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Employment Outcomes of Caring in England and Wales: A Feminist Quantitative Analysis.

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Abstract

In this thesis, I investigate the complexities of the gendered care-employment relationship focusing on factors that contribute to a carer's labour market participation, such as whether they live with the cared-for person, whether they live in a multigenerational household (MGH), their gender, and their ethnicity. The research is situated in England and Wales using contemporary UK Household Longitudinal Study (UKHLS) data ranging from 2009 to 2021 and Census 2021 data. Two quantitative methods are used: Random Effects Within Between (REWB) models, for a longitudinal analysis of carer's employment the year after becoming a carer or increasing care hours; and logistic regression models with two-way interaction terms stratified by gender, to assess whether there are significant interaction effects between multigenerational living and caring intensity or ethnicity and care intensity.

I highlight the variation in employment outcomes depending on care intensity, location of care, ethnicity, multigenerational living, and gender demonstrating a need for flexible policies to support carers both in and out of employment. There are three overarching themes to the contributions provided: nuance in the care-employment relationship; further complexity in the gendered relationship between care and employment; data and methodological contributions to the field. The findings show that employment outcomes vary depending on whether an individual becomes a co-resident carer or an extra-resident carer. Additionally, employment probability varies for individuals providing different intensities of care in an MGH compared to a non-MGH. This is particularly true of women providing high-intensity care. The research shows differences by ethnicity in the care-employment relationship with Arab, Bangladeshi and Pakistani high-intensity carers having the lowest probability of employment. Throughout this thesis, I analyse how gender dissects the care-employment relationship. The effect of caring appears to be greater for women but this varies depending on type of care provided, multigenerational living, and ethnicity.

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Chapter 1: Introduction

This thesis considers the employment outcomes of carers, compared to non-carers, in England and Wales. It comprises three papers exploring different aspects of the gendered relationship between caring and employment. The aim of the research presented is to contribute to the body of literature exploring the varying association between caring and employment for different social groups. Through carrying out this research, I aim to highlight nuanced gendered employment outcomes for carers that depend on a variety of factors using contemporary data which contributes to a wider body of research aiming to influence future policy supporting carers through labour market transitions.

In Chapter 2, I explore the gender differences in becoming unemployed or economically inactive, losing income, or reducing paid working hours for male and female carers in England and Wales between 2009 and 2021. In Chapter 3, I explore the differences in probability of employment or probability of full-time employment for men and women and how this varies depending on whether the individual lives in a multigeneration household and what intensity of care they provide. In Chapter 4, I explore ethnic differences in probability of employment for male and female carers of different intensities through an intersectional lens.

In this chapter, I detail the context within which my research is situated, discussing the demographic trends and socio-political context surrounding my research. I present definitions of key concepts, outline the theories used to inform my analysis, and briefly discuss the methods used throughout the thesis. Finally, I discuss the three papers this thesis consists of, the aim of each paper and the gaps in the literature that they fill.

1.1 Defining Care and Carers

Throughout the rest of this thesis, unpaid carers and unpaid care are referred to respectively as 'carers'[1] and 'caring'. In the Census, carers are identified through responses to the question "Do you look after, or give any help or support to, anyone because they have long-term physical or mental health conditions or illnesses, or problems related to old age?" excluding anything individuals do for paid employment (ONS, 2023a). The wording of this question is chosen to use "look after" and "give any help to" to try to capture carers who do not consider what they do to be care but who identify with the term "looking after" (ONS, n.d).

As Tronto (2015) has observed, part of the difficulty in defining care stems from care being everywhere and all of us being both givers and receivers of care at some point in the life course. It is also "one of the primary functions of any society" (Claassen, 2011,

[1] Following terminology recommended for the *International Journal of Care & Caring* (Yeandle et al., 2017).

p43), “a vital sphere of human engagement” (Daly, 2021, p113), and, crucially, “part of citizenship” (Williams, 2001, p487). It is this almost ubiquitousness of care that makes it easy to ignore while also making it all the more important not to ignore it. Tronto (2015) argues that care should be placed at the centre of democracy, is experienced by everyone in one way or another, and is ultimately political (Tronto, 2015). An encompassing definition of care is “*a species activity that includes everything that we do to maintain, continue, and repair our “world” so that we can live in it as well as possible”* with ‘that world’ comprising “our bodies, ourselves, and our environment, all of which we seek to interweave in a complex, life-sustaining web” (Fisher and Tronto, 1990, p40).

