure and other personal service occupations	4.50%
82	Transport and mobile machine drivers and operatives	4.31%
92	Elementary administration and service occupations	4.06%
21	Science and technology professionals	3.93%
53	Skilled construction and building trades	3.34%
91	Elementary trades, plant and storage related occupations	3.31%
31	Science and technology associate professionals	3.29%
41	Administrative occupations	3.24%
71	Sales occupations	2.93%
33	Protective service occupations	2.20%
54	Textiles, printing and other skilled trades	2.02%
52	Skilled metal and electrical trades	1.27%
81	Process, plant and machine operatives	0.36%
42	Secretarial and related occupations	-4.83%

Figure E.1. Time series comparison of weighted mean Long-Term Prospects (change in employment + replacement demand p.a. for each SOC) in Understanding Society (SOC 2000s) vs. the Labour Force Survey (SOC 2010s), 2012-13 to 2020-21.



Table E.2. Comparison of the distribution of indicator scores for Long-Term Prospects. All waves.

Indicator	Min.	1 st Quartile	Median	Mean	3 rd Quartile	Max.
Long-term Prospects	0	1.505	1.784	1.657	1.887	2

Appendix F – Discussion of QoW Index Indicators and Dimensions

In this section, I provide an overview of each of the indicators of the QoW index. Using the Capability Approach, I discuss some of the normative decisions underlying the choice of indicator selection and the calculation process for indicator scores. I also discuss some limitations of the indicators, particularly based on data availability; some alternative calculation and indicator selection approaches; and the comparability of the data with other published national statistics, to test the representativeness of Understanding Society data.

The QoW index groups the indicators into seven dimensions. I define these as groupings of work characteristics based on the way that they impact similar groups of Functionings. These indicators are usually therefore positively correlated with each other, but it is not a requirement for them to be in order to be included in the same dimension. For example, as briefly discussed in the paper, within the Work-life Balance dimension, there is only a weak correlation between Excessive Hours and Employee Flexibility. As discussed in the paper, this may reflect the fact that workers can reconcile work-family and family-work conflict by reducing their hours *or* accessing flexible work opportunities: these are different means of achieving the same Functionings. This should be borne in mind in the succeeding subsections.

F.1. Earnings

Even though job quality research has tended to emphasise the role of non-pecuniary aspects of work, there is still widespread recognition across the social sciences that earnings play a critical role in job quality. This perhaps distinguishes it from other areas of wellbeing research, such as the multidimensional poverty agenda (Cazes et al., 2016) I suggest that people achieve Functionings from earnings in two distinct and separate ways. Often only the first of these is discussed in literature:

- We achieve some Functionings based on where their wage is within the distribution, not least because this is a signifier of the status and worth society attaches to their job (Earnings Equity). For this, we tend to use *gross* hourly wages: how does our pro rata hourly wage or salary compare with others?
- Distinct from this, we also need our earnings to be sufficient to achieve, and ideally far exceed, the level of Functioning achievement to enjoy a societally-

agreed minimum acceptable standard of living (Earnings Sufficiency). We need money to pay for many of these Functionings. Because of this, this is best seen in terms of *net* earnings: what is our actual take-home pay – after accounting for hours worked, pay deductions, e.t.c. – and what can we buy with this money?

Earnings Equity is the easier of the two concepts to operationalise. There is widespread agreement that there is declining marginal utility to higher wages. In terms of the Capability Approach, this can be conceptualised in terms of imagining expect diminishing returns to Functioning achievement the higher up the gross wage distribution you go: you may be deeply concerned if you are very low down in the wage distribution, but not concerned if you are in the top end of the distribution. To capture this, I use a categorical indicator which calculates whether gross hourly wages⁵ are (a) below the 20th (Worst), (b) at or below the 60th (Middle), or (c) above the 60th (Best) percentile of the distribution. This is informed by an approach taken in existing studies of wage inequality (Machin, 2011; Lindley and Machin, 2013), which tend to place an emphasis on trends in the bottom fifth of the wage distribution vs. other parts of the wage distribution. To assess potential changes over future years, the percentile thresholds are set in standard units at Wave 4. As can be observed, this means that exactly 20% of people score Worst, 40% score Middle and 40% score Best as at Wave 4; this is an intentional feature of the indicator. Changes from this in future years mean that, in aggregate, the relative position of workers has improved. It does not however necessarily mean that this improvement has necessarily accrued to the workers who scored Worst in an earlier wave.

In this index, Earnings Sufficiency is operationalised using a categorical indicator: assessing whether net monthly earnings, irrespective of hours worked, are below the Joseph Rowntree Foundation's Minimum Income Standards (MIS) for (a) a single person with no dependents (Worst), (b) half the MIS of a dual earner couple, including childcare costs (Middle) or (c) above both thresholds (Best) (Bradshaw *et al.*, 2008; Hirsch, 2015). These standards have been developed and updated through a deliberative process of public engagement, in which people were asked to agree minimum baskets of goods necessary to participate in society – akin to similar processes using the Capability Approach. The cut-offs effectively tell us whether

someone has the Capability, through earnings alone, to enjoy a minimum societally-agreed standard to live alone, or have two children as part of a dual-earning couple.

It could be argued that the Earnings Sufficiency indicator should set a different threshold based on wages rather than the Minimum Income Standard – such as the Living Wage Foundation’s living wage and London living wage rates. This study rejects the use of indicator cut-offs based on LW/LLW thresholds for normative reasons:

- The LW/LLW rates assume 100% take-up of any welfare benefits individuals are eligible for. This means that whilst the rates are an improvement on the Government’s National Living Wage, the thresholds are still insufficient for someone to enjoy a minimum standard of wellbeing from work alone.
- The above discrepancy has the effect of making changes in the time series sensitive to changes in welfare provision, rather than any underlying change in job quality.
- The process by which the thresholds account for costs associated with other household members is unclear. It is therefore not clear whether the wage is designed to be sufficient for eg a person with children, and if so, how many children; whether childcare costs are included; whether another household member contributes to these costs, e.t.c.

