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UK construction workplace poverty:
the impact of financial and job insecurity on mental health

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Acknowledgements

Front cover image: Malgorzata Tomczak

Executive summary

The aim of this study was to explore resilience and wellbeing in the UK construction sector, specifically looking at mental health in construction and how this is affected by financial wellbeing and job security. Mental health is of paramount importance; it impacts on how we feel, think, and behave each day. Mental health contributes to decision making and problem solving, and therefore impacts professionally and can have profound effects on the individual, family, friends and work.

The UK construction sector is cognisant of the need for mental health awareness and systemic change. Organisations such as the Chartered Institute of Building, Construction Industry Training Board, Royal Institution of Chartered Surveyors, Mates in Mind and other charities are all seeking ways to reduce the shame and silence around topics surrounding mental ill health. The UK construction sector needs to grow and sustain a workforce that is fit for purpose with a focus on mental health and inclusivity as ways to attract and retain talent, especially across diversity boundaries.

This study specifically targeted those in all income bands working in UK construction to explore themes of workplace poverty, gender, career commitment and food security. Each objective is built iteratively on the prior stage to form an empirical evidence base. A gap in the current literature was identified where the links between mental health, financial insecurity and job insecurity were not well understood or statistically modelled in this sub-group of UK construction workers.

Key findings from data analysis of this survey revealed:

- There is a statistically significant relationship between financial wellbeing and job insecurity as predictors of self-reported depression. This means that if someone is struggling financially and is worried about their job, they are highly likely to experience some level of depression. Critically this finding leads to the recommendation that indirect lines of open conversation could be had around financial wellbeing and job security. This could lead to someone asking for help, or help being offered, rather than speaking directly about their mental health status as a conversation opener among friends, colleagues and Mental Health practitioners.

- Only 58% of survey participants felt that their values were similar to those of the people they worked with.

- 32% of male participants working in the UK construction industry surveyed, self-reported moderate or severe depression compared to 14% of the general population.

- Food insecurity was higher for female participants than males; all were in employment in the UK construction sector.

- 74% of surveyed participants had accessed mental health support, were considering it or had supported a friend or colleague over the last 12 months.

Recommendations from this study focus on establishing a culture of enabling more regular vulnerable and open conversation with colleagues, friends and peers in UK construction, specifically by asking how someone is feeling about their work security and financial security. Both could be factors in someone seeking and being supported in accessing mental health services.

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Figures & tables

1.0 Introduction

When looking at career choice options as a leaver of school, college, or university you would not necessarily consider a sector's mental health statistics; if you were to consider them, in most cases you would avoid a sector with poor mental health figures when making a career decision. You would be more likely choose something where your skills and interests lay, and with influence from the experiences of family and friends; you may not know anything about mental health statistics or even think to review them. Those who choose to work in UK construction are working within a sector with some of the worst mental health statistics (ONS, 2017) in Britain. Thankfully many charities and outreach organisations are finding ways to support UK construction workers with mental ill health, such as Mates in Mind, the Lighthouse Club, Mind, Samaritans and the National Health Service.

A key driver for this research stemmed from the question:

Are UK construction workers struggling to make ends meet financially; are they experiencing job insecurity and does this negatively affect their mental health?

'Workplace poverty' is a colloquial term used to describe a person who is in full-time paid work but is unable to afford rent, bills and meals; the more formal term used is 'households below average income.' Imagine you are a first-year apprentice, up early to be onsite at 7am, working in a male-dominated environment that is often filled with shame around asking for help. At 12pm, you break for lunch, exhausted from manually and mentally challenging work. You cannot afford lunch and so you go without. You might start to think: 'Why am I working in this sector? It's dangerous, tiring, I am not being paid well enough to feed myself lunch – I could work in a retail outlet with less risk and more income at a minimum wage.' We need to urgently address these issues in order to make the sector attractive for those seeking jobs at entry level, for those already in the sector and for career changers.

Workplace poverty is a topic that is shrouded in shame, vulnerability and misunderstanding. Within the UK construction sector, workplace poverty is of rising concern and is an area with only limited data available. In 2019/2020, 12% of those employed in the construction sector in London were in workplace poverty (Trussell Trust, 2016). In-work poverty occurs when a working household's total net income is insufficient to meet their needs (Trust for London, 2020). There is a strong correlation between people in skilled manual work and areas with high foodbank usage (Trussell Trust, 2016). A direct link between the two is yet to be fully explored by collecting data in this sector and will remain a priority area for future research. The construction sector is forecast to need over 200,000 new workers by 2025 to meet demand (CITB & Experian, 2021). If the construction sector is to recruit this number of new workers, then it needs to be a sector that is attractive to all ages, pays appropriately, and is supportive of people who are struggling. In-work poverty can affect people of all ages. This research looks at in-work poverty, whether this constitutes not having sufficient funds to afford food and secure habitable accommodation, or not having disposable income to pay into a pension.

The structure of this research study and the literature review conducted for the study is shown in Figure 1. Firstly, the study examines in depth the level of workplace poverty in the UK construction industry, as outlined in the introduction. The perceptions of workplace poverty are then discussed, along with underlying issues relating to age and gender data in UK construction. The main themes explored are mental ill health, financial stress and workplace insecurity in UK construction. The findings from the literature will be summarised and the current economic context of the UK highlighted. The research design and method will be explained, and empirical research results provided for each theme using the literature for comparison.

1 — What level of workplace poverty exists in UK construction

2 — Perceptions of workplace poverty in construction

3 — Sector career choice

4 — Insecurity in the workplace

5 — Financial stress

6 — Mental ill health

7 — Findings and recommendations

Figure 1: Structure of literature review and design of workplace poverty research

2.0 Aim & objectives

2.1 Aim

The aim of this study was to explore resilience and wellbeing in the UK construction sector, specifically looking at mental health in construction and how this is affected by financial wellbeing and job security.

This study specifically targeted those in all income bands working in UK construction to explore the following themes: workplace poverty, career commitment and food security. Each theme is built iteratively on the prior stage to form an empirical evidence base. These are funnelled towards understanding the impact of the three themes on people's lives and particularly mental health in the UK construction sector.

2.2 Objectives

Objective 1
Establish in a literature review the existing datasets that outline mental health and financial wellbeing in construction.

Objective 2
Explore the evidence base factors that affect mental health in UK construction by using a survey to obtain responses from a sample of the industry population.

Objective 3
Analyse the data from survey respondents to answer the study hypothesis relating to the themes.

Objective 4
Report and summarise key findings for industry stakeholders.

It is hypothesised that high job insecurity and low financial wellbeing will impact and increase a person's mental health depression score.

3.0 Background

3.1 Definition of workplace poverty

Poverty is both an absolute and relative term, meaning different things to each person. Extreme poverty at a global level means a person has a daily income of less than $1.90 USD per day (World Bank, 2021). What most high-income countries refer to as poverty is a relative term and is based on the specific definition used in that country (Gapminder, 2021a). The UK is ranked as the 25th highest out of 193 countries in terms of gross domestic product (GDP) per person, adjusted for differences in purchasing power (Gapminder, 2021b). In the UK, poverty in working households is defined as those who fall below 60% of the median household income after housing costs (Trust for London, 2021). Households below average income (HBAI) is calculated using the net income, adjusting this using equivalisation to reach an individual as the unit of analysis, after this has been completed, housing costs are deducted (Department for Work & Pensions, 2018), as shown in Figure 2.

Figure 2: Infographic showing the Households Below Average Income calculation steps;
Image constructed using Source icons: Microsoft® Word for Microsoft 365, copyright free

The Welfare Reform and Work Act 2016 makes it a statutory requirement to publish data on children living in low-income households in the UK (Welfare Reform and Work Act 2016). An advantage of having a definition that is accepted across the UK is that the published data can be used by different multidisciplinary bodies to understand a variety of related social and economic issues, such as food bank use, employment in a particular sector, geographical location and mental health support

provision. A disadvantage of this metric is that it does not offer insights in any greater depth of detail. Significantly, the COVID-19 pandemic was found to cause a higher prevalence of food insecurity in London among Black, Asian and Minority Ethnic groups who were found to have lower incomes and a subsequent greater reliance on food banks (Geyser, 2021). Significant socio-economic inequalities were identified in a study by Power et al. (2020) which demonstrated that vulnerable groups, such as those with disabilities, faced higher levels of food insecurity than others during the height of the COVID-19 pandemic in the UK. A review of current literature around gender and food insecurity shows a "significant overlap between being female, being in employment, and experiencing food insecurity" (Dempsey, 2020). Notably, little is known about how the UK construction sector is impacted by food security, and as such, this study will include survey questions with a specific focus on food security alongside financial wellbeing.

3.2   Demographics of workers

For those in the early stages of their career in construction, it has been reported that 30% of those aged 16 to 24 years, and 25% of those aged 25 to 34 years, worried that their household food would run out before there was money to buy more (Food Standards Agency et al., 2017). Further, we need to better understand the evidence around in-work poverty for mid-career practitioners, if we are to address the 'leaky pipeline' as depicted in Figure 3 of women returning to the sector or retraining for a new career (Considerate Constructors Scheme, 2017). The impacts of crises are never gender-neutral, and COVID-19 is no exception (United Nations Women, 2020). Lone parents, 89% of whom are women, are twice as likely to live in poverty as couple families (Trussell Trust, 2016). The construction industry can also be an option for career changers at any age/ stage of their career, moving on from other sectors (RICS Recruit, 2019). For those at the end of their career or near retirement, alarmingly, research conducted by The Construction Index (2021), found that only 36% of the construction workforce are known to be paying into a pension fund.
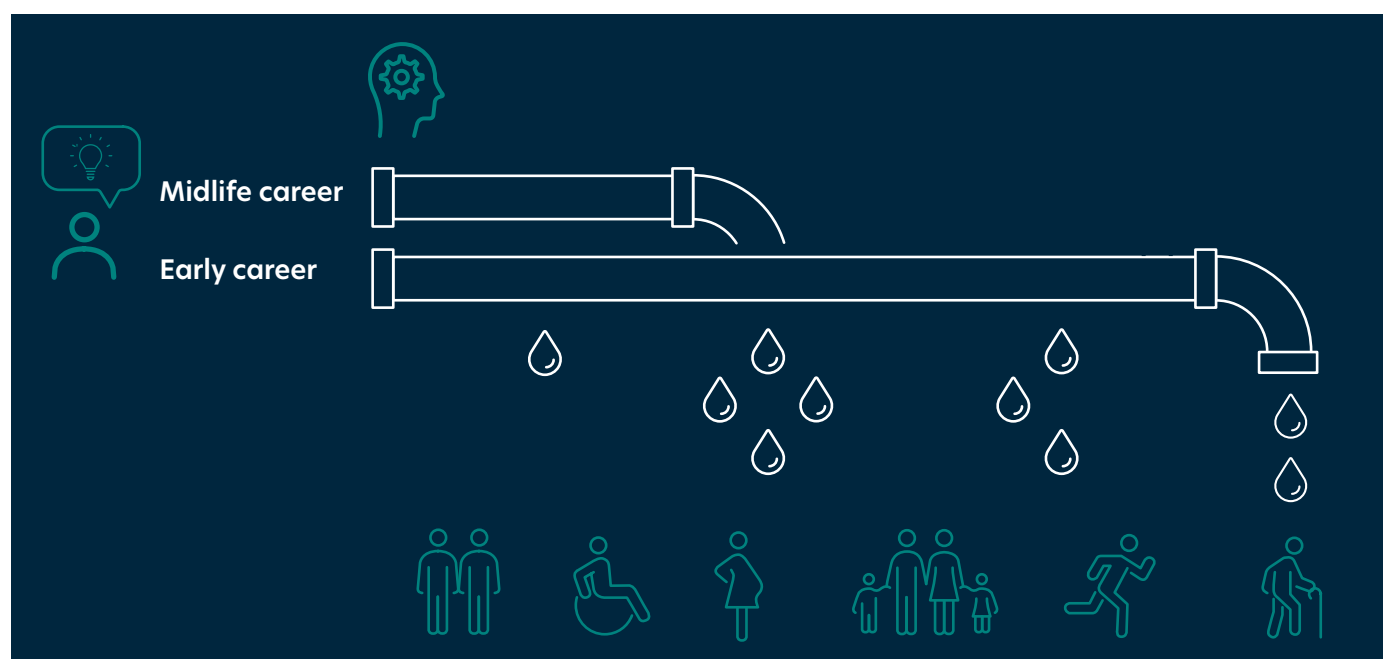
Figure 3: Leaky pipeline of construction industry, early and midlife career options and changes.
Image constructed using Source icons: Microsoft® Word for Microsoft 365, copyright free

The background context of in-workplace poverty and the age of workers has been explored; however, this needs to be understood in the context of the current economic climate. The International Monetary Fund (2022) has identified that the war in Ukraine has triggered and contributed towards a significant slowdown in global GDP growth this year, with fuel and food prices increasing rapidly. A description of the cost of living crisis in 2022 will complete the background to this study before the in-depth literature review is presented.