The focus of this thesis is on unpaid carers but the relationship between unpaid caring and the paid care sector is heavily intertwined. For one, the underfunding of the social care sector drives the inaccessibility of paid for care services. The budget cuts which affect social care funding means that there is a high volume of unmet need with “over half the requests for local government-funded social care in England in 2022/23 result[ing] in no support, or advice or signposting” (The King’s Fund, 2024a). Additionally, anyone with assets greater than £23,250 is not entitled to government-funded care and must fund all care themselves (Department of Health and Social Care, 2025). Thus, many choose or have no choice but to provide unpaid care as an alternative. Additionally, even when available and accessible, the quality of care provided in the paid-for care sector may put people off leading them to turn to provide unpaid care as an alternative. The social care sector has a particularly high level of staff shortages with a vacancy rate of 9.9% compared to the overall UK rate of 3.4% in 2022/23 (The King’s Fund, 2024b). The level of staff shortages in care is related to reduced services, reduced ability of staff to provide adequate care, and unmet needs (Care Quality Commission, 2022). Therefore, there is a strong link between the paid-for care sector and unpaid carers with issues in the former increasing the prevalence of the latter and unpaid carers turning to paid-for care services at times for respite care for example (Age UK, n.d).

1.2 Theoretical Background

There are some key theories that contributed to my research. These are described in this section to provide context about the theoretical background that informed my research process and analysis.

1.2.1 Ethics of Care

My research process and the ethos behind my work are informed by theories of the ethics of care, particularly those of Tronto (1994; 1998). An ethics of care is a key foundation for research in the field, and was first introduced by Carol Gilligan in her 1982 text ‘In a Different Voice’ (Mahon and Robinson, 2011; Koggel and Orme, 2019). In this, Gilligan (1993, p74) draws on gendered discussions of morality; women, more so

than men[2], framing choices through language of "should" or "ought" especially regarding why they provide care or carry out domestic tasks. Gilligan's (1993, p74) work also speaks of a "logic of equality and reciprocity" and of "relationships" to the themes of interconnectedness drawn on by later care theorists. Tronto (1994, p128) built on these themes, outlining four phases of care and framing the undertaking of these phases as moral imperatives. These are "caring about", "taking care of", "care-giving", and "care-receiving". "Caring about" involves being aware of care needs and identifying when someone is in need of care. "Taking care of" refers to the handling of these care needs, preparing for them to be taken care of. It is the "organizing, marshalling resources or personnel, and paying for the care work" (Tronto, 1998, p17). "Care-giving" refers to the actual care being given and "care-receiving" refers to the care-receiver responding to the care that was provided "Whether the needs have been met or not, whether the caregiving was successful or not" (Tronto, 1998, p17). These four phases of care map on to "four ethical elements of care: attentiveness, responsibility, competence, and responsiveness" (Tronto, 1994, p128). The key element I draw on here is the idea of competence with an understanding that a lack of available resources can result in "incompetent" care. If society does not provide the resources and structures for competent care to be provided, for instance by failing to implement policies to support carers, there is a moral failing on the part of society. Policies that support carers to balance paid employment with caring responsibilities better enable competent care to be carried out. Examples of such policies would be improving the recently introduced right to unpaid care leave by implementing a right to "five days of paid Carer's Leave per year" and work with employers to improve understanding of their employees' caring responsibilities (Carers UK, 2025, p57). Such policies may promote competency in care by making sure carers are not struggling to balance paid work and caring. Additionally, Williams (2001, p487) argues that an ethics of care "asks us who is benefiting and who is not from existing care policies". This is a question that should be central to research in the field of care and to identifying support needs among carers.