The MIS thresholds do not have these three issues. No assumptions about welfare benefits receipt are made: they are designed to be income thresholds which need to be met in order to enjoy a decent standard of living. This means it is possible to establish whether someone is able to meet these standards from earnings alone, simply by comparing net earnings to the weekly thresholds. This should not be misinterpreted as making any normative statement about whether individuals should be expected to secure their wellbeing from work alone. Rather, this process ensures that the QoW index measures what it is expressly designed to measure: it means trends in Earnings Equity are less sensitive to extraneous factors which would not reflect an underlying change in job quality. The MIS thresholds are also very explicit about the household costs they capture, making a distinction between costs for a range of sub-groups. This means it is possible to use these thresholds to establish whether an individual has the Capability to exercise these family-related Functionings, whether on their own or as part of a dual-earning couple.

The data from both these indicators is consistent with other published statistics. The UK has indeed seen a large fall in the share of low paid workers in recent decades, which is reflected in the trends in Earnings Equity. Because the Earnings Sufficiency indicator is more novel, the uncovered trends are harder to compare with other data sources, but they are consistent with trends in hours worked and self-employed earnings which would explain the trends observed. Overall, they are consistent with the discussions of Understanding Society income data in other studies, which find it compares well with other sources – such as the Annual Survey of Hours and Earnings – and has the added advantage of including crucial data on self-employed earnings.

F.2. Insurance

Work plays a key role in insuring people against risks both during work and, crucially, in their future lives through pensions. Although pensions policy is generally conceptualised in terms of equalising and smoothing consumption (Barr, 2020, pp. 157–192), it can also be framed in terms of the equitable distribution of Functionings and Capabilities within and between generations. In the UK, good-quality paid work has been vital to the funding of pensions in two respects: earnings taxes pay for state-provided defined benefit pensions; and employer and employee pension contributions pay for personal pensions (either defined benefit or, increasingly in the UK, defined contribution). There is concern that low QoW – particularly rising informality and wage stagnation – will undermine both these foundations (Barr and Diamond, 2010). Many existing job quality indices lack a pensions dimension, but these considerations make the exclusion of them in the UK context particularly untenable. Hence its high weighting in the QoW index.

To capture this, the index uses two groupings of questions from Understanding Society. First, a set of employee-only questions ask respondents whether their employer has an employee pension scheme, and if so, whether they are a member. Second, a set of questions asked to all paid workers on whether they contribute to a personal pension, and if so, how regularly. These are used to develop a categorical indicator combining employees and self-employed. Employees are assigned the Best score if they are members of their employee pension scheme. The self-employed are assigned a Middle score if they contribute regularly to a personal pension, and

employees are assigned a Middle score if they do not have a workplace pension but nonetheless contribute regularly to a personal pension. The trends in the Insurance indicator serve as a validation of the representativeness of Understanding Society data: they align with ONS data which show a sharp rise in the proportion of employees covered by workplace pensions following the introduction of Automatic Enrolment (ONS, 2022a). The self-employed, who only have recourse to personal pensions, have seen no such improvement.

It would be possible to devise an alternative Pension indicator which treats the self-employed more generously, for example by only assigning them a Best if they contribute to a personal pension. This would not affect the overall conclusions of this paper, since the data already shows sharp differences in the Insurance dimension for employees and the self-employed, which widen over the time series with the implementation of automatic enrolment – it would only serve to slightly reduce these differences. Nonetheless, this approach was rejected for normative reasons. Whilst it may be reasonable to assume that some self-employed workers have pensions which are better quality than employees, in practice employers do not contribute to most personal pensions – depriving the self-employed, and employees without workplace pensions, of crucial opportunities to supplement their pension savings. Nonetheless, a more generous approach would not change the observed *trends* discussed in the paper; only the relative position of sub-groups would change.

Whilst the Pensions indicator is an improvement on other job quality indices, most of which do not have such an indicator, there is still scope for further refinements. Understanding Society does not contain data on the size of the pension pots of respondents, so it is not possible to establish whether respondents who belong to employer schemes have saved enough to enjoy their retirement. Conversely, older respondents with access to a pension may choose not to contribute because they already have sufficient retirement earnings: indeed, people aged over 66 in the QoW index do in fact score significantly worse on the Insurance dimension. Finally, it is not always clear whether Understanding Society's derived net earnings variables deduct for earnings related to employee pension contributions, since this would depend on how the worker reports the income from their payslip (which would usually deduct for pension costs). These could be non-trivial sums for many workers enrolled onto

employee pensions for the first time, reducing their real wages below the MIS thresholds. The data also does not allow us to establish the size of the contributions, the nature of the pension (eg defined benefit such as final salary vs. defined contribution), or the expected income in retirement, but the indicator still marks an improvement on existing job quality indices, most of which do not use a pensions indicator. There is the potential for future research should explore ways of addressing these limitations by making use of a wider range of indicators in Understanding Society, and potentially introducing data from other datasets and pension schemes.

F.3. Security

Security, which is used here as an antonym of precarity, is widely agreed to be a key dimension of job quality. Sociological literature has identified “insecure and uncertain” work to be one of three inter-related aspects of precarious work, alongside “limited economic and social benefits” and “limited statutory entitlements” (Kalleberg, 2018, p. 15). Conceptualised using the Capability Approach, precarious work could be argued to affect Functionings inside the space of work such as meaningful work, since it signifies to the worker that their work is less worthwhile to employers and society. It also has a considerable effect on the ability of the worker to exercise Functionings outside the space of work: offering less secure earnings, and preventing the worker from planning for the future to exercise family- and life-related Functionings. As discussed in the paper, the concept has become increasingly relevant since the 1980s in the context of significant changes in labour markets in the Global North and the continued predominance of insecure work in the Global South (e.g. see Burchell et al., 2002; Gallie, 2004, 2003).