3.3   Cost of living crisis 2022

Having weathered the storm of the COVID-19 global pandemic in 2020-2022, and the deliberate exit by the UK from the European Union in 2020, the UK is facing continuing financial pressures. During spring and summer 2022, the depth and breadth of workplace poverty increased from when the survey data was collated for this study in winter 2021. The UK cost of living crisis is currently unfolding, causing multiple and cumulative long-term impacts that have not yet been quantified. Consequences, such as a rise of insecure work, a lack of real wage increases, rising inflation and low-income households struggling to eat and heat their homes, have been reported (Buchanan et al., 2022).

3.3.1   Pay has not increased

Over the past 20 years, pay for workers has not increased significantly, and with rising living costs, this means fewer people have sufficient savings to cope with the current financial instability and unexpected price rises (Buchanan et al., 2022).
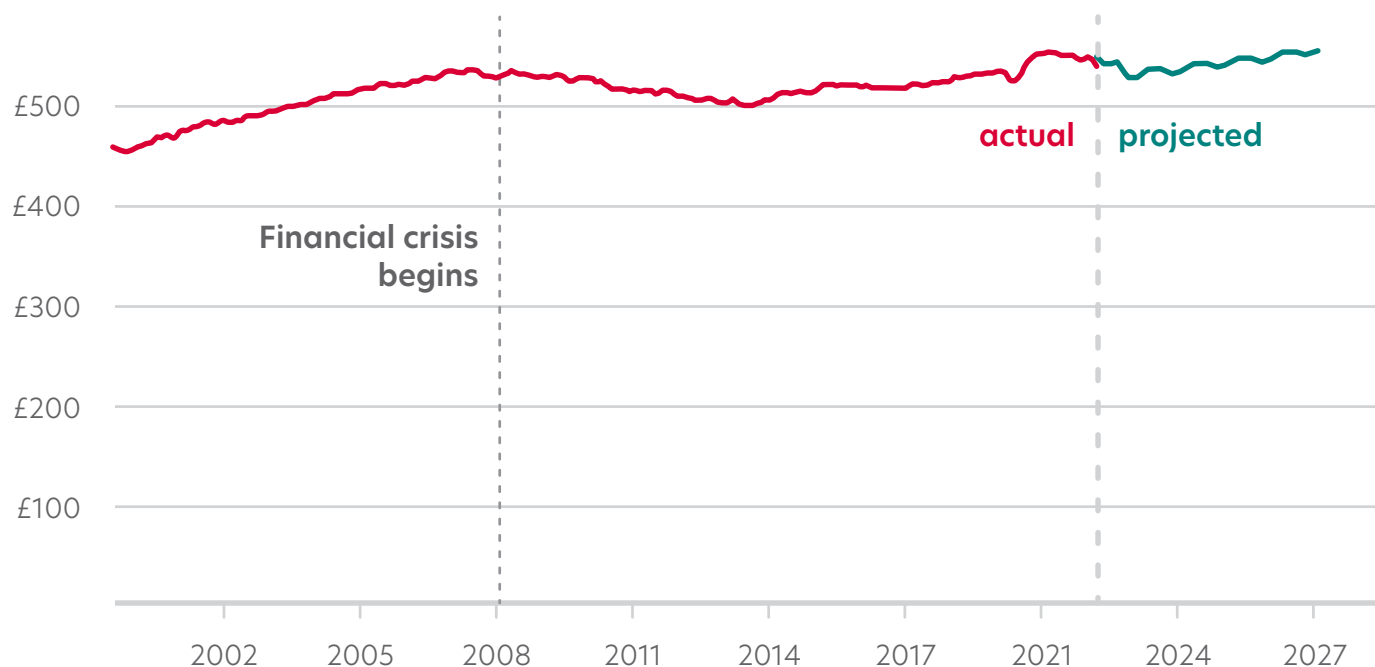
Pay increase and projection since financial crisis. Average weekly pay adjusted for inflation.
Source: BBC. Actual data from ONS, projection derived from OBR forecast

3.3.2 Inflation is increasing rapidly

The current rate of inflation is 9.1% (Bank of England, 2022a) Figure 4.

The Government set the target rate of inflation at 2% to keep prices stable and help people plan their spending and financial wellbeing.
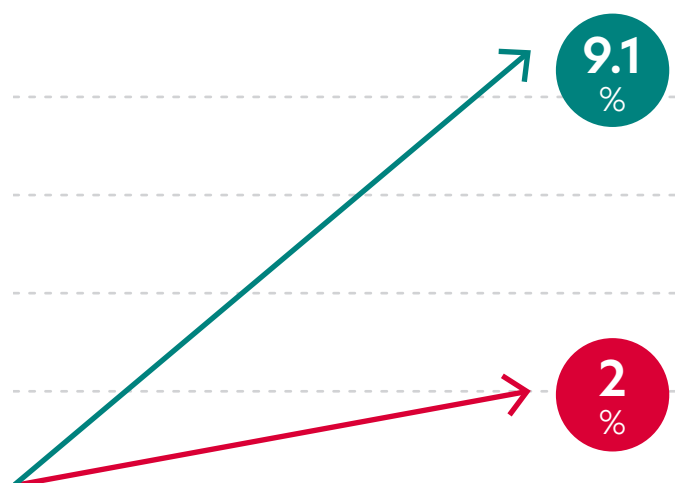
Figure 4: Inflation illustration

3.3.3 Not eating, heating or able to pay bills

The Joseph Rowntree Foundation (Schmuecker & Earwaker, 2022) briefing document for the UK government revealed, as shown in Figure 5, that:

- 7 million low-income households have gone without food over the last 30 days, or one essential item such as basic toiletries since the start of 2022.

- 5.2 million low-income households have skipped or cut down on meals or gone hungry over the last 30 days.

- 4.6 million low-income households are in arrears with bills e.g., rent, council tax or utility bills.
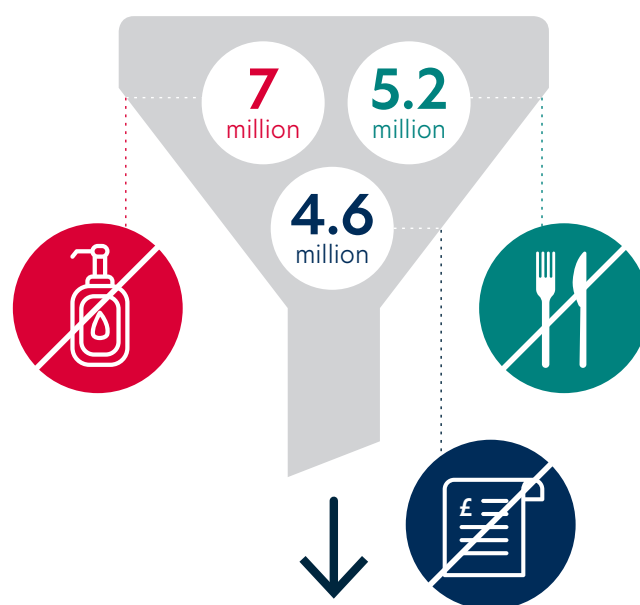
Figure 5: Illustration of cost of living crisis for low-income households

4.0 Literature review

This literature review is divided into four areas and forms the structure of the research design as shown in Figure 6.

Figure 6: Themes explored in the literature and research design

4.1 Sector career choice

To provide guidance on how the sector can attract and retain talent at every level and stage of people's careers, it was important for this study to consider how committed respondents were to their career choice. Mental health and resilience play vital roles in people's day-to-day lives and therefore exploring these themes alongside how committed respondents were to the construction sector was an important aim of this study.

Apprenticeships and other vocational career paths that incorporate practical teaching onsite are valuable routes into the construction sector. However, when day-rates for a labourer are around £150 and the hourly wage for an apprentice is £4.50, apprentices face harsh financial situations that are likely to lead to workplace poverty if they do not receive additional state or family support. Waters' (2019) study looked at why construction is not a preferred career choice for young people,

exploring this from an early career perspective. Both the literature and focus group findings concluded that construction is not a career of choice for young people (Waters, 2019). Findings highlighted long-held biases and perceptions of the sector being a male-oriented, dirty, manual and an unsafe industry (Waters, 2019). To widen (and diversify) participation in UK construction, we need to look at the root issues and values underpinning the cultural norms. Waters' (2019) study focused on young people at the beginning of their career choice; it is likely that the needs, circumstances and pressures facing those in leadership, managerial or technical professional roles are different. Questions exploring career commitment and job satisfaction are used by the Institute for Employment Studies (IES) (Hayday, 2003) to find ways to make sustainable improvements in employment policy and human resource management. As such, this study included questions from Hayday (2003) relating to people's values and

career commitment in organisational and service-level areas using the Institute for Employment Studies (IES) questions as a basis.

The subsequent themes to be explored alongside the underlying influences of gender, age and career position are shown in Figure 6. Insecurity in the workplace is a factor that can change depending upon one's career stage and can depend on financial resilience. The topic of insecurity in the workplace is considered within the UK and in relation to current employment practices.

4.2   Insecurity in the workplace

In July 2021, the Living Wage Foundation (Richardson & Howard, 2021) analysed the data from the UK Government Office for National Statistics studies, namely, the quarterly Labour Force Survey and the annual Family Resources Survey. Richardson and Howard (2021) found that 6.6 million workers experienced work insecurity in the UK in 2021. As with most socio-economic factors, discrimination is at play here, where "social inequalities are associated with increased risk of many common mental disorders" (World Health Organization, 2014). Insecurity of work was found to be associated more strongly in certain UK regions; the North East and Wales had higher levels of insecure work at 25% and 26% respectively (Richardson & Howard, 2021). Construction as an industry was found to have 18% insecure workers, and those that were both in insecure work and living below the Living Wage were found to make up 16% (Richardson & Howard, 2021). To define insecure work, the Living Wage Foundation (Richardson & Howard, 2021) used four criteria. A worker had to meet at least one of these to be included in the insecure work category: 1) people in non-permanent work (excluding those who said they did not want a permanent job); 2) self-reported volatile pay and hours (zero hours contracts); 3) self-reported volatile hours, constant pay; and finally, 4) low-paid self-employed workers.

The findings from this analysis show there was a negative impact on mental health at 42%, and the ability to plan work and personal life at 40%, as the impact on below Living Wage workers with short notice for working hours, shifts or work schedules, over the past 12 months in the UK. Recent findings from a study by Lingard et al. (2021) showed that there was a positive and significant association

between mental health and job security in Australian construction workers. This association was found in all age groups and was stronger among younger participants (Lingard et al., 2021). In the young workers age group (18-24 years), perceived fairness of effort and reward (pay) was positively and significantly associated with mental health (Lingard et al., 2021). In both the middle-aged (25-45 years) and older (>45 years) age groups, a statistically significant positive association was found between job control and mental health while a negative association was found between job demands and complexity and mental health (Lingard et al., 2021).

A measure of job insecurity using qualitative survey methods was tested and validated by Blotenberg and Richter (2020). This measure is used within this study to measure job insecurity as it contains job features that employees value in their job satisfaction. It is hypothesised that high job insecurity and low financial wellbeing will impact and increase a person's mental health depression score.

4.3 Mental health

"Work is good for mental health, but a negative working environment can lead to physical and mental health problems"

(World Health Organization, 2021)

Mental health relates to a person's ability to cope and deal with daily life. A person with a positive sense of self, who they are and the ability to manage on a daily basis, is a good example of someone in good mental health. Possessing good mental health means being able to meet the demands of everyday life, connect with people to form relationships, make sense of the world around you, think clearly and express feelings and emotions (Council for Awards in Care, 2020). Mental ill health often refers to a period when a person feels like they cannot cope with everyday tasks and challenges; they may feel anxious, stressed and/or depressed, and often express this in different ways. In England, suicide is the leading cause of death in adults below the age of 50 years (ONS, 2017). Within the construction industry, compared to the male national average, the risk of suicide is three times higher for low-skilled male labourers (ONS, 2017). The sub-groups in construction with the highest risk are among the building finishing trades, including decorators, painters, plasterers and roofers (ONS, 2017). The Patient Health Questionnaire (PHQ)– 9 is widely used tool to assess depression, gathering self-reported data, and is available globally for distribution and reproduction. The PHQ-9 is a nine-point survey of how someone has felt over the past two weeks and is scored to help understand what their level of depression is at a particular point in time.