An ethics of care provides a means of structuring "our thinking about the ways in which care is delivered at the local, national, and global levels" (Mahon and Robinson, 2011, p16) by placing our interdependence at the fore and rejecting "excessively privatized solutions" (Mahon and Robinson, 2011, p16). Additionally, an ethics of care provides us with a framework through which we can appropriately value the labour undertaken by carers (Robinson, 2019).

[2] Since this publication, in 2023, Carol Gilligan published 'In a Human Voice' which shares a similar discourse around why we choose to care through narratives of 'I should do this', 'I ought to do this', or 'Doing this is the right thing' but with a less gendered lens regarding women having this narrative more so than men. However, I focus on the original 'In a Different Voice' publication because it was this text which first gave the language around an ethics of care.

1.2.2 Feminist Theories

Various feminist theories inform this research due to the highly gendered nature of care (Folbre, 2008; Eriksson et al., 2013; Hamilton and Cass., 2017; Lightman and Kevins, 2021; Pietka-Nykaza and Hay., 2023). Feminists in the field of feminist socioeconomics consider the economic value of, often women's, domestic labour (Lokot and Bhatia., 2020), with some theorists promoting remuneration for this labour, giving it formal recognition and valuing it both monetarily and otherwise (Federici, 1975). More broadly the concept of undervaluation can be applied to explain why women typically receive lower wages than men. Female-dominated fields have lower wages than male-dominated fields (Perales, 2013; Grimshaw et al., 2017). Grimshaw et al (2017) argue that it is the very nature of female-dominated fields being female-dominated that explains their lower wages since work carried out by women is inherently less valued by a patriarchal society. This includes paid care work which mirrors the undervaluation and invisibilisation of unpaid caring taking place in the private sphere (Williams, 2018).

These notions tie into Marxist-feminist ideas of reproductive labour which argue that the domestic work typically carried out by women reproduces the workforce by childrearing (raising the next generation of workers) and doing the household tasks that allow the 'male-breadwinner' to participate in paid employment. Marxist-Feminists argue for the formal recognition of this labour that, indirectly, contributes to the economy (Federici, 2014; Renault, 2021). Federici (2014, p104) states that "As long as reproductive work is devalued, as long as it is considered a private matter and women's responsibility, women will always confront capital and the state with less power than men, and in conditions of extreme social and economic vulnerability". Such economic vulnerability is perpetuated by the assignment of caring and domestic labour to women, reinforcing women's "marginalization from the public sphere" (Williams, 2018, p548) through limiting women's occupational opportunities (Fast et al., 1999). Chanfreau (2023, p994) argues that although, with more women entering paid employment, there has been a shift away from the traditional, male breadwinner model in family policy, policies still prioritise a "heteronormative family ideal" and "the patriarchal nuclear family model" as it is still assumed that women do most domestic labour while a male father figure is the main financial provider. This puts women in a position of financial precarity demonstrated by high rates of financial problems among divorced or separated women in later life (Purdam and Prattley, 2021) and women being more likely to be in poverty at end of life than men (Stone and Hirsch, 2022).

Each paper in this thesis explores gender differences in the employment outcomes associated with caring. Gender differences in caring occur for a multitude of reasons. An economic theory associated with gendered employment outcomes for carers is the undervaluation of women's work. This is where the occupations women typically occupy are less renumerated than those that men typically occupy simply due to them being