The Earnings Sufficiency indicator in the QoW index already captures aspects of precarity related to low hours and/or low wages: someone with a high wage but unable to work sufficient hours, or conversely someone working long hours at an insufficient wage, could fall below the MIS thresholds. The Security dimension contains two other indicators designed to capture other aspects.

First, Continuous Employment uses longitudinal data from both the current and prior wave of Understanding Society to generate a categorical indicator based on length of continuous service with the same employer. This is an especially important

indicator in the UK context, since employees' statutory rights, such as unfair dismissal, depend on the length of continuous service. A distinction is drawn between employees with (a) < 1 wave (Worst score), (b) 1-2 waves (Middle) and (c) > 2 waves' (Best) continuous service. By definition, the self-employed and those who were out of work 1-2 waves ago do not have associated legal rights based on continuous service. The self-employed are therefore assigned the Worst score, and those who were out of work in the relevant period are assigned the corresponding (Middle or Worst) score. In line with Kalleberg's (2018) framework, this indicator therefore incorporates a wealth of data on non-standard work arrangements, precarity and insecurity whilst also being sensitive to the specific legal framework and level of worker power in the UK context. It should also be noted that the key question used to create this variable (jbsamr) is asked in such a way as to match the UK's legal framework for continuous employment: it specifically refers to having "worked continuously for the same employer", and an additional prompt in the questionnaire specifically advises interviewers to code workers who have been transferred to another employer under TUPE arrangements as continuously employed.

Second, Composite Security is a binary indicator which captures (a) whether the job is permanent or temporary (eg fixed-term contracts, seasonal work, e.t.c.) and (b) whether the worker perceives it likely/very likely to lose their job in the next 12 months. Employees are coded Worst if they answer yes to either question, whilst the self-employed – since they are not asked question (b) – are assigned scores based only on question (a). An alternative indicator of Continuous Employment could be developed focussing entirely on prior spells out of paid employment – such as whether the respondent was unemployed or inactive in the previous wave. This would be in line with an indicator used in another application of the Alkire-Foster method to measuring job quality (e.g. see González et al., 2021). This approach is rejected in this paper, since it is possible to take advantage of the richness of Understanding Society data to create a more comprehensive indicator. The indicator already captures any individuals who were not in paid employment in the prior wave and/or the wave prior to that, since these people will by definition have fewer than 1 or 2 waves of continuous employment. However, in addition to this, it also captures (a) anyone self-employed, since by definition they lack the statutory rights associated with continuous

employment, thus scoring Worst; and (b) any employees who, despite being continuously employed, have fewer than 1 or 2 waves' continuous service in their current job.

Some limitations of these indicators warrant mention. It is difficult to find comparable data for Continuous Employment, since Understanding Society has the advantage of (a) surveying all paid workers (employees and self-employed); (b) following those out of the labour force in-between waves; and (c) interviewing workers directly rather than through employers. ASHE, by contrast, is an employer survey of employees only. ASHE data suggests that mean job tenure for many workers is very long, standing at 9.8 years in the public sector and 6.7 years in the private sector (ONS, 2017). Whilst this would appear to be broadly consistent with the uncensored headcount ratios in the QoW index (once filtered to employees only), they are not easily comparable, and any discrepancy could also reflect the different nature of the two populations and survey methods as noted above. For Composite Security, the data suggest a markedly better picture than what information on employees' actual contracts would suggest it should be. Indeed, even a majority of self-employed workers report having permanent jobs in this indicator (albeit still markedly lower than employees). This is likely due to question ordering in Understanding Society data: workers are first asked whether their current job is permanent or temporary, and if they say it is temporary, they are then only afterwards prompted for the ways it is not permanent – such as fixed-term contracts, seasonal work, platform labour in the gig economy, etc. Whilst this issue does not affect the overall conclusions of this paper, it is suggested that future indices could arrive at a more objective measure of job insecurity by asking workers a set of binary questions about the existence of specific contractual arrangements *first*. This would likely give a more reasonable picture of the real level of insecure working arrangements in the UK labour market.

F.4. Autonomy and Voice

This dimension captures two more detailed aspects of the working environment: workers' autonomy, and their power to exercise collective voice to shape the way they work. Autonomy refers the level of initiative workers have over their tasks, and is recognised across different disciplines, and across a wide spectrum of different

philosophical approaches to work and wellbeing, to be a central part of the employment relationship (eg see Gallie 2007). It is associated with work intensity, (Green, 2001, p. 54), and evidence suggests that since the late 20th Century task autonomy has declined in Britain (Gallie, Felstead and Green, 2004) just as work intensity has increased (Green *et al.*, 2022).

The separate concept of voice has its origins in economic literature studying the options available to consumers faced with declining quality of goods and services (Hirschman, 1970), but subsequent work applied this framework for the study of job quality. Such literature traditionally associated voice with unions due to their unparalleled ability to exercise collective voice (Freeman and Medoff, 1992; Boroff and Lewin, 1997; Bennett and Kaufman, 2007), but the decline of unions has seen the growth of a much broader range of definitions and mechanisms for voice (Budd, Gollan and Wilkinson, 2010). A separate strand of literature in the Capability Approach has argued for a Capability for Voice (Bonvin, 2012; De Leonardis, Negrelli and Salais, 2012; De Munck and Ferreras, 2013); the way both schools of thought conceptualise voice has yet to be reconciled.

The QoW index incorporates these concepts into two indicators.