...the risk of suicide is three times higher for low-skilled male labourers.

(ONS, 2017)

Construction companies are not prioritising mental health

Photo: Finn

Key findings from the Construction Industry Training Board (2021) show that:
71.7% of companies did not measure mental health and wellbeing of employees

Key findings from a Chartered Institute of Building study (Rees-Evans, 2020) show that:
"56% said they work for an organisation that had no policies on mental health in the workplace"

It is theorised from these findings that workers and companies may not know the extent and severity of mental ill health in themselves or other workers.

Prior studies that relate to mental health and construction have been conducted in different regions. In Australia, 1124 mining and construction workers who were Fly In Fly Out (FIFO) workers in remote sites were found to have higher rates of psychological distress; this was more prevalent among those under 44 years of age (Bowers et al., 2018). The study utilised a mixed-methods approach with two different survey methods within two construction sites as case studies (with 18 and 91 participants respectively), whereby the relationships between daily stressors, adaptation to these and maladaptation were studied (Langdon & Sawang, 2018). Findings from the studies found that work-life balance and financial concerns were the highest-rated stressors (Langdon & Sawang, 2018). In Nigeria, 110 tradesmen completed questionnaires in a cross-sectional study across 65 construction sites registered with the Federation of Construction Industry, Nigeria (Nwaogu et al., 2021). The logistical regression findings included protective factors of resilience and both problem - and emotion - focused coping strategies. Depression was seen in 72.5% of the participants when completing the PHQ-9 self-assessment (Nwaogu et al., 2021). In particular, the study found that mental health and resilience was found to be a significant concern for tradesmen with less than 20 years of experience as they were more likely to develop depressive symptoms (Nwaogu et al., 2021).

Finally, within the UK, the themes of shame, masculinity, motivation and self-compassion were evaluated in a study by Kotera et al. (2019) with 155 construction workers. Noteworthy findings from this study suggested there was not a high shame level among those with mental ill health. Notably, 15% of participants received mental health training and 14% received mental health support because of the study (Kotera et al., 2019). The suggested recommendation from this study was for the participants to complete a short three-hour-long self-compassion online training session. A recent Chartered Institute of Building (CIOB) study (Rees-Evans, 2020) collected data from 2,000 participants and found that 70% had experienced depression, 97% had experienced stress and 26% had had suicidal thoughts. Interventions within mental health and construction are explored further in the CIOB study, giving an overview of which interventions are currently available in the UK.

4.3.1 Mental health interventions

A randomised controlled trial design was used by Iremeka et al. (2021) in Nigeria with 160 skilled construction workers to establish the effectiveness of Rational Emotive Behaviour Therapy (REBT). REBT is the original version of Cognitive Behavioural Therapy (CBT) and was developed by Dr Albert Ellis in 1995 (University of Birmingham, 2021). At the beginning of the study, construction workers showed an elevated level of stress, with the treatment group showing a significant drop in stress levels when compared to the control group, and reduced stress in workers was maintained for four weeks in the follow-up period (Iremeka et al., 2021). The use of CBT is also one of the recommendations from the Chartered Institute of Building (CIOB) study (Rees-Evans, 2020). Conversely, Bevan et al. (2022) looked at ways to support the mental health of self-employed construction workers with moderate or severe anxiety, finding that the most frequently chosen form of support was that provided by family and friends, rather than professional or external support.

4.4 Financial income and stress

To counter the findings of prior work in this field, a study in Scotland hypothesised that as Scottish construction workers were on average, higher wage earners within the sector, they would be more resilient to the impact of COVID-19 restrictions on work (Fraser of Allander Institute, 2020). The Fraser of Allander Institute (2020) researchers looked at empirical Office for National Statistics data to conduct an inductive study and acknowledged that self-employed construction workers could potentially fall between the gaps relating to both government assistance during the COVID-19 pandemic, and data on pay due to payment of dividends.

This research study addresses economic and societal issues surrounding a choice to work in the construction industry as opposed to other sectors. As business leaders, we want our staff to have a decent living standard and access to opportunities for sustainable wage growth. This means addressing workplace poverty and opening conversations about how people are living in poverty. The Federation of Master Builders (2021) estimates the UK construction industry is worth £117bn per annum and accounts for 9% of UK GDP. Nearly 300,000 companies are associated with the construction industry, of which 99% are Small to Medium Enterprises (SMEs), and 71% of construction apprentices are trained by SMEs (Federation of Master Builders, 2021). Many of these SMEs do not have dedicated Human Resources teams and rely on business owners having multiple skill sets. Poor financial wellbeing can influence a person's capacity to concentrate, with a lack of sleep impacting energy levels and ability to work (CIPD, 2021). Therefore, this study is of paramount importance in raising awareness of the impact of mental health on staff in the vast majority of the construction sector.

4.4.1 Defining financial wellbeing

"Financial wellbeing is a state of being wherein a person can fully meet current and ongoing financial obligations, can feel secure in their financial future, and is able to make choices that allow them to enjoy life."

(Consumer Financial Protection Bureau, 2017)

The financial wellbeing scale is a useful measure of a person's ability to cope financially and prosper. The financial wellbeing scale, when in development, was tested on over 14,000 respondents during three rounds of surveys to validate its use (Consumer Financial Protection Bureau, 2017). Rigorous statistical testing by the Consumer Financial Protection Bureau (2017) showed the scale to be a comprehensive tool and it is freely available for researchers. The questionnaire uses specific questions and a scoring matrix to determine if someone is financially well; the higher the score, the

Navigating financial wellbeing

Photo: Scott Graham

This leads to the following questions:

What are the levels of financial wellbeing in UK construction workers?

How do they navigate financial instability?

What are the mental health consequences?

more financially well they feel (Consumer Financial Protection Bureau, 2015). The recently published report by Bevan et al. (2022) points to financial wellbeing as a key area of action that employees, site managers and construction companies can focus on. As such this was a key theme explored in this study, as the links between mental health and financial wellbeing are hypothesised but not confirmed in quantitative results.

4.5   Employment status

In the UK, Her Majesty's Revenue and Customs (HMRC) recognises 5 different categories of employment status, namely: worker, employee, self-employed, director or office holder (Office for National Statistics, 2021b). Within UK construction, there exists a special 'other' category which is used for self-employed contractors and sub-contractors; this is called the Construction Industry Scheme (Office for National Statistics, 2021b). The factors relating to demographic data and employment details are in line with other construction mental health studies conducted in the UK (Kotera et al., 2019), Nigeria work stress (Ibem et al., 2011) and a medical intervention in Nigeria (Iremeka et al., 2021), and Australia (Langdon & Sawang, 2018). The insecurity of work is explored in terms that relate to both hours, pay and contract in the UK.

In summary, this literature review explored the themes of career commitment, mental health, financial wellbeing and job insecurity. As the construction sector is the sector with the highest rates of suicide by occupation in the UK, and given the current cost of living crisis, it was crucial for this study to explore how these parameters are linked. The research design that follows outlines the structure and method of the study. Objectives 1 and 2 explore literature and evidence based factors that affect mental health in UK construction by using a survey to obtain responses from a sample of the construction industry.

5.0 Research design

An online questionnaire survey was piloted in January 2022. This pilot survey initially asked broader questions around mental health and workplace poverty. The pilot was tested by several staff at the University College of Estate Management (UCEM) and other individuals with construction industry experience. The feedback included a need for more specific questions and both ethical and General Data Protection Regulation (GDPR) approval processes were initiated.

The final survey was deliberately designed to use and combine previously published surveys that have been rigorously tested and reported in peer reviewed journal papers. The four research topic areas of career commitment, mental health, financial wellbeing, and insecurity of work, as well as gathering demographic data. The benefits of an online survey meant that this could be accessed via mobile phone, tablet, laptop and social media via a website link, see Figure 7.
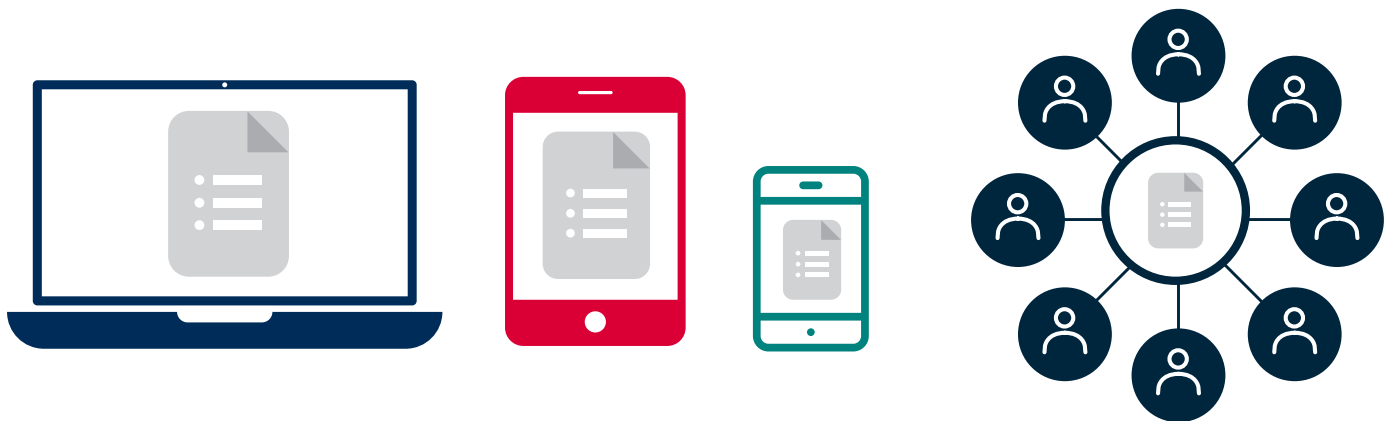
Figure 7: Access to survey

This also offered the advantage that the survey could be accessed by UK construction workers spread throughout the UK, and that workers could complete the survey at a time convenient for them.

The final survey was made live between March and May 2022 and administered through Google Forms, an online anonymous survey tool. The limitations of this method include the following: some participants with accessibility needs might not have been able to use this tool; in addition, some might not have clicked submit to enter data; they may have taken the survey more than once as no identifiable data was collected to prevent this; the survey might have been too long, meaning that participants could have selected incorrect categories and have grown fatigued while completing the survey. To try to

overcome the last limitation with regards to fatigue, picture prompts were used for each section to act as a visual cue to the participant. The images were taken from copyright-free webpages, which meant they could be reused.

GDPR and ethical issues in this survey was evaluated by the University College of Estate Management (UCEM). As no personal or sensitive data was gathered that could identify participants and the survey was administered in the way described above, the survey was found to be ethically conducted. The sampling strategy used was that of snowball sampling, whereby survey respondents could forward the survey on completion to a friend or work colleague.

6.0 Method

6.1 Hypothesis

This study aimed to investigate the relationships between career commitment, mental health, financial wellbeing, work security and food security in UK construction workers to seek descriptive statistics and correlation analysis. The hypothesis concerned whether participants who are financially stressed are more likely to be depressed. Findings will be based on testing this hypothesis with the aim to help identify links between their career choice, mental health and financial wellbeing of UK construction workers.

6.2 Survey

The online survey comprised a combination of photos and questions. These were based on other published works to allow for comparison of any disparity in findings. The structure of each theme and the background sources are shown in Table 1. The survey was posted on LinkedIn and shared directly with construction contacts through individual messages. A link at the end of the survey prompted respondents to share the survey with others to encourage snowball sampling and also provided links to mental health services.

Some survey theme questions used industry-standard scoring methods, e.g., the mental health depression rating questions used PHQ-9, and financial wellbeing survey questions. The responses were scored numerically, and the resulting single value was translated into a specific category in the case of the PHQ-9 survey.

Theme	Source and background
Consent, ethics and GDPR (general data protection regulation)	UCEM HSRP requirements and best practice
Career commitment	Institute of Employment Studies Questions to Measure Commitment and Job Satisfaction (Hayday, 2003)
Mental health	PHQ-9 (Kroenke et al., 2001)
Financial wellbeing - part 1 & part 2	Consumer Financial Protection Bureau Financial wellbeing scale (Consumer Financial Protection Bureau, 2015)
Security of work	Qualitative Job Insecurity Measure (Blotenberg & Richter, 2020)
Security of food	Food security measures (Economic Research Service US Department of Agriculture, 2022)
Demographic information	Based on other mental health in construction studies: (Kotera et al., 2019; Bowers et al., 2018)

Table 1: Survey question themes and sources

7.0 Data analysis & results

The results of this study are thematically organised as illustrated in Figure 8, systematically and then subsequently at the interactions between the themes. At each theme level, the key findings were highlighted, and analysis was discussed using figures and tables.