associated with women. This is identified as one of the largest driving forces behind the gender pay gap (Sandberg et al., 2018). This feeds into decision making in the family when negotiating who will provide care with women having employment being seen as a less legitimate reason for not providing care than men having employment because the income lost from women leaving the labour market may often be less than from men leaving the labour market (Finch, 1989). Chanfreau (2023, p988) notes that policy is trying to come away from a male-breadwinner model by using more gender-neutral language but perpetuates the assumption that a mother will have "a (male) breadwinning partner" to support them which is exemplified with maternity pay being low. Decisions around caring are likely shaped by the economic value attributed to women's work. Thus, women may be more likely to give up their paid employment to provide care due to the undervaluation of female labour (Grimshaw et al., 2017) as well as patriarchal and heteronormative family dynamics (Chanfreau, 2023, p988). Thus, feminist theories around caring and the undervaluation of female labour provide important context to my analysis. Additionally, socialisation into patriarchal norms and values may take shape in diverse ways beyond gender. For example, research shows that cultural attitudes around gender roles in Pakistani, Bangladeshi, and Black Caribbean groups contribute to women's lower labour market participation in these groups (Wang, 2019). This suggests that gender socialisation may be patterned depending on other factors, including cultural values. Gender was the main issue explored in early research about caring and employment (for example: Allen, 1994; Arber and Ginn, 1995; Folbre, 2008). Research has since shown that other factors, such as ethnicity, are also important in this relationship and I use new developments in using intersectional analysis to explore this.

1.2.3 Intersectionality

Intersectionality is both a theory and an "analytic tool" used to investigate the intersection of various power relations in society and how diverse sociodemographic characteristics are "interrelated and mutually shap[e] one another" (Collins and Bilge, 2020, p2). Intersectionality has long-standing roots and was used in the American Civil Rights Movement discourse (Collins and Bilge, 2020); it is often cited as have being coined by Kimberlé Crenshaw in the late 1980s (Collins and Bilge, 2020) with a particular focus on the intersection between sex and ethnicity (Cho et al., 2013). Its use has since expanded to incorporate other variables including disability (Berghs and Dyson, 2022). In Chapter 4, I examine the more traditional intersection of sex and ethnicity with the additional intersection of caring. Most intersectional research is motivated by a desire to transform society (Rice et al., 2019) so that aim is carried forward in this research which aims to inform policy and encourage social change. Intersectionality is an appropriate tool for care research because of its concern with power, particularly the four types identified by Collins and Bilge (2020): structural, cultural, disciplinary, and interpersonal. Care is inherently "infused with power" (Tronto, 2015, p9). Using a theory concerned with power dynamics and how their

interrelatedness shapes experience is appropriate to research something that is shaped by and transmits power relations.

The field of care research, including in England and Wales, lacks intersectional studies that explore gender, ethnicity and caring and their joint relationship with employment. To inform my use of intersectionality in this research, I draw on literature exploring ethnicity and caring as well as the more extensive literature around gender and caring. For gender, research from a variety of countries including the UK shows that women spend more time on caring than men (Folbre, 2008; Himmelweit and Land, 2011; Duffy et al., 2013; Ferrant et al., 2014). Female higher intensity carers have an increased risk of labour market exit compared to male higher intensity carers (Gomez-Leon et al., 2019). Women's earlier labour market exit than men, due to caring, is associated with poverty in older age due to loss of pension entitlements (Carers UK, 2019). For ethnicity, studies show that some minority ethnic groups in London struggle to access formal care services (Ahmed and Rees Jones, 2008) and Black/ Black British and Asian/ Asian British people over 65 years of age in England are more likely than White people to need support with Activities of Daily Living (ADLs) (Brimblecombe and Burchardt, 2021). Research shows that more hours of care are provided among people from Asian backgrounds than people from White backgrounds in England (Brimblecombe and Burchardt, 2021) but White groups have the highest proportions of carers in England and Wales (ONS, 2023b). Research examining the interaction between care and socio-demographic characteristics tells us that Black carers have the highest odds of not being in employment compared to other groups and female carers have the lowest earnings compared to male carers (Brimblecombe and Farias, 2022). A scoping review of care literature shows that very few studies investigate the combined relationship of multiple socio-demographic characteristics for carers, instead treating these characteristics singularly (Hengelaar et al., 2023). I am specifically interested in the intersectionalities between ethnicity, gender and care in my research. I build on Brimblecombe and Farias' (2022) research and fill the gap identified by Hengelaar et al's (2023) scoping review by adopting an intersectional lens and exploring what the employment probability is for women of different minority ethnic groups. Intersectionality has informed much of the background to this thesis and is the analytical foundation for Chapter 4.