First, Autonomy combines five variables, which ask all workers to assess the level of autonomy over five aspects of work on a 4-level scale from “a lot” (1), to “some” (2), “a little” (3) and “none” (4). Summing these together leads to 16 possible scores, ranging from 5 (“a lot” of autonomy in all five variables) to 20 (“none” in all five). A categorical indicator is created, distinguishing between scores of (a) 5-9 (Best), 10-15 (Middle) and 16-20 (Worst). Because the number of potential Autonomy scores is not divisible by 3, the Autonomy indicator assigns the Middle category an extra score. One of the most significant limitations of Understanding Society is the lack of a question on work intensity, but autonomy is argued to be sufficiently theoretically and empirically associated with intensity for the reasons described above. The work arrangements summed up are as follows:

- Autonomy over job tasks (wkaut1)
- Autonomy over work pace (wkaut2)
- Autonomy over work manner (wkaut3)

- Autonomy over task order (wkaut4)
- Autonomy over work hours (wkaut5)

Second, adopting the conceptualisation of voice taken in more traditional literature, the index uses a binary Collective Voice indicator which distinguishes between employees who (a) have (Best score) or (b) do not have (Worst) “a trade union, or a similar body such as a staff association, recognised by your management for negotiating pay or conditions for the people doing your sort of job in your workplace.” The self-employed are automatically coded Worst on this indicator, since they are not asked this question and, by definition, they are denied access to an employer-recognised means of exercising collective voice. There is no data in Understanding Society on potential wider avenues for exercising worker voice, or indeed of worker perceptions of how their voice can be exercised in the workplace.

For the Collective Voice indicator, there is a recognised discrepancy in the reported level of union and collective bargaining coverage across different national surveys, and no clear consensus exists about which survey represents the true levels (BEIS, 2022). Due to discrepancies in question ordering and wording between the LFS and Understanding Society, Understanding Society tends to over-estimate collective representation (by prompting for “staff associations” as well as unions in the question) and under-estimate union membership (by only asking those who report collective agreements in the workplace about their union membership). As a result of this, the Collective Voice indicator in the QoW index should be interpreted conservatively: it should not be interpreted as suggesting the existence of a formal collective bargaining arrangement for all respondents. Rather, it is designed to capture the existence of some collective means through which workers can exercise their voice in the workplace.

F.5. Work-Life Balance

Considerable multi-disciplinary research has studied work-family and family-work conflict (Esping-Andersen, 1996; Epstein *et al.*, 1999; Parasuraman and Simmers, 2001; Gallie, 2007; Annor and Burchell, 2018; Chung and van der Lippe, 2020) – including within the Capability Approach (Lewis and Giullari, 2005; Hobson, 2011). This paper conceptualises this as an inability to exercise both work-related and family-related Functionings at the same time. Workers facing this conflict therefore face a choice

between (a) reducing their work activity to exercise family-related Functionings, eg by sacrificing pay or other aspects of job quality (eg career prospects); or (b) holding off from exercising family-related Functionings. Good-quality work enables workers to exercise both sets of Functionings simultaneously. A range of work resources are important in enabling or preventing this from happening – including flexible working arrangements, earnings, and the time spent in work (since excessive working hours will lead to time poverty, by definition preventing workers from exercising other Functionings).

The Earnings Sufficiency indicator is partly designed to capture some aspects of work-life balance, since someone forced through family or caring responsibilities to work insufficient hours to achieve a decent standard of living would score poorly on this indicator. Two categorical indicators are designed to capture wider aspects of this issue.

First, Employee Flexibility utilises an indicator which asks employees a set of yes/no questions about the availability of numerous flexible work arrangements in their workplace. Due to the heavily left-skewed nature of this data, the indicator assigns a greater weight towards having more flexible arrangements at the lower end of the distribution, distinguishing between (a) zero flexible working arrangements (Worst score), (b) one or two flexible work arrangements (Middle) and (c) three or more flexible work arrangements (Best). I construct the indicator based on the availability of eight worker-oriented flexible work arrangements. Note that for any of these arrangements to count towards the indicator score, they simply need to be *available* in the workplace; the worker does not have to actually use them:

- Part-time working (jbflex1)
- Working term-time only (jbflex2)
- Job sharing (jbflex3)
- Flexi-time (jbflex4)
- Working a compressed week (jbflex5)
- Working annualised hours (jbflex6)
- Working from home on a regular basis (jbflex7)
- Other flexible work arrangements (jbflex8)

As of Wave 12 two additional work arrangements of a zero-hours contract and on-call working are also available, but these are excluded from the indicator because they are not asked before Wave 8 and in any event they do not in fact reflect genuine worker-oriented flexible work arrangements.

Second, Excessive Hours uses data on weekly hours worked in all jobs to capture aspects of work-life balance associated with excessive working hours. It distinguishes between those who work (a) over the UK Working Time Directive of 48 hours a week (Worst score), (b) over 37 hours (Middle) (c) 37 hours or below (Best). The Middle cut-off is informed by the distribution of hours worked and the average weekly working hours of full-time workers, which currently stands at 36.7 hours (ONS, 2024a). Because the self-employed are not asked about flexible work arrangements, they are only coded based on the Excessive Hours indicator. Note that legally self-employed workers are not subject to the Working Time Directive, but it is justified to still score them Worst if they exceed it.

The Excessive Hours data closely corresponds with published data in the Labour Force Survey. For example a 2014 study by the then- Department for Business, Innovation and Skills into the impact of the UK's Working Time Regulations found a similar proportion of employees (13%-15%) worked over 48 hours in 2010-2013 (BIS, 2014, p. 32). LFS data also shows a similar polarised distribution of self-employed hours worked, with a higher proportion working excessive and low hours and a lower proportion in the middle of the distribution (BIS, 2014, pp. 27, 29). The higher incidence of excessive hours partly reflects the fact that as noted above, the UK Working Time Directive requirement to opt-out of a 48-hour working week only applies to employees, and not to self-employed. The higher incidence of low hours reflects the fact that newly self-employed appear to have poor work histories, and thus are likely accessing what little self-employed work they can given their poor work opportunities.