7.1   Demographics - Participant profiles

The survey was distributed using a snowball sampling technique to industry contacts at the Chartered Institute of Building, Royal Institution of Chartered Surveyors, Mates in Mind, LinkedIn, and to University College of Estate Management staff and student representatives. A total of 38 respondents participated and all were over 18 years of age to meet the ethical and GDPR requirements of the study. The gender profile of the participants is shown in Figure 9, with 47% of respondents identifying as female and 50% as male. Actual count data reveals that 18 participants were female, 19 were male, and one was non-binary or preferred not to state their gender.
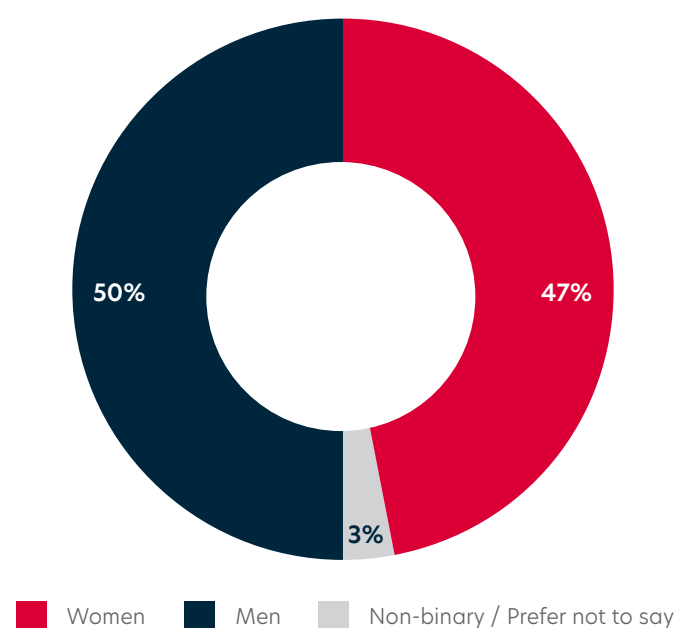

Women   Men   Non-binary / Prefer not to say

Figure 9 *Proportion of participants by gender*
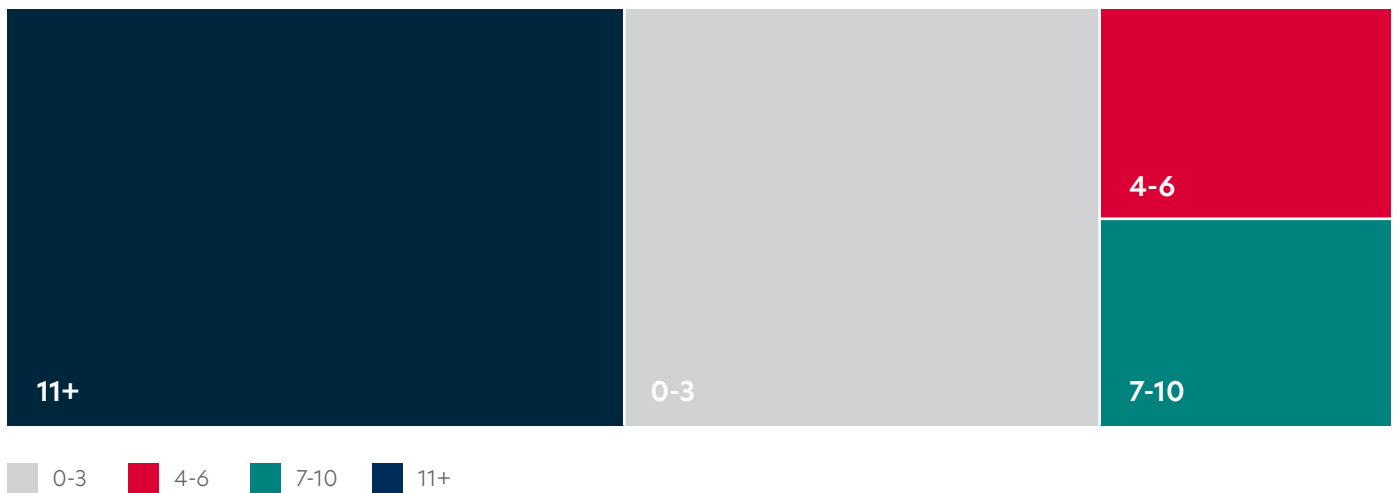*Source: van Someren 2022 study*

Figure 10 Treemap count of participants' number of years in the construction industry
Source: van Someren 2022 study

The number of years the participants had been working in the construction industry was also provided by participants; the two largest categories were 0-3 years and 11+ years, as shown in the treemap in Figure 10.

The long-term trends seen in UK construction against the demographic data for those aged 16 or over (from the Labour Force Survey) reveals that within the sector, employment during Q1 in 2022 consisted of 316,000 women (Office for National Statistics & Debra Leaker, 2022b) and 1,866,000 men (Office for National Statistics & Debra Leaker, 2022a). Within the labour force, gender is commonly expressed as binary, with women representing a 14.48% proportion of the total sector. This study has captured the non-

binary nature of people's gender and a much higher - almost parity - representation of gender due to the small sample size; therefore, this study's results may not be directly transferrable to the wider population. The data will nevertheless be discussed and where appropriate distinctions in gender will be included.

The variables for gender and number of years working in construction were combined to understand whether the previously reported trend of the leaky pipeline applied, as depicted in Figure 3, where younger women did not remain in construction for the same length of time as men. Interestingly, as shown in Figure 11, this was not the same finding as the study represented women and men against their years in working construction.
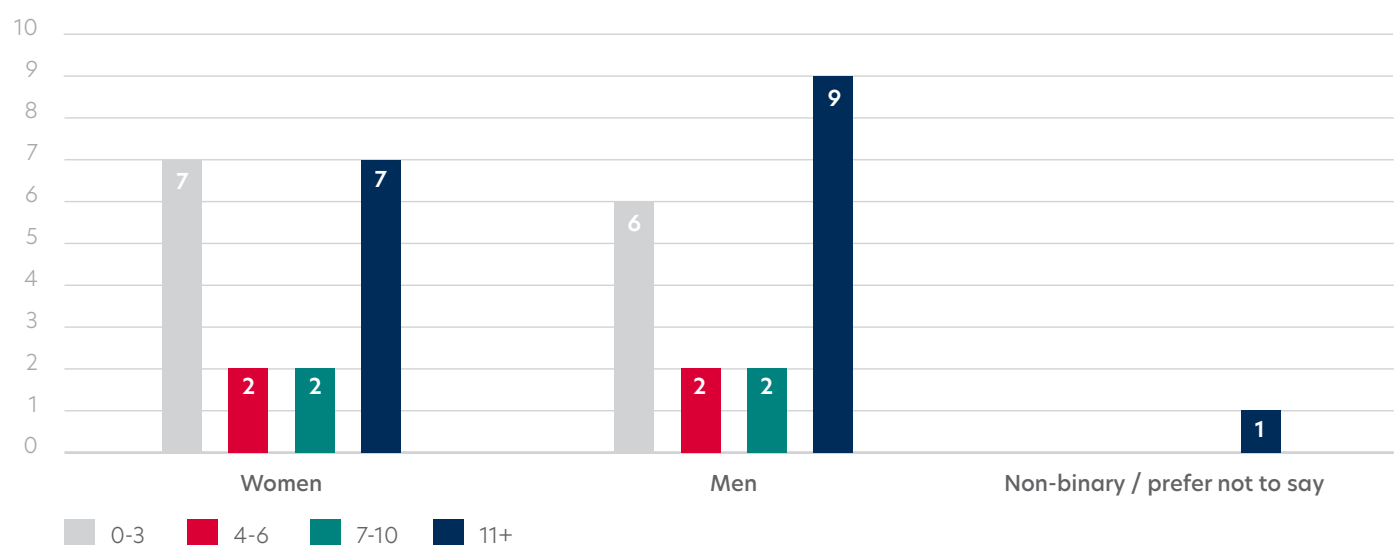
Figure 11 Gender and number of years in construction
Source: van Someren 2022 study

7.2 Discrimination

Within the demographic information section of the survey, a question relating to discrimination asked participants to identify if they had been discriminated against while working in UK construction. Participants were able to select more than one type of category from those available; the counts are totals across all participants. Figure 12 Source: van Someren 2022 study, Treemap of discrimination types and counts reveals that 23 of the 38 participants had not been subjected to discrimination, 4 provided no answer and the remaining 9 had experienced discrimination, in most cases more than once.

No discrimination 23

Age 7

Gender Identity 4

No answer 4

Being pregnant or on maternity leave 3

Being a parent 3

Spoken languages 2

Ethnicity 2

Country of Origin 3

Race 2

Disability 1

Sexual Orientation 1

Legend:
- Disability
- Ethnicity
- Being a parent
- No answer
- Sexual orientation
- Race
- Country of origin
- Age
- Spoken languages
- Being pregnant or on maternity leave
- Gender identity
- No discrimination

Figure 12 Treemap of discrimination types and counts
Source: van Someren 2022 study

7.3 Career commitment

The survey was informed by the peer reviewed work from Hayday (2003) relating to people's values and career commitment in organisational and service level areas using the Institute of Employment Studies questions as a basis. An analysis of the results where participants chose 'agree or strongly agree' as their top answer is shown in Figure 13. The top three areas of career commitment re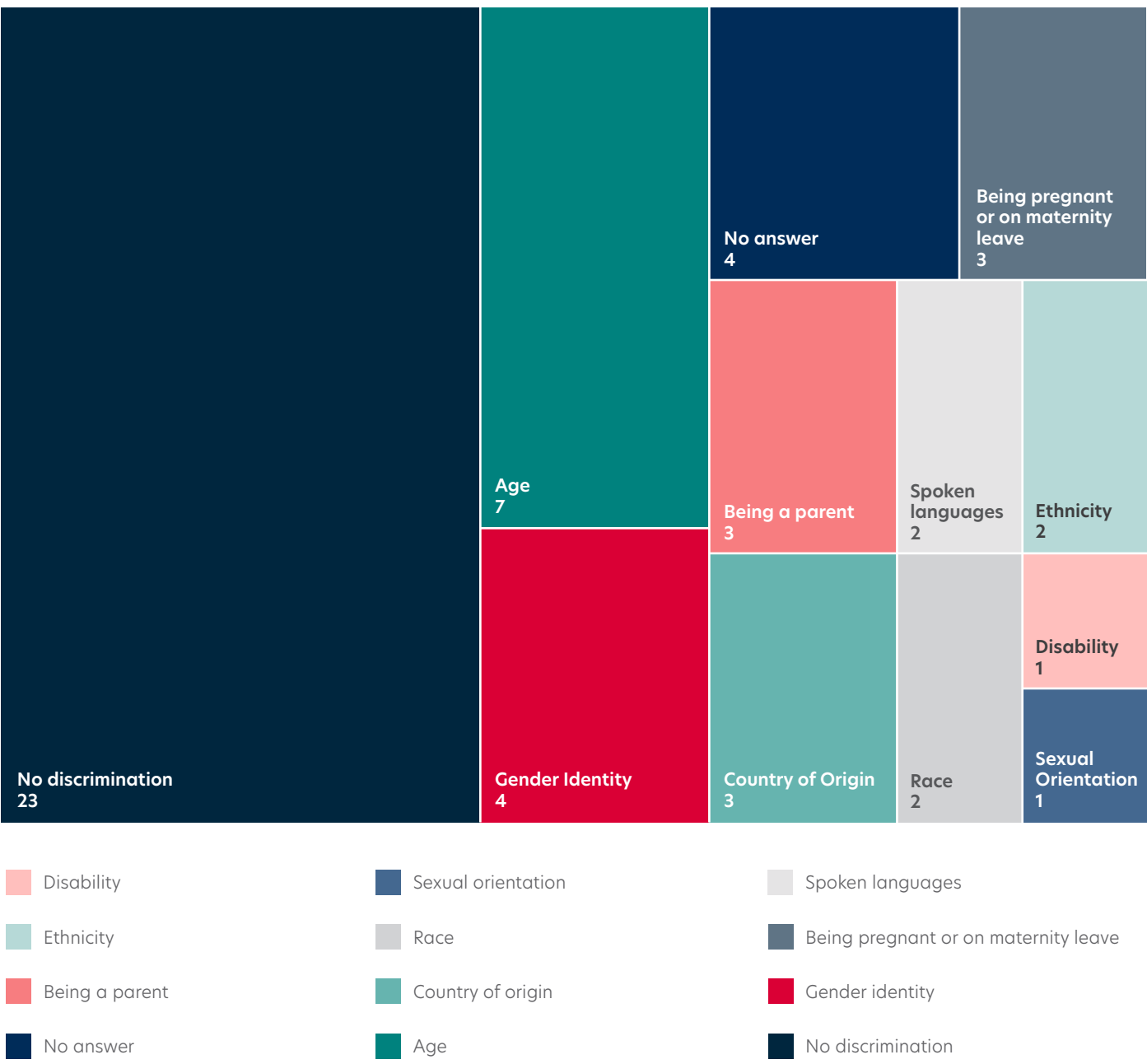late to a person's individual identity and show that between 92 and 95% of participants agreed with these statements. As only 66% 'would recommend the construction industry as a place to work,' here, organisational and cultural factors relating to values found that only 58% of participants felt that their values were similar to those of the people they worked with.