1.2.4 Summary of Theoretical Background

The three key theoretical influences to this thesis are: feminism, intersectionality, and the ethics of care. The thesis is particularly shaped by feminism methodologically as shown by my decision to separate the samples into men and women for each paper to investigate gender differences. Intersectionality particularly influenced Paper 3 regarding the inclusion of interaction terms to explore the intersection between the sociodemographic characteristics of gender, ethnicity, and caring. The ethics of care

has less tangible implications for my research but, without the lens of this theory, the research presented in this thesis would look very different. For example, an ethics of care promotes the facilitation of adequate resources that allow for people to better care for one another and notes that good care cannot take place without such resources. My stance throughout the thesis aligns with this and understands that adequate resourcing comes at cost. A more neoliberal underpinning to the thesis perhaps would come at the topic from an angle of financial savings to the economy.

1.3 Demographic Context

The Census in 2021 identified 5 million people in England and Wales as providing unpaid care. Of these carers, 36% were providing up to 9 hours of care per week and 30% were providing 50 or more hours of care per week (ONS, 2023a). Although it reported an overall fall in the number of unpaid carers since 2011, this masked notable variation for different groups around this change. The proportion of unpaid carers providing medium- or high-intensity care increased, while the proportion providing low-intensity care fell (ONS, 2023a). The care provided by these unpaid carers has been valued at an estimated £162 billion, "roughly equivalent to the budget for NHS health service spending" (Petrillo and Bennett, 2021, p5).

Factors contributing to these developments include the ageing population and low fertility rates. Between 2011 and 2021 the proportion of people aged over 65 rose by 2.2%, part of an ongoing population ageing trend in England and Wales (ONS, 2023c). The Total Fertility Rate (TFR) in England and Wales fell slightly between 2023 and 2024 (ONS, 2025). Although a small decrease, this is part of a long-term trend and the 2024 TFR is the "lowest value on record for the 3rd year in a row" (ONS, 2025). An ageing population is predicted to increase demand for care services (Townsend, 2016). This is a potential issue since demand for these services is already struggling to be met (Dunn et al., 2023). Brimblecombe et al (2018) predict a necessary rise in the number of carers of older people of 27% to meet demand in line with changes in demographic pressures.

1.4 Socio-Political Context

The data explored in this thesis is collected during a period of political austerity in the UK. 'Austerity' refers to measures implemented by the Conservative-Liberal Democrat Coalition government between 2010 and 2015 following the 2008 financial crisis (Hernandez, 2021). Options for reducing the deficit in the wake of the financial crisis included increasing taxation and enforcing budget cuts, and the UK, like much of Europe, opted for the latter (Stuckler et al., 2017; Hernandez, 2021) with major implications for the welfare state, including the adult social care sector (Busby, 2014; Glendinning, 2017; Taylor et al., 2025). The austerity measures were imposed alongside new 'decentralisation' policies which meant local authorities have more responsibility for and autonomy over their funding streams. Beyond central government grants, local

authorities gain income through "Council Tax, based on property values, payable by local residents; rents on council properties; and charges and fees (for services provided)" which they have autonomy over (Yeandle, 2016, p219). Though the increased autonomy can be considered advantageous, the increased responsibility for local authorities to find funding and to "develop their local economies" has negatively impacted the social care sector (Hernandez, 2021, p521). This is particularly the case in deprived areas because councils in these areas cannot feasibly rely on raising council taxes to better fund adult social care (Hernandez, 2021). As a result, the private supply of social care has increased to fill the gap left by underfunded public sector services (Hernandez, 2021). Power at al. (2022) use the term 'shadow care infrastructures' in describing how individuals have to navigate an ever-dwindling welfare state to ensure their care needs are met. The backdrop to this thesis is thus a situation in which individuals have to piece together services and means of support, not only to receive care but also to be aided in providing care.