F.6. Prospects

The prospects of jobs tend to be discussed from the perspective of employers or national economies rather than workers themselves – for example in discussions of skill-biased technical change, human capital and economic productivity. However, I

suggest that job prospects can be conceptualised from the workers' perspective. Jobs with good prospects are more resilient to future changes, eg by using in-demand skills such as jobs in the green economy; offer good promotion opportunities; and are likely further up the hierarchy and so less vulnerable to sudden lay-offs and restructuring. They provide workers with Functionings inside and outside the space of work: they are more likely to be meaningful, whilst also being a more stable and certain means of obtaining other Functionings. Where skills are measured, it is important to distinguish the skill of the job from the qualifications of the individual.

This is captured in the QoW index using one binary indicator, a categorical indicator and a continuous indicator.

Firstly, Managerial Duties captures whether the worker is either solo-self-employed (if self-employed) or has managerial duties (if an employee). Non-managerial employees and solo self-employed are coded Worst, and the converse coded Best. This is in line with literature suggesting those self-employed who hire staff have significantly better pay and prospects (Giupponi and Xu, 2020): by definition, they can lay other workers off first if they face a reduction in their revenue. The data on Managerial Duties serves as a further validation of the representativeness of Understanding Society data, since it shows an increase in the proportion of solo- self-employed within the self-employed population. This is in line with national labour market statistics, which show that the rise in self-employment in the UK over recent decades has been led entirely by solo self-employment.

The second, Short-Term Prospects, combines data from a set of questions asked to workers about what they expect from their job, and out of paid work more generally, over the next 12 months. A total of five questions are asked in the survey, but the fifth (give up paid work) is not used to construct the indicator since it reflects a negative rather than a positive labour market event:

- Expects a better job with the same employer (jbxpcha)
- Expects work-related training (jbxpchb)
- Expects a new job with a new employer (jbxpchc)
- Expects to start own business (jbxpchd)

Similarly to Employee Flexibility, the distribution of scores for the combined prospects indicator are heavily left-skewed. This makes intuitive sense, since it is obviously unlikely that a worker would expect to achieve all of these things simultaneously over the course of 12 months. I therefore create a categorical indicator, splitting workers between (a) workers who expect none (Worst), (b) workers who expect one (Middle) and (c) workers who expect two or more (Best).

Third, as discussed in Appendix E, a more objective indicator of Long-Term Prospects over the next decade is also included in the index. As discussed, this is designed to capture aspects of job prospects which the Short-Term Prospects indicator does not measure: covering a longer timeframe (2017-2027), and assessing the vulnerability of the worker's occupation to technological change, the replacement demand for jobs in their occupation, and the future economic projections about the sector they work in.

Taken together, these three indicators provide a broad spectrum of information about the job prospects of workers in the UK. Many job quality indices lack sufficient data on job prospects, but the QoW index takes steps towards redressing this in this dimension. Nevertheless, there is scope to refine this data in future research. The timeframe for the Short-Term Prospects indicator is far too short – just 12 months – and the question wording does not allow the researcher to delve into some specific details, such as their general expectations of being promoted in the job they work in. The vast majority of workers also score highly on Long-term Prospects. This reflects its genuine distribution in the data, with only a small proportion of occupations projected to see a decline in the next decade, with most other occupations expected to grow to a comparatively similar degree. However future updates and the introduction of more detailed labour market data into Understanding Society may be able to provide more granular detail, further building on this index.

F.7. Health and Safety

As discussed in Appendix D, workplace health and safety is a crucial measure of working conditions and features in a number of indices of job quality (e.g. Muñoz de Bustillo, Fernandez-Macias, *et al.*, 2011). Whilst early research focussed on more extreme risks such as environmental and chemical exposure, later literature has

measured broader aspects of workplace health and safety such as risk of chronic health conditions caused by repetitive work tasks or sedentary working conditions. The measurement of the mental health risks associated with certain kinds of work is, however, still under-developed (Descatha *et al.*, 2022). Due to lack of data, however, many job quality indices lack dimensions on health and safety. This is indeed an issue with Understanding Society, which as mentioned previously does not ask respondents any direct questions about their exposure to health and safety issues in the workplace.

This paper makes a significant contribution towards addressing this issue, with the introduction of three continuous indicators the QoW index: Work Fatalities, Work Accidents and Work Illness. In an improvement on some other indices, there is an inclusion of mental health: where a worker perceives this to have been caused or made worse by their employer, this would be reflected in incidence rates of work illness, so an industry more exposed to mental health risks would see this reflected in the Work Illness scores of workers in that industry. Further discussion of the indicators, comparison with the Labour Force Survey, and the process for assigning scores can be found in Appendix D.

Appendix G – Discussion and Analysis of Capability Set Indicators

Appendix G was originally prepared alongside the submission of Paper 3 to a journal. It contains a series of data tables and figures about the indicators and dimensions used for the proxies for the Capability Set, together with some descriptive features of the data in Understanding Society, to supplement the data presented in the article. This appendix is also written to help guide future researchers interested in Understanding Society questions on this topic, and to inform future thinking about questionnaire design and coverage. Quite a significant amount of coding was carried out to develop the data into indicators, and this will be deposited with the UK Data Service.

Table G.1 contains further descriptive characteristics of the (weighted) data in Wave 12 of Understanding Society. As the analysis for the article is restricted to those either in paid work or away from a paid job they usually do, these descriptive figures are designed to be representative of UK paid workers, and not the UK population as a whole. Those interested in further information on how representative Understanding Society data is for the UK labour force should refer to the appendices of Stephens (2023a), where the author of that paper compares the data for each indicator of the QoW index with data in other representative surveys such as the Labour Force Survey and the Annual Survey of Hours and Earnings. Understanding Society itself has also carried out extensive analysis of the representativeness of its data, and this has informed its approach to weighting (see in particular Benzeval et al., 2020; Lynn, 2011; Lynn and Borkowska, 2018).