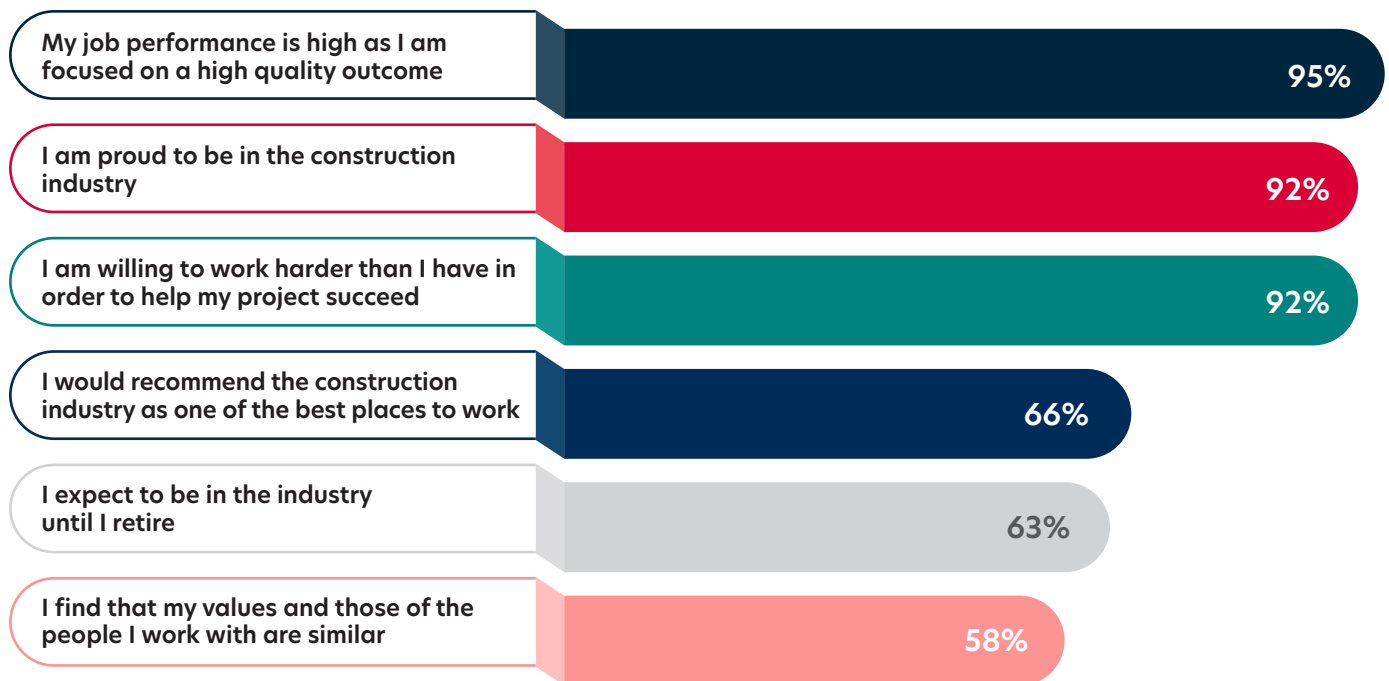| Statement	%
My job performance is high as I am focused on a high quality outcome	95%
I am proud to be in the construction industry	92%
I am willing to work harder than I have in order to help my project succeed	92%
I would recommend the construction industry as one of the best places to work	66%
I expect to be in the industry until I retire	63%
I find that my values and those of the people I work with are similar	58%

Figure 13 *Career commitment results where participants chose 'agree or strongly agree' as their answer*
Source: van Someren 2022 study

7.4   Mental health in UK construction, PHQ9 and treatment

The aim of this study was to explore resilience and wellbeing in the UK construction sector, specifically looking at mental health in construction and how this is affected by financial wellbeing and job security. The survey used the healthcare industry standard and copyright-free PHQ-9 survey by means of self-reported data. The PHQ9 survey (Kroenke et al., 2001) uses a numerical scale to convert each of the 9 questions and totals these out of 27. Different categories are then assigned based on this score, a lower score means the person has a lower level of self-reported mental ill health and the nearer the score is to 27 the more severe the depression. Depression severity was categorised as follows: 0-4 none, 5-9 mild, 10-14 moderate, 15-19 moderately severe, 20-27 severe. Count data is shown in Table 2 below.

	Depression rating as two discreet categories	
	Moderate to severe	None or mild
PHQ9 count	8	30

Table 2 PHQ9 Mental health scores count of participants in two categories of depression
Source: van Someren 2022 study

By analysing the relation between the PHQ9 scores and the gender of participants, gender-based influences on depression scores were revealed, as illustrated in the dot violin plot in Figure 14. Here the range of scores can be seen as dots and the distribution of these has a larger variation among the gender category identifying as male.
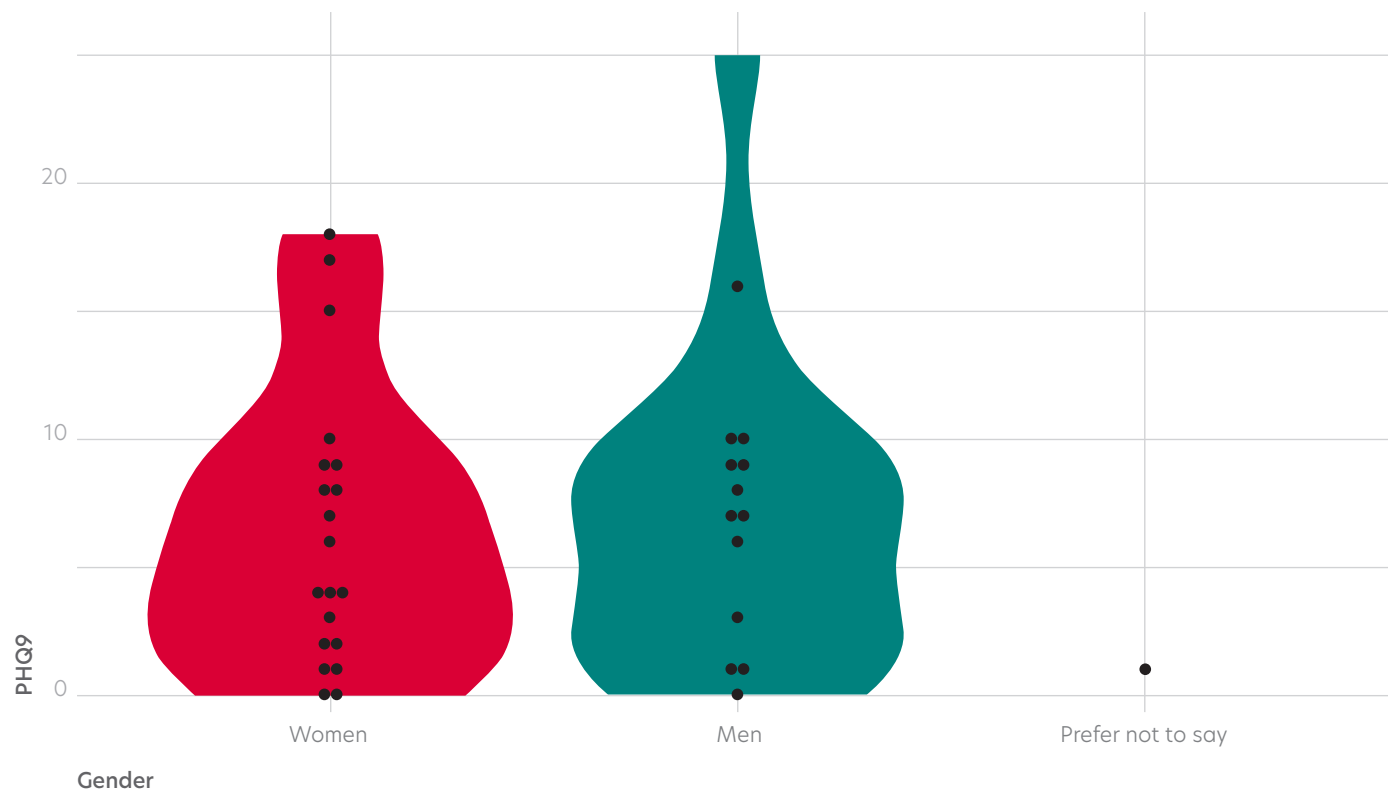

Figure 14 Gender and PHQ9 scores
Source: van Someren 2022 study

The gender and PHQ9 scores were compared with general UK population data. The PHQ8 survey was conducted by the UK Office for National Statistics (2021a) and used an 8-question survey that is more appropriate for larger scale studies. Only two categories were derived from the data in this study and each participant sits in one of them:

- no or mild symptoms for a score of 0-9 inclusive; or
- moderate to severe symptoms with a score of 10-24 inclusive

For the data collected here, those with no or mild symptoms were compared with the no or mild symptom category in PHQ8. The remainder were assigned to the moderate to severe depression category.

Figure 15 shows that 86% of the male general population has no or mild depression symptoms while 68% of the current study participants have no or mild depression symptoms. Each bar, read horizontally, adds up to 100% of the sample. Two key findings can be identified. Firstly, 89% of women in the current study had no or mild depression symptoms, which is greater than the 80% of women in the general population; a welcome finding.

The second interesting finding is that a greater number of males in the current study focusing on UK construction workers as a specific group, had moderate to severe symptoms of depression when compared to the male general population.
The prevalence of male depression in construction is a finding from this survey and aligns with the Office for National Statistics' (2021b) findings relating to male mental ill health in construction being higher than in the general population. Alongside seeking a greater understanding of depression in the context of the UK construction industry, this study asked what mental health support and treatments were sought by participants.
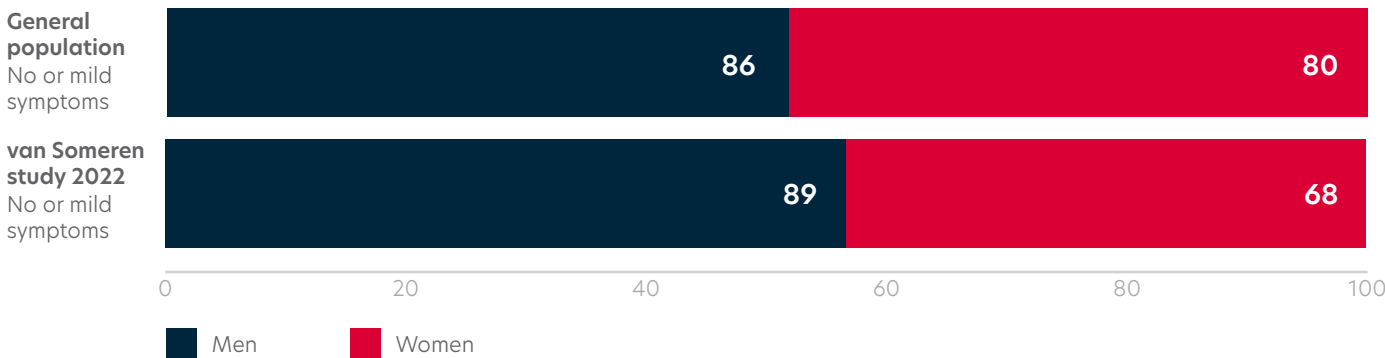