The research presented in Chapters 3 and 4 of this thesis uses data from Census 2021 which was collected in the aftermath of the COVID-19 pandemic. The pandemic had important implications for the social care sector and for carers. In November 2020, the charity Carers UK found that 81% of carers in its sample were providing more care than they had provided prior to the lockdown that began in March 2020; 78% of carers in their sample reported a rise in the needs of those they cared for (Carers UK, 2020). This context is important as the Census produces cross-sectional data giving a picture of social phenomena at a specific point in time. Thus, the results of the analysis using the data cannot give insight into trends over time but are true to the number of carers during the pandemic, of whom there were more than pre-pandemic.

1.4.1 Support Available to Carers

Public policies in England and Wales provide a minority of carers with financial support and local social services such as Carer's Allowance, Carer's Assessments to identify eligible support needs, and support with returning to work via "the official employment agency in England" (Yeandle et al., 2013, p38). The formal support policies available to carers are not always preferable to support provided by voluntary organisations, so sometimes carers need to navigate formal and informal support services to get the support they need. For example, specialist policy supporting carers' return to work was provided by Jobcentre Plus in the early 2000s but many carers felt this support was insufficient for their needs with support provided by voluntary organisations being more positively received (Read, 2018). Employed carers are entitled to modest workplace rights such as the right to request flexible working and the right to unpaid care leave. The right to request flexible working and the right to unpaid care leave are important policies to ensure that carers also in paid employment are better able to balance their

responsibilities. Improving unpaid care leave to make it paid care leave would better enable carers to have support without facing a financial penalty.

Carer's Allowance is the main form of financial support available to people providing care. It is conditional on the carer providing at least 35 hours per week of care to someone who receives certain benefits such as Disability Living Allowance. This is paid at £83.30 per week in Oct 2025 (Gov UK., n.d.) but was £67.25 per week at the time of Census 2021 (Sanderson, 2021). A carer can only claim Carer's Allowance for care provided to one person, and if several people care for the same person, only one can receive Carer's Allowance (Sanderson, 2021). In 2024, the amount received from Carer's Allowance for someone providing the same hours of care per week as a full-time job equates to just £2.34 per hour (Wyadlowska, et al., 2024, p11). Carer's Allowance can be combined with paid employment but with an earnings cap of £132 per week after tax (Hamblin et al., 2024). In 2025, roughly 1.4 million people were entitled to Carer's Allowance. Of this, roughly 960,000 claimants are female whilst roughly 425,000 are male (Department for Work and Pensions, 2025a). Of those entitled, approximately 1 million cases are in payment (roughly 270,000 and 717,000 cases in payment for men and women respectively) (Department for Work and Pensions, 2025b). Increasing Carer's Allowance to make it more of a compensation for lost earnings would allow working carers who cannot balance paid employment with caring or who want to focus on their caring responsibilities to exit the labour market without incurring as much of a financial loss as they do now.

In March 2021 the legislated employment supports in place for carers in England and Wales were still rather modest. Employees were legally entitled to take time off work for emergencies regarding a dependant (under the Employment Relations Act 1999, Hamblin et al., 2024); protected (under the Equality Act 2010) from workplace discrimination due to their caring responsibilities; and had the right to request flexible working (under the Work and Families Act 2006). Subsequently employees have acquired an entitlement to 5 days of unpaid carer leave (Carers Leave Act 2023). Campaigners continue to call for further changes, including an entitlement to 5 days paid carer's leave per annum (Carers UK, 2025) and support to re-enter the labour market, such as in applying for job and interview advice (Fenney et al., 2023). Identifying which carers are most in need of employment support is a key aim of this thesis.

Respite care is a valued form of support that enables carers to take a break from high-intensity caring responsibilities while ensuring the person cared for is well looked after (Southby, 2017; Age UK, 2024). However, a recent study found 68% of carers were unable to access respite care when needed (Carers Trust, 2023a). Other research shows that struggling to find information about eligibility and access and navigating the bureaucratic side of respite care are barriers to this type of support (Southby, 2017).