In addition, Tables G.2 and G.3 provide some further descriptive data, to supplement the comparisons in Table 1 of the article itself. To minimise complexity the article contains a very simplistic comparison of the regional and ethnicity breakdown of people based on the relationship between their jobs and choices. These tables supplement this by identifying which specific ethnic groups and regions are over-represented in these populations. As can be seen the Pakistani, Bangladeshi, “mixed” and “other” ethnic groups are over-represented in the most disadvantaged group of workers (those in low-quality jobs with evidence of constrained choices), whilst the Chinese ethnic group is under-represented. The more detailed regional representations show residents of Yorkshire & Humber, the West Midlands, the East

of England, Wales and Northern Ireland are particularly over-represented in the same, most disadvantaged, group.

The later figures summarise the inter-relationship between all the variables used in the article – presenting:

- A correlation matrix for each of the indicators used as proxies for the Capability Set (Figure G.1);
- A correlation matrix of workers' Capability Set scores with their Quality of Work scores for each indicator (Figure G.2);
- Factor loadings of the first seven principal components of the Capability Set indicators, from a Principal Component Analysis (PCA) of the correlation matrix of the standardised Capability Set indicators. This paper has restricted the PCA to only the indicators proposed as proxies for the Capability Set.

Overall, the data shows a relatively low correlation between most of the indicators in the CS index with each other. This is reflected in the PCA itself, which find each of the indicators has a relatively high loading in at least one of the principal components. An exception is two of the income-based indicators – equivalised earnings of other household members; and individual share of household income – which are both strongly negatively correlated with each other. This of course makes intuitive sense, since an individual responsible for a high proportion of their own household's income will likely live in a household whose other members' income is at the low end of the income distribution. This is an intended feature of the CS index, and reflects a normative decision to capture two distinct manifestations of economic capital. It should also be stressed that these two variables need not be inevitably correlated: it is possible for an individual to command a large proportion of household income whilst also living alongside other household members who are themselves very high up the income distribution. Such a household would score unusually well on both indicators.

Figure G.2 finds that there are some noteworthy differences in the relationship between each QoW indicator and each CS indicator. In general, the CS indicators were either positively correlated or uncorrelated with each QoW indicator; this means that as a rough rule, workers in low-quality jobs were either *less likely*, or *no more likely* to have greater choices available to them. The exception is for excessive hours and some of the health and safety QoW indicators, which reflects the fact that these indicators

are themselves negatively correlated with other measures in the QoW index (Stephens, 2023a). Strikingly, there is an especially weak (though still slightly positive) correlation between QoW and other household members' earnings – suggesting that those in lower-quality, and thus generally lower-earning, jobs, are no *more* likely to have these compensated for by other household members than the general population. There is also a weak relationship between housing assets and QoW, but this was partly accounted for by the lower QoW scores of outright homeowners vs. mortgage holders, with the latter having QoW scores much closer to those of renters. It may also reflect an over-representation of younger workers living in households with homeowners but not possessing these assets themselves – this is a key limitation of this indicator, and should be addressed in future research. Finally, it is noteworthy that there was a particularly weak relationship between the one subjective CS indicator – perceived self-efficacy – and any of the measures of QoW. Perhaps unsurprisingly, the most strongly correlated indicators are those one would expect would be most related to workers' job quality – particularly workers' own share of household income, non-employment spells and highest qualifications. The relationship between parental/first job NS-SEC is more striking, and suggests a lifelong link between social-economic group and job quality.

Finally, and separate to the above, some inevitable limitations, suggestions for future research, and information on alternative indicators should be disclosed. The first and most obvious limitation of the article is its exclusion to paid workers only. This reflects a common issue in job quality research, and is brought about by the limitations of the data available: in *Understanding Society*, all questions on job quality, working conditions, pay and other aspects are only asked of those in paid work. The article acknowledges this is conceptually unsustainable – most theories of work conceptualise it as paid or unpaid productive activity (Budd, 2011). Future surveys should work to address this in questionnaire routing: quantitative research needs to learn from the way qualitative studies integrate discussions of paid and unpaid work (see in particular Cooke et al., 2013).

In addition, it is acknowledged that measures used in many other applications of Boudieu's theory of capitals are not captured in this article. In some cases this is due to there being no equivalent variable in *Understanding Society*, or missingness of what

variable there is, whilst in others it reflects a conscious decision because better variables were available, or the variables in question had limited normative or explanator value. The following observations may aid in future research:

- A family of questions in *Understanding Society* measure **group participation**, which is used as a key indicator of cultural capital used in this paper. These are only asked in later waves of the survey, and then only sporadically (usually waves 7, 9 and 12) and are scattered across different questions depending on whether the individual did a face-to-face/online ([org](#), [orga1-16](#)), or telephone ([orgat1-16](#), [96](#)) interview.⁸⁵ To create the indicator, this article merges both sets of questions from Wave 12 into a single indicator.
- Some compromises had to be made to identify a **proxy for individual self-efficacy**. *Understanding Society* lacks a direct set of self-efficacy questions, so the article uses a more general set of questions from the General Health Questionnaire (GHQ) (Cox, 1987) which asks respondents a set of 12 questions about their general subjective wellbeing – including whether they feel they are “playing a useful role”, they believe themselves as a “worthless person”, or are “capable of making decisions” more vs. less than usual. All answers for these are combined into a single Likert scale running from 0 (the least distressed) to 16 (the most distressed) ([scghq1 dv](#)). Nevertheless, alternative subjective indicators are available – such as job-related wellbeing ([jwbs](#)); feelings of tension or uneasiness about one’s current job ([depenth](#)); and indeed general job ([jbsat](#)) or life satisfaction ([sclfsato](#)). These were not used because a number of studies have found a strong correlation between GHQ scores and self-efficacy (Bavojdan, Towhidi and Rahmati, 2011; Solhi and Kazemi, 2013; Dadipoor *et al.*, 2021), making the GHQ data the best available data capturing this concept. The indicator is specifically designed to capture, as best as possible given the limitations of the data, an individual’s perceived ability to do

⁸⁵ Note that these are mirrored by another set of questions – one for face-to-face interviews ([orgm](#)), another for web interviews ([orgmcawi](#)), and another for phone interviews ([orgmt](#)) – ask people whether they are *members* of these same organisations. I opt for the broader wording of [orga](#) and [orgat](#), which asks “whether you are a member or not, do you join in the activities of any of these organisations on a regular basis?” This question likely both (a) captures a broader range of forms of social participation and social networks whilst also (b) filtering out nominal members of organisations who don’t participate in practice.

and be different things: their perception of having a range of achievable Functionings.