Figure 15 Gender and PHQ9 - no depression or mild symptons, comparison with general population
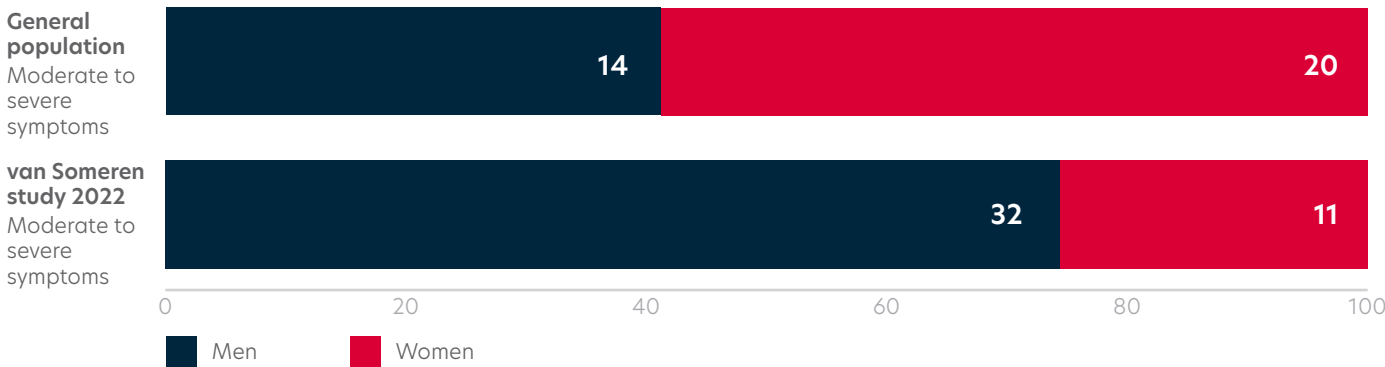*General population and van Someren 2022 study*

Figure 16 Moderate or severe depression comparison with variable gender
General population and van Someren 2022 study

7.5   Mental health support and depression rating as two categories

In addition to understanding a person's depression rating, this study also wanted to determine what self-reported mental health support a respondent had received in the past 12 months. This question asked participants to select all options that applied; count data for each option is shown in Figure 17 below. The highest count revealed that 18 of the participants responded that they had received mental health support in the past year.
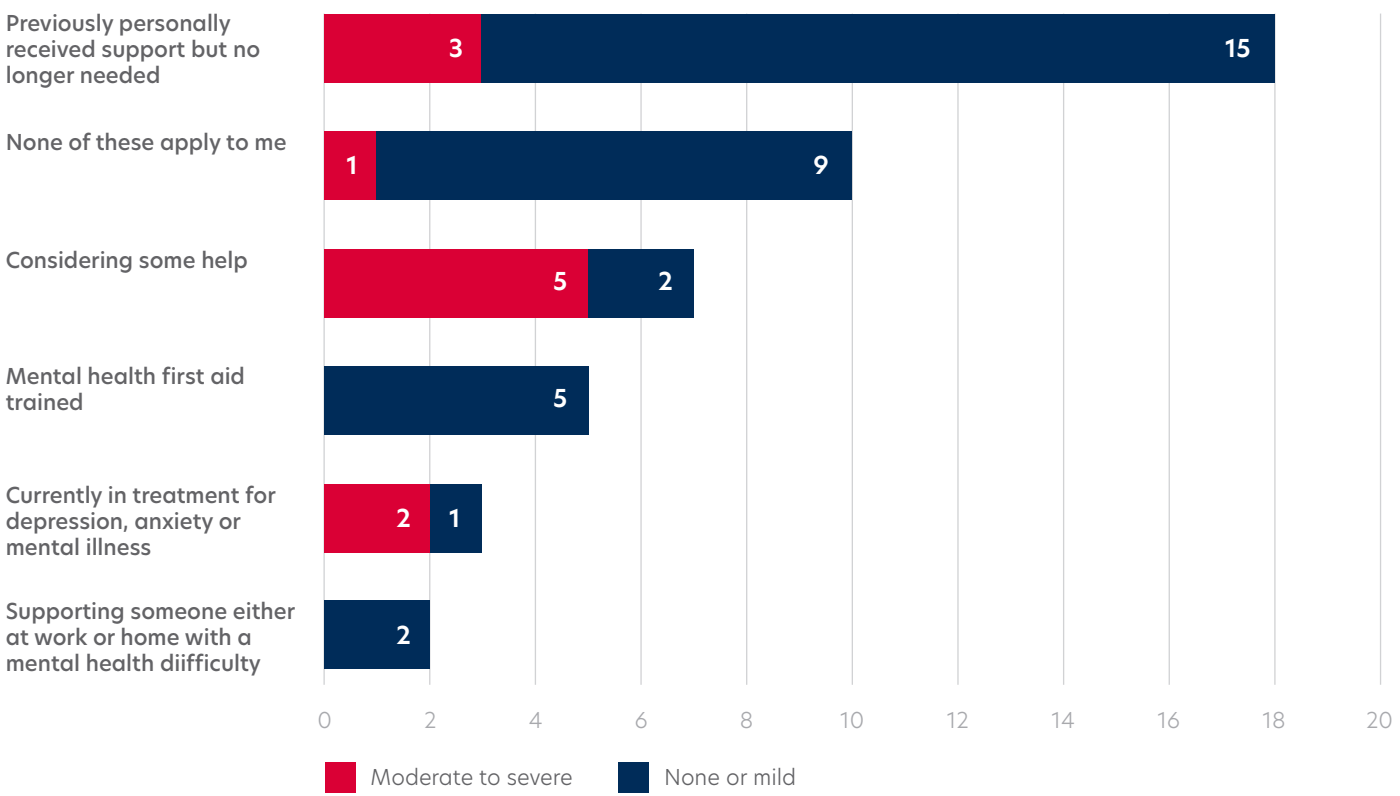

Figure 17 *Mental health support - participants could select multiple options*
Source: van Someren 2022 study

Deeper analysis of the participants with a higher self-reported PHQ9 depression score, were found to be currently receiving treatment for depression, anxiety, or mental ill health; those that were in the moderately severe depression category with a mid-range of PHQ9 depression score were found to be considering some help, as shown in Figure 18. Recent studies have shown that men have a greater tendency to feel shame associated with poor mental health in construction and are less likely to seek help (Bevan et al., 2022; Kotera et al., 2019). The finding from this study contradicts these findings, as the participants in this study had sought mental health support. For context, it is important to note that of the sample population for this study, 87% were in paid employment and 13% were self-employed. Prior studies have found a relationship between UK construction sole traders (self-employed) and those with mental ill health, and that this specific group experienced feeling shame towards seeking help compared to Small- Medium Enterprise workers (Bevan et al., 2022). This finding is therefore consistent with prior studies and supports the idea that workers in employment are more likely to access mental health support services.
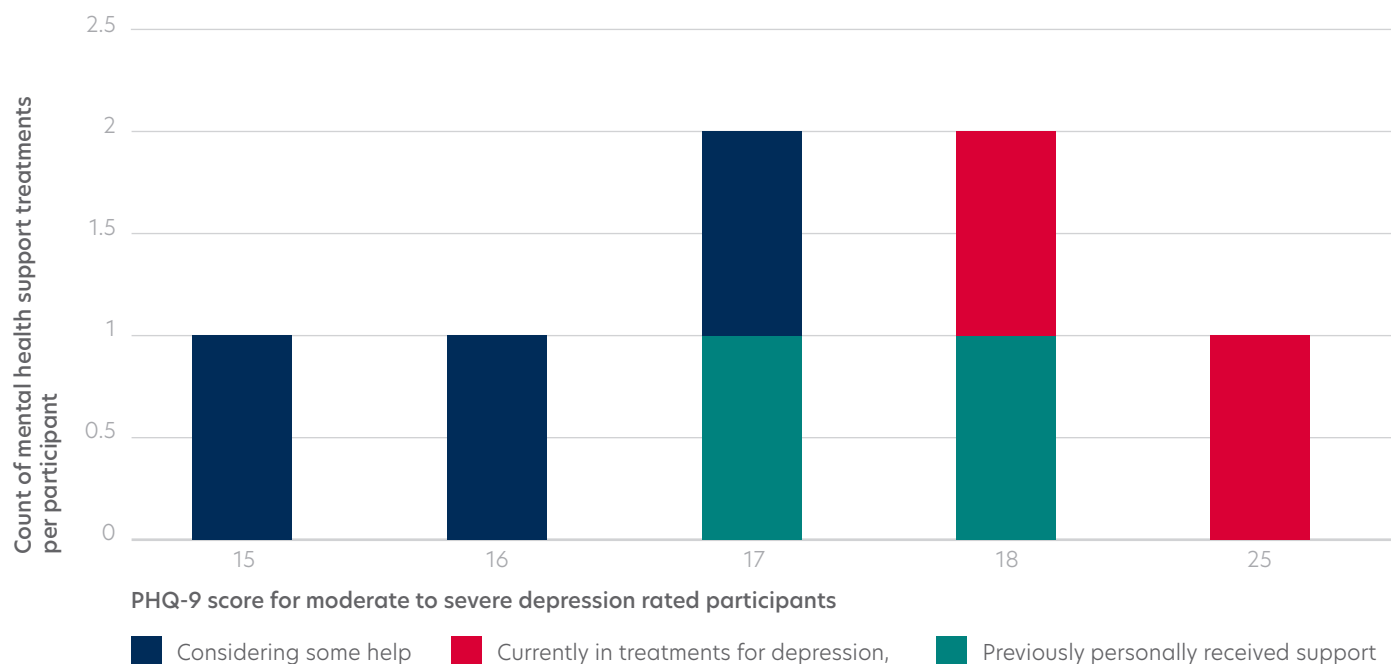
Figure 18 Moderately severe and severe depression participants and their support
Source: van Someren 2022 study

7.5.1   Mental health support

Mental health support was an essential factor in this study as it provided the opportunity for participants to report their access to services and their self-agency in reaching out for support. A cumulative sum of those in support or seeking mental health support across each category is shown in Figure 19, revealing that 74% of participants were actively engaging or had previously engaged in receiving or providing mental health support.

Figure 19 Percentage of cases where participants sought mental health support
Source: van Someren 2022 study

7.6   Financial wellbeing scale

The financial wellbeing of participants used the objective questions posed in Table 1 (section 6.2), and the Consumer Financial Protection Bureau's (2015) financial wellbeing scale (FWS) to determine a financial wellbeing score for each participant.