Having respite care is important to minimise carer stress and burn out which may allow them to stay in employment should they want to.

Much research has highlighted the need for employment support for carers and the consistent improvement of policies to facilitate this (Yeandle et al., 2013; Yeandle and Buckner, 2017; Hamblin et al., 2024; Carers UK 2025). Austin and Heyes (2020) found that carers are better able to stay in employment when the employer is aware of their caring role and allows for flexible arrangements to accommodate this. Further support for carers needs to ensure that employers understand the diverse needs of people providing care (Fenney et al., 2023; Carers UK, 2025). Carers UK launched an organisation called Employers for Carers (EfC) in 2009 to offer employers advice and support to help them support their employees who provide care (Hamblin et al., 2024). Much research has highlighted the need for support for carers in employment and much has been done through trade unions and carers' organisations to pressure governments to implement policy (Hamblin et al., 2024).

My research contributes to this existing field by further highlighting groups of carers in need of support to either stay in the labour market or facilitate labour market exit. Many female carers in Northern Ireland speak of how employment is an important part of their identity and gives them a sense of purpose which they do not want to give up to provide care. However, these women often feel as though they have had to give up work for care (Carers NI, 2024). It is for these women that workplace support need to be implemented and improved like transitioning from unpaid care leave to paid care leave. However, there are also many carers who report burnout from trying to balance work with caring and carers who need to be supported financially to enable labour market exit (Age UK, 2016; Carers UK, 2025). My research explores care and employment from an angle whereby carers should be able to stay in the labour market, and be supported in doing so, if that is what they want to do and feel a sense of loss at labour market exit. However, crucially, if paid employment is not something they can or want to maintain on top of caring responsibilities, better financial support, like an improved Carer's Allowance, should be made available. Such support is necessary to help carers make the decision to stay in employment, leave employment, change work or reduce their paid working hours. This support needs to be equally available to all carers from a variety of backgrounds. For example, a higher proportion of carers from certain minority ethnic groups and from lower socioeconomic backgrounds did not know what support was available to them in a study carried out by Carers Trust (2023b).

1.5 Themes from the Literature

Fast et al (1999), using data from Canada, identified financial consequences of three types experienced by carers; employment-related costs, out-of-pocket costs, and labour costs. Of these, employment-related costs and labour costs are most applicable to this thesis. Employment-related costs refer to the costs carers incur when

balancing paid work with caring responsibilities (Fast et al., 1999) such as leaving employment to provide care. Labour costs refer to the idea of 'time is money' and that the time carers spend caring has an economic value (Fast et al., 1999) such as paying someone to provide replacement care (money has been spent but time has been gained). Petrillo and Bennett (2021) use this concept in valuing the economic contribution of carers' labour at £162 billion per year.

Spann et al (2020) carried out a scoping review of the literature on caring and employment which demonstrates the varied ways care provision can impact labour market participation. Caring responsibilities can lead to "absenteeism" and "presenteeism" which is where an individual may have many absences from work to provide care or attends work but is not performing as well at work as they might because of the stress and distraction of caring (Spann et al., 2020, p705). Another type of employment-related cost is opportunity costs, when a carer cannot participate in extra training or accept promotions due to difficulties balancing work and care (Spann et al., 2020). The multifaceted employment related costs are somewhat disentangled in my research, shown in Chapter 2, which explores multiple types of employment cost: becoming unemployed/ economically inactive, reducing paid working hours, and reducing net labour income.

It is important to research these employment-related costs because of the subsequent financial toll they can take on the person providing care. The poverty rate for carers in the UK is 9% higher than that of non-carers (Wyadlowska, et al., 2024). Caring can also lead to a precarious financial situation through erosion of savings, which get used to substitute income, and limited opportunity for carers to contribute to a pension (Wyadlowska, et al., 2024). The financial implications associated with caring are not limited to the duration of the caring period. Research shows that the poor financial situation of some carers persists after caring stops (Carers UK, 2025).