- There is a lack of any suitable **individual or household savings** questions in Understanding Society, to use under economic capital. The survey does ask some respondents questions like whether the household is able to set aside £10 a month for savings ([matdepf](#)), but these were dismissed because they are restricted to households (a) with children under 15 or (b) with nobody of pensionable age in the household. This is problematic, because not only does criteria (b) exclude pensioners who are not working, but it also excludes working people of pensionable age and indeed any household with anyone of pensionable age living there. There was therefore a very high missingness for this variable. In any event, the savings threshold of £10 a month is far too small to give a great deal of information about a family's savings.
- **Language** was considered as a further measure of cultural capital. *Understanding Society* does not have a question on language proficiency, but it does have variables on the language the interview is conducted in. This was excluded because in the overwhelming number of cases the language is English; where data is available, only a negligible number are interviewed in different languages (see data in [ivintleng](#) and [hhintleng](#)). Likewise very few people who say they are unable to complete the self-completion interview cite language problems (see [scun3](#)). Separate to this, foreign-born respondents, those who were part of the Immigration and Ethnic Minority Boost (IEMB), e.t.c. were asked if English was their first language and, if not, whether they had any difficulties speaking or reading it, but they were only asked this in waves 1, 5, 6 and 10 (see for example [engleng](#)). Overall, the addition of a language variable would therefore have added very little to the CS index.
- From wave 9, a family of questions about **loneliness and isolation** were introduced – asking respondents about how often respondents feel “isolated from others” ([scisolate](#)), a “lack of companionship” ([sclackcom](#)) and “left out” ([scleftout](#)). These could be argued to be clear proxies for cultural capital, and appear to be quite objective in nature. However, there are a large number of missing values for these questions in Wave 12 due to an issue with the question

not being asked in certain survey months, rendering this question not useable for this paper. As a result, this article opted to use the questions on group participation instead.

- A set of **volunteering**-related questions were considered to measure cultural capital. In some waves Understanding Society asks respondents about the frequency ([volfreq](#)) and hours ([volhrs](#)) of their volunteering, but these were not asked in Wave 12 and so were discounted in favour of the questions on group participation.
- **Satisfaction with amount of leisure time** ([sclfsat7](#)) was also considered as a proxy for cultural capital, but was discounted as it was identified as much less objective than the direct measure of group participation, which prompts people about their activities in specific listed groups and other organisations.

Table G.1. Descriptive statistics for respondents represented the UK QoW index at Wave 12 (2020-21). Sample consists of all individuals in paid work, or away from a paid job they usually do, at the point of interview in that wave – this will therefore not be representative of the entire UK population (working + non-working). Note that as with Table 2 in the article, the employment relationship is made mutually-exclusive by removing those using zero hours contracts or in the gig economy from the respective employee/self-employed population (whichever is applicable).

		Weighted N#	Weighted %
Employment relationship	Employee	10,991	82.7%
	Self-employed	1,674	12.6%
	Gig economy	376	2.8%
	Zero hours contract	255	1.9%
Sex	Male	6,846	46.8%
	Female	7,793	53.2%
Age	Aged 16-25	1,714	11.7%
	Aged 26-35	2,500	17.1%
	Aged 36-45	3,143	21.5%
	Aged 46-55	3,877	26.5%
	Aged 56-65	2,836	19.4%
	Aged 66+	570	3.9%

Table G.2. More detailed breakdown by ethnicity for Table 2 in the article.

	“High-quality job, wide choices” (top 40% QoW <u>and</u> CS)	“Low-quality job, wide choices” (bottom 40% QoW, <u>but</u> top 40% CS)	“Low-quality job, constrained choices” (bottom 40% QoW <u>and</u> CS)
White UK	82.8%	85.6%	77.5%
Irish	2.6%	1.5%	2.2%
Traveller	3.3%	3.2%	3.4%
Mixed	1.7%	2.5%	2.8%
Indian	3.1%	2.5%	3.1%
Pakistani	0.7%	0.6%	3.6%
Bangladeshi	0.2%	0.5%	2.4%
Chinese	1.4%	0.5%	0.3%
Caribbean	1.4%	2.1%	1.6%
African	1.5%	0.5%	1.3%
Other	1.2%	0.6%	1.7%

Table G.3. More detailed breakdown by region of residence for Table 2 in the article.

	“High-quality job, wide choices” (top 40% QoW <u>and</u> CS)	“Low-quality job, wide choices” (bottom 40% QoW, <u>but</u> top 40% CS)	“Low-quality job, constrained choices” (bottom 40% QoW <u>and</u> CS)
North East	3.6%	2.4%	4.0%
North West	11.0%	8.3%	9.5%
Yorkshire & Humber	7.7%	7.1%	10.3%
East Mids	6.8%	8.6%	7.2%
West Mids	7.6%	8.0%	8.5%
East of England	9.0%	10.1%	10.1%
London	11.5%	12.8%	10.4%
South East	13.4%	15.3%	12.1%
South West	10.0%	10.7%	8.3%
Wales	5.2%	4.4%	6.7%
Scotland	8.8%	6.7%	6.4%
Northern Ireland	5.5%	5.5%	6.5%

Figure G.1. Indicator-by-indicator correlation matrix of workers' Capability Set scores with each other, Wave 12 (2020-21). Scores normalised on a standard scale and use Spearman (ranked) correlation coefficients.