The scores range from 29% financially well to 86%, as shown in Figure 20. Those with a higher score are more financially well and less likely to feel insecurity regarding their financial situation.
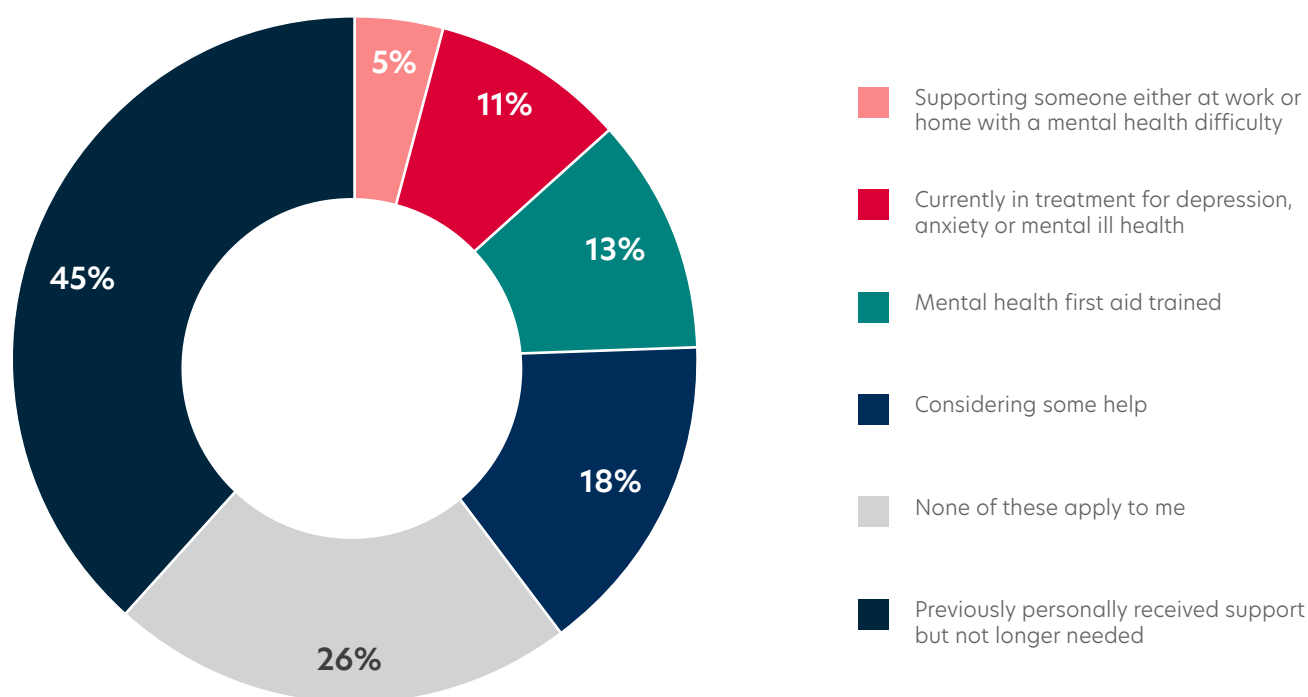
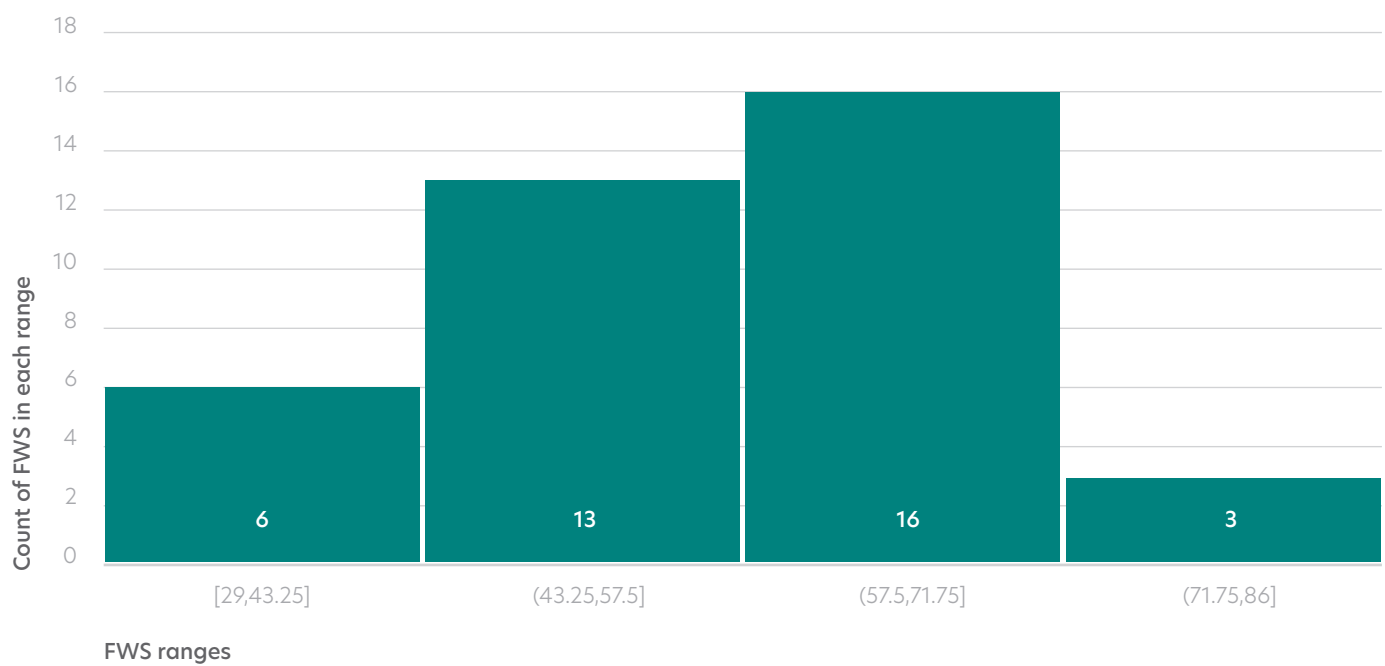**What are the levels of financial wellbeing in UK construction workers?**

Figure 20   Financial wellbeing scale scores, count of each score range
Source: van Someren 2022 study

What are the mental health consequences?

To analyse the mental health consequences of poor or good financial health, PHQ-9 depression scores and the financial wellbeing scale scores for each participant were plotted using a dot violin plot, as shown in Figure 21. This type of plot shows the distribution of the data and the individual data points, allowing greater granularity of understanding when interpreting the findings. A trend appears to be present where for most participants, the higher their financial wellbeing, the lower their self-reported depression. There are, however, outliers, as can be seen with the lowest financial wellbeing score at 28%; this participant reported no adverse effect of their financial health on their self-reported depression or mental health. Bevan et

al. (2022) found that 32% of their survey respondents felt stressed by financial problems or debt. The descriptive statistics in Table 3 show that the mean PHQ9 score for this study was 6.5 – categorised as either no or mild symptoms of depression. The mean financial wellbeing scale score of 56% is interesting, as the data collection for this study took place between March and May 2022. By July 2022, increased financial pressures could have already significantly altered the financial wellbeing of people, reducing their resilience to inflation and rising energy costs.

When friends, family and work colleagues are concerned about an individual's mental health (most likely a male), a potential route into opening-up the conversation may involve raising the topics

of financial wellbeing and job security. This could lead to discussion around challenges at work and both parties looking at ways they would find mental health support if they were facing difficulties. This recommendation supports the findings in the recent study by Bevan et al. (2022), which suggests that conversations around financial security are a way to initiate an open and honest dialogue.
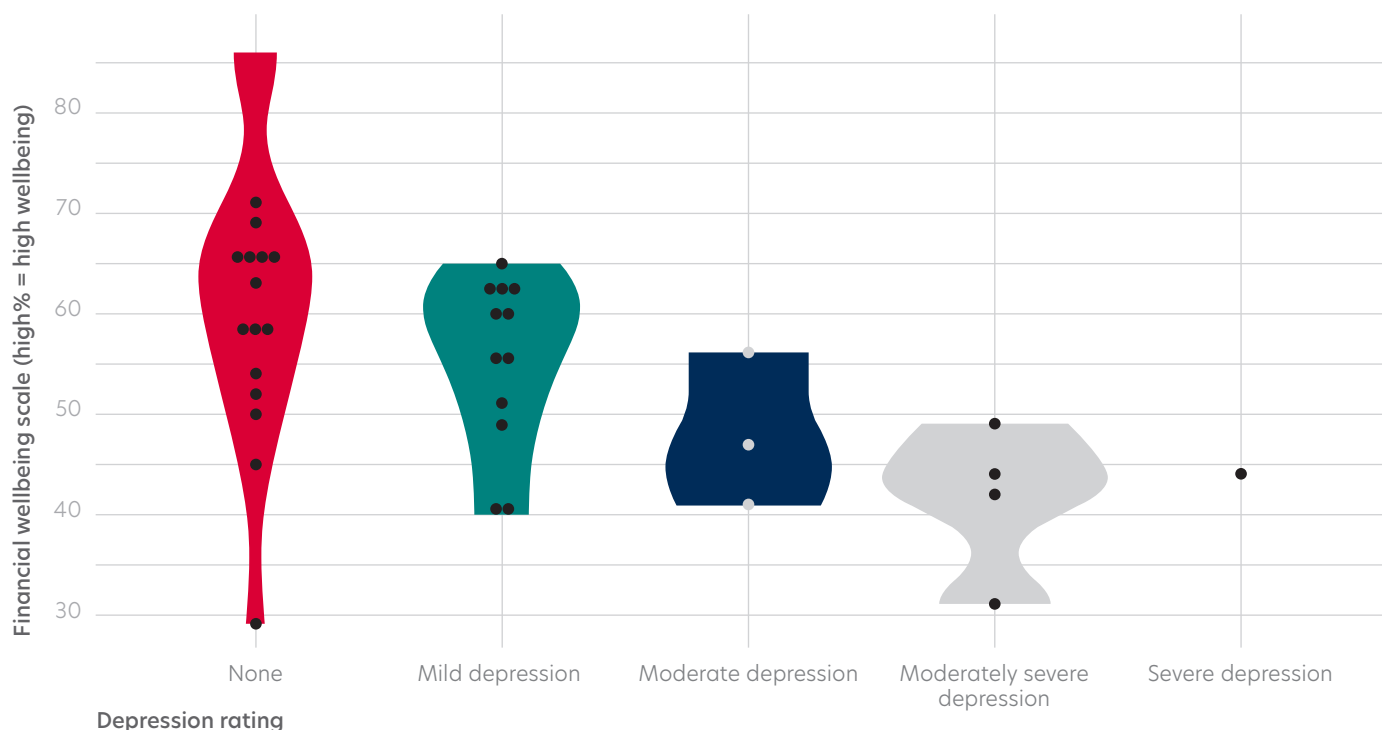
Figure 21 Dot violin plot of depression rating and financial wellbeing scale scores
Source: van Someren 2022 study

	PHQ9	FWS
Mean	6.5	56.52631579
Standard error	0.938924357	2.181239303
Median	6	57
Mode	1	63
Standard deviation	5.787918451	13.4460621
Sample variance	33.5	180.7965861
Kurtosis	1.645570683	0.327981838
Skewness	1.241661308	0.306433599
Range	25	57
Minimum	0	29
Maximum	25	86
Sum	247	2148
Count	38	38
Confidence level (95.0%)	1.902441455	4.419610636

Table 3 Descriptive statistics for PHQ9 and FWS
Source: van Someren 2022 study

7.7 Income and depression

The relationship between household income and depression is shown in Table 4, where depression has been split into two categories. The moderate-to-severe symptoms category is spread across the £20,001 to £70,001 and above household income bands. This demonstrates even at this scale of study, that not all cases of depression are related to financial household income and there are many other factors affecting a person's mental health.

Household income	Moderate to severe symptoms	No or mild symptoms
£10,001 - £20,000		2
£20,001 - £30,000	3	3
£30,001 - £40,000		9
£40,001 - £50,000	1	3
£50,001 - £60,000	2	2
£60,001 - £70,000		5
£70,001 and above	2	6

Table 4 Income and depression
Source: van Someren 2022 study

7.8 Food security

To understand food security measures, five questions relating to food security were used from the Economic Research Service US Department of Agriculture (2022). These categorise food insecurity as someone indicating that it was often or sometimes true that they have experienced food insecurity by responding affimitively to at least two of these measures:

1. The food that I bought just didn't last, and I didn't have money to get more.
2. I couldn't afford to eat balanced meals in the last 12 months.
3. In the last 12 months, since today, did you/you or other adults in your household ever cut the size of your meals or skip meals because there wasn't enough money for food?
4. In the last 12 months, did you ever eat less than you felt you should because there wasn't enough money for food?
5. In the last 12 months, were you ever hungry but didn't eat because there wasn't enough money for food?

The results in Figure 22 show that a total count of 5 participants had experienced food insecurity in the last 12 months across the 5 questions posed. The food insecurity category is plotted with income to show the relationship between household income and food insecurity. The data revealed that participants with a household income salary in the range £20,001-40,000 were the most likely to experience food insecurity. Food insecurity may contribute to and be an important factor in determining if someone is in workplace poverty. Households below average income (HBAI) is a proxy measure of workplace poverty and is calculated using the net income, adjusting this using equivalisation to reach an individual as the unit of analysis, after this has been completed, housing costs are deducted (Department for Work & Pensions, 2018). As no data was collected relating to household family and dependants in the survey, this could present an interesting research area for future, more in-depth studies of workplace poverty within the UK construction sector.
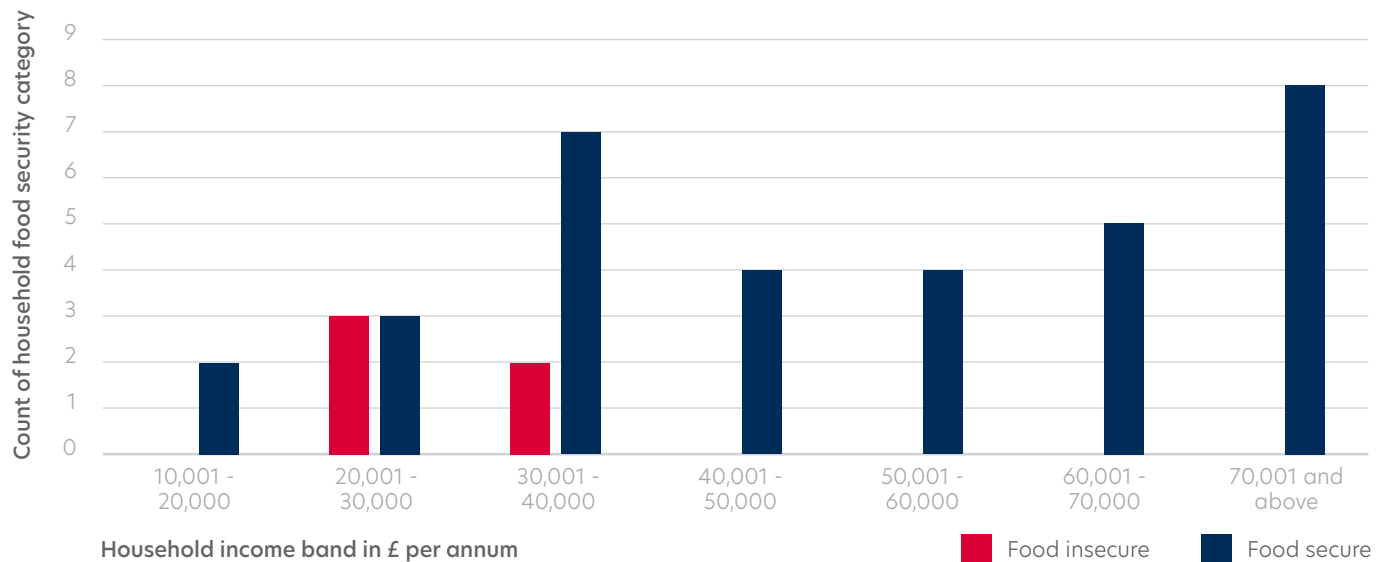
Figure 22 Food insecurity and income
Source: van Someren 2022 study

When food insecurity and depression were explored together, it was surprising to find that those categorised as food insecure were spread evenly across the self-reported depression categories. As a reminder, the data for this study was collected in March-May 2022, post-Covid-19 lockdowns in the UK and prior to the full impact of the current economic crisis in the summer of 2022. Prior to the COVID-19 pandemic, relevant data primarily existed within the domain of charitable organisations who operate food banks. Since 2019-2020, for the first time, the UK Government has measured food insecurity through the Family Resources Survey. As a result, comparable datasets gathered prior to the pandemic do not exist. As there is a strong interrelationship between food insecurity and gender (Dempsey, 2020), the final analysis of this study investigated whether this interrelationship was also prevalent in the UK construction sector. Figure 23 shows a greater count of women experiencing food insecurity, all respondents to the survey were in employment and all of those in food insecurity were in paid employment (not self-employed). This finding supports the interrelationship found by Dempsey (2020).

The results of each theme were explored systematically and revealed a higher rate of moderate to severe depression in men in UK construction. To further understand the relationship between all these factors, a multiple linear regression model was built to inform the summary results.
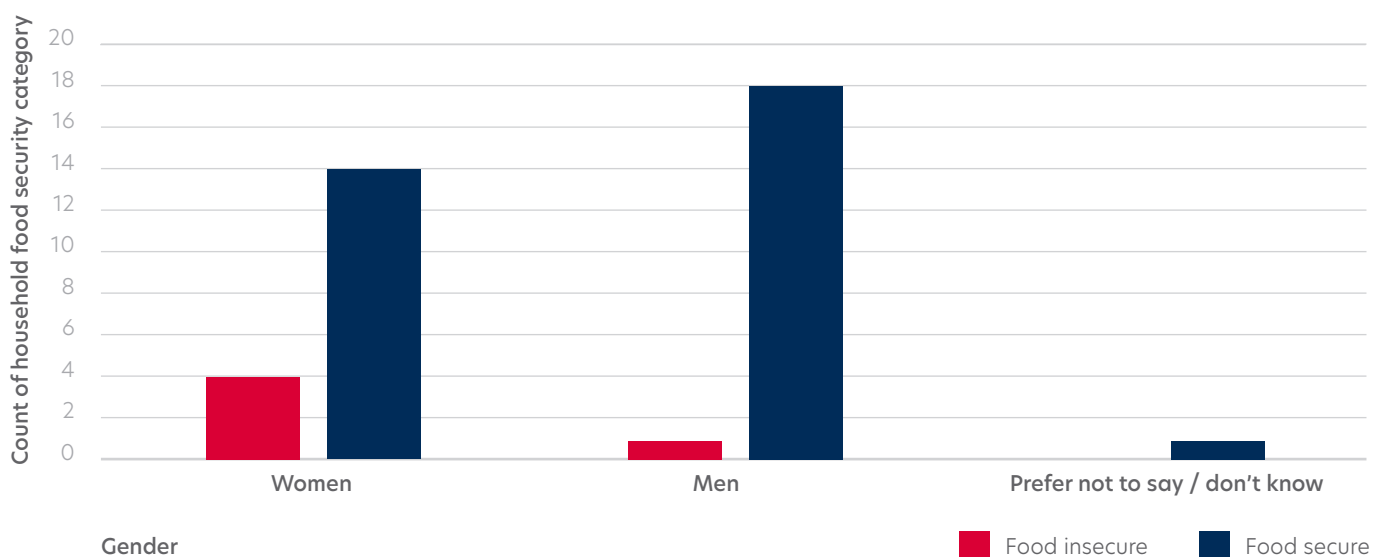

Figure 23 Food insecurity and gender
Source: van Someren 2022 study

7.9   Multiple linear regression model

The data was sorted and converted into numerical values – for example, where an answer to a question was a categorical range, such as Working Hours per week, it was coded to differentiate each possible outcome. The multiple linear regression model was uploaded to R, an open-source data analysis tool.

7.10 Hypothesis

The null hypothesis is H0: There is no relationship between the independent variables (financial wellbeing, qualitative job insecurity measure, working hours per week, total number of workplace locations or income) and a person's self-reported depression rating.

The alternative hypothesis is H1: There is a relationship between the independent variables and a person's self-reported depression rating.

The results of the multiple linear regression model are shown in Table 5.

Coefficients	Estimate	Std. Error	t value	Pr($>$t|)	
(Intercept)	14.09287	4.54306	3.102	0.004467	**
FWS	-0.14122	0.05717	-2.47	0.020105	*
Whpweek	0.1248	0.08554	1.459	0.156088	
Number.of.workplace.locations	-1.51295	0.83607	-1.81	0.081504	.
income20,001 - 30,000	5.05038	3.20459	1.576	0.126676	
income30,001 - 40,000	2.56916	2.99097	0.859	0.397918	
income40,001 - 50,000	3.95001	3.36113	1.175	0.250174	
income50,001 - 60,000	6.6044	3.41585	1.933	0.063729	.
income60,001 - 70,000	-0.39461	3.43783	-0.115	0.909466	
income70,001 and above	4.38989	3.07094	1.429	0.164331	
QJIM_n	-5.63123	1.40203	-4.016	0.000424	***

Signif. codes: 0 '*' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1**

Residual standard error: 3.77 on 27 degrees of freedom
Multiple R-squared: 0.6904, Adjusted R-squared: 0.5758
F-statistic: 6.021 on 10 and 27 DF, p-value: 9.311e-05

Table 5 Multiple linear regression model
Source: van Someren 2022 study

The fitted multiple linear regression model is:

PHQ9 score = 14.09 – 0.14 *(Financial wellbeing) + 0.12 *(Working hours per week) – 1.51 *(Total number of workplace locations) +/- *(Income) – 5.63 *(Job insecurity)

As the model was run with all independent variables predicting the response variable, it is the combined effect of all of these variables that needs to remain within the model; hence no variables should be removed. For p-values, the significance codes show statistically significant results where p is lower than 0.05; these results are denoted with '*' and especially significant results are shown with '**' and '***' codes.

7.11　Key statistical findings

Multiple R-squared: 0.6904
Adjusted R-squared: 0.5758
F-statistic: 6.021 on 10 and 27 DF,
p-value: 0.00009311

Since the p-value is less than 0.05 the null hypothesis can be rejected.

Multiple linear regression was carried out to investigate the relationship between self-reported depression (PHQ9), financial wellbeing score (FWS), qualitative job insecurity measure, working hours per week, total number of workplace locations and income.

There was a significant relationship between PHQ9 and FWS ($p < 0.05$) and PHQ9 and the qualitative job insecurity measure ($p < 0.001$).

For the financial wellbeing score, there was a decrease of -0.14 for each increase in depression rating; when someone became financial unwell their depression score increased. For job insecurity, as a person becomes more insecure than -5.63 the higher their depression rating. The adjusted R^2 value was 0.575, meaning that 58% of the variation in depression rating using the self-reported PHQ9 can be explained by the model containing financial wellbeing, qualitative job insecurity measure, working hours per week, total number of workplace locations and income).

Overall, these results indicate that there is a relationship between financial wellbeing and job insecurity as predictors of self-reported depression.

8.0 Findings & recommendations

The aim of this study was to explore resilience and wellbeing in the UK construction sector, specifically looking at mental health in construction and how this is affected by financial wellbeing and job security. The study specifically targeted those in all income bands working in UK construction to explore the following themes: workplace poverty, gender, career commitment and food security. Each objective is built iteratively on the prior stage to form an empirical evidence base. A gap in the current literature was identified where the links between mental health, financial insecurity and job insecurity were not well understood in this group of UK construction workers. The level of engagement expected was to be between 50 and 100 participants; 38 anonymous survey participants took part. The survey looked in detail at topics that would potentially enhance a person's vulnerability and shame if they felt insecure about the personal and in-depth questions posed. It is likely that participants were reluctant to reveal personal and private information despite the survey being fully anonymous and data handled being handled in a way that fulfilled GDPR requirements and ethical guidance procedures.

8.1 Context

The macroeconomic global impacts of the COVID-19 pandemic, Ukraine war (International Monetary Fund, 2022) and current UK economic crisis have been included to provide context. The timings of this research mean that it was conducted between the COVID-19 UK lockdown ending and a period of accelerating financial hardship in summer 2022. The UK Consumer Prices Index is forecast to rise by 13% in Quarter 4 2022, with GDP growth slowing and the UK is projected to head into a recession during winter 2022 and for all of 2023 (Bank of England, 2022b). There is potential for a future project which extends this research to better understand trends over time relating to mental health, financial wellbeing, job insecurity and food insecurity. This study would act as a baseline measurement from which to build and develop future research on these topics.

8.2 Key findings

This research study has extracted key findings from the data, which are summarised in Figure 24

Key findings

There is a statistically significant relationship between financial wellbeing and job insecurity as predictors of self-reported depression.

58%

Only 58% of participants felt that their values were similar to those of the people they worked with.

32%   **14%**
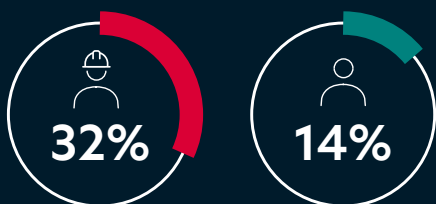
32% of male participants working in the UK construction industry self-reported moderate or severe depression compared to 14% of the general population.

Food insecurity was higher in female participants than males, all were in employment in the UK construction sector.

74%
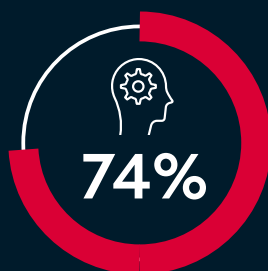
74% of participants had accessed mental health support, were considering it or had supported a friend or colleague.

Figure 24 Key findings
Source: van Someren 2022 study

8.3 Limitations

The limitations of this research include the sample size, and a wider study with greater industry participation would be preferable to test and validate the multiple linear regression model which shows the interrelationship of factors with financial insecurity and job insecurity being predictors of depression. The method followed was appropriate for a public-based open access online survey, however, this could have led to a multitude of barriers for those who could not access the survey, including those with technology deprivation. Further research could study the point at which people reach out and seek support.

8.4 Recommendations

The recommendations drawn from the findings of this research study conclude this report:

- Construction companies and the industry's education and training providers need to actively and transparently communicate the values and culture of their workplaces to retain and attract talent. They particularly need to demonstrate this to harder-to-reach groups, such as women in construction. It is theorised that this category would extend to those from ethnic minorities.

- When friends, family and work colleagues are concerned about a person's mental health (most likely a male), a potential route into opening the conversation could be around financial wellbeing and job security. This could lead to a discussion of challenges at work and both parties looking at ways they would find mental health support if they were facing difficulties.

- Among construction workers, a discussion around coping with food security, the income to buy food, and the ability to ask for help from external parties would normalise this topic in conversation.

- Addressing gender pay gaps could deal with some of the underlying issues that have been found in this study relating to women being more food insecure.

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