CC3.Civil.Participation	0.09	0.02	0.08	0.12	0.12	0	0.09	0.18	0.02	1
CC2.Perceived.SelfEfficacy	0.04	0.01	0.08	-0.01	0.12	0.02	0.02	-0.05	1	0.02
CC1.Highest.Qual	0.11	0.13	0.01	0.28	0.06	0	0.29	1	-0.05	0.18
SC4.QoW.Capabilities	0.06	0.22	0.01	0.15	0.05	0.07	1	0.29	0.02	0.09
SC3.Num.NonEmpSpells	-0.04	0.1	0	0.01	0.01	1	0.07	0	0.02	0
SC2.Neighbourhood.Cohesion	0.1	-0.03	0.12	0.09	1	0.01	0.05	0.06	0.12	0.12
SC1.Parental.NSSEC	0.09	0.08	0.04	1	0.09	0.01	0.15	0.28	-0.01	0.12
EC3.Housing.Assets	0.17	-0.05	1	0.04	0.12	0	0.01	0.01	0.08	0.08
EC2.Share.HHIncome	-0.58	1	-0.05	0.08	-0.03	0.1	0.22	0.13	0.01	0.02
EC1.Equiv.HHEarnings	1	-0.58	0.17	0.09	0.1	-0.04	0.06	0.11	0.04	0.09
	EC1.Equiv.HHEarnings	EC2.Share.HHIncome	EC3.Housing.Assets	SC1.Parental.NSSEC	SC2.Neighbourhood.Cohesion	SC3.Num.NonEmpSpells	SC4.QoW.Capabilities	CC1.Highest.Qual	CC2.Perceived.SelfEfficacy	CC3.Civil.Participation

Figure G.2. Indicator-by-indicator correlation matrix of workers' Capability Set scores with their Quality of Work scores, Wave 12 (2020-21). Scores normalised on a standard scale and use Spearman (ranked) correlation coefficients. **Positive** correlations mean a higher CS indicator score is associated with higher QoW (and vice-versa), while **negative** correlations mean a higher CS indicator score is associated with lower QoW.

EC1.Equiv.HHEarnings	0	0.08	-0.01	-0.02	-0.01	0.03	0.02	0.05	0.08	0.04	0	0.07	0.07	0.06	-0.05
EC2.Share.HHIncome	0.42	0.3	0.13	0.08	0.04	0.12	0.01	-0.28	0.01	0.2	0.03	0.01	-0.07	0.03	0.06
EC3.Housing.Assets	-0.01	0.07	-0.03	0.04	-0.01	0	0.05	0.09	0.04	0.01	-0.1	-0.03	0.02	0.02	-0.02
SC1.Parental.NSSEC	0.19	0.22	0.08	0.02	0.03	0.1	0.02	-0.07	0.12	0.14	0.05	0.09	0.07	0.14	-0.01
SC2.Neighbourhood.Cohesion	0.06	0.11	0.03	0.02	0.02	0.08	0.03	0	0.05	0.09	-0.02	0.02	0.01	0.03	0
SC3.Num.NonEmpSpells	0.17	0.13	0.18	0.45	0.29	0.07	0.08	-0.1	0.05	0.11	-0.02	0.02	0.03	0.02	-0.04
SC4.QoW.Capabilities	0.46	0.43	0.24	0.08	0.06	0.21	0.17	-0.12	0.21	0.3	0.14	0.16	0.11	0.17	-0.06
CC1.Highest.Qual	0.32	0.37	0.12	0	0	0.15	0.09	-0.11	0.21	0.22	0.17	0.28	0.23	0.23	-0.13
CC2.Perceived.SelfEfficacy	0.05	0.04	-0.02	-0.01	0.1	0.1	-0.03	-0.01	-0.04	0.02	-0.04	-0.04	-0.07	-0.03	0.05
CC3.Civil.Participation	0.08	0.13	0.03	0	0	0.07	0.08	-0.01	0.13	0.09	0.07	0.1	0.09	0.11	-0.04
	D111.Earnings.Sufficiency	D112.Earnings.Equity	D211.Pension	D311.Continuous.Employment	D312.Composite.Security	D411.Autonomy	D412.Collective.Voice	D511.Excessive.Hours	D512.Flexibility	D611.Managerial.Duties	D612.ShortTerm.Prospect	D613.LongTerm.Prospect	D711.Work.Fatalities	D712.Work.Accidents	D713.Work.Illness

Table G4. Factor loadings of the top 7 (>90% variance explained) principal components of the Capability Set. PCA conducted on the correlation matrix of standardised Capability Set indicators, using Spearman correlation coefficients. Factor loadings > 0.3 coloured green and < -0.3 coloured red.

	Comp.1	Comp.2	Comp.3	Comp.4	Comp.5	Comp.6	Comp.7
Equiv. HH earnings	0.628	0.214	0.248	0.117	0.015	0.057	0.072
Share of HH income	-0.664	-0.079	-0.189	-0.068	0.124	0.001	0.025
Housing assets	0.236	-0.200	-0.191	-0.450	0.692	0.041	0.079
Parental NS-SEC	-0.037	0.425	-0.074	0.047	0.093	-0.433	-0.622
Neighbourhood cohesion	0.154	-0.117	-0.413	0.003	-0.365	-0.632	0.434
No. non-employment spells	-0.150	-0.270	0.716	-0.252	-0.271	-0.133	-0.049
QoW capabilities	-0.199	0.324	0.156	0.319	0.160	0.179	0.575
Highest qualification	-0.106	0.552	-0.007	0.103	0.042	0.031	0.029
Perceived self-efficacy	0.081	-0.437	-0.205	0.649	-0.038	0.259	-0.270
Civil participation	0.063	0.200	-0.333	-0.423	-0.511	0.539	-0.079
Proportion of variance	30.8%	18.4%	11.2%	9.1%	8.4%	7.9%	7.3%

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