1.6 Research Aims

In the thesis, I present in-depth quantitative analysis of, specifically, employment participation of carers with different characteristics. By using contemporary data, and relevant quantitative techniques, I aim to provide an up-to-date analysis of carers' 'employment behaviours' which I use to describe participation in paid employment, including paid working hours, in England and Wales with the following specific aims for each paper in the thesis.

The aim in Chapter 2 is to identify what happens to an individual's employment after having become a co- or extra-resident carer or increased their care hours in the previous year. This research builds on existing research in the field demonstrating that duration of caring is related to employment. For example, King and Pickard (2013) found that the employment rates of carers providing 10 or more hours of care per week were

lower after two years of care than the employment rates of non-carers. Additionally, of 151 respondents, Pickard et al (2018) found that 15 had exited the labour market 2 years later due to caring. In their analysis, those caring for 20 or more hours a week were more likely to leave employment than those caring for fewer hours (Pickard et al., 2018). I build on this research by disaggregating by co-resident care and extra-resident care, as well as by looking at multiple employment outcomes: becoming unemployed/ economically inactive; reducing paid weekly working hours; undergoing a loss of net labour income. Additionally, this research is a novel contribution to the field as it uses contemporary data from England and Wales and examines both within and between effects through the use of Random Effects Within Between modelling (Bell and Jones, 2015). I found no other research into the longitudinal effects of care on employment that used this type of modelling. This approach is advantageous because it allows for the separate examination of within from between effects (defined in more detail in section 1.7.2) whereas between effects are removed in more frequently used fixed-effect models. By also being able to examine the between-effects, insight is provided into the relationship between multiple episodes of caring and employment.

The aim in Chapter 3 is to explore the employment behaviours of carers living in an increasingly common household type: multigeneration households (MGHs). There is research detailing the motivations for moving into multigeneration households (Burgess and Muir, 2020; Maye-Banbury and McNally, 2020). It is rare for the main motivation for moving into an MGH to be caring, but caring in some form is often provided in this household type (Simpson, 2015; Burgess and Muir, 2020; Ansari-Thomas et al., 2024). I found no research in England and Wales that looks at the employment of carers living in MGHs. I fill this gap by using logistic regression models with two-way interaction terms between care and multigenerational living, stratified by gender to estimate the probability of carers being in employment or full-time employment in this household type compared to non-multigeneration households. By using data from Census 2021 to which I had full access, I use a volume of data that is not widely available to be used by researchers to contribute to the field of care.

In Chapter 4, I apply theories of intersectionality to researching the employment behaviours of carers. I use logistic regression models with two-way interaction terms between care and ethnicity, stratified by gender on data from Census 2021 to estimate the probability of employment for male and female carers of different ethnicities providing different intensities of care. This paper is a novel contribution to the field, with additional value from the recency of the data used and my access to the full Census. Although other care research has explored ethnicity, gender, and intersectionality, very few studies have examined gender and ethnicity together with regard to a carer's employment. Additionally, access to the full Census gave me a large enough sample to explore minority ethnic groups of small population size, without aggregating them to the commonly used 5-category variable. This is valuable because I could include minority

ethnic groups that usually get amalgamated. For example, the typical five category ethnicity grouping amalgamates Indian, Pakistani, Bangladeshi, Chinese, and other Asian into a combined Asian category; in this research, I was able to keep these categories separate allowing for more detailed research into minority ethnic differences.

I also aim to contribute to the research on caring and employment by identifying how employment probability varies depending on sex, ethnicity, household structure, and caring intensity. This is useful to better identify groups who may need support to maintain employment or support to facilitate leaving the labour market for care provision. Yeandle et al (2007) found that over half of carers in a sample of 701 economically inactive carers would prefer to be in paid employment but felt there was no support available to facilitate working and caring. Additionally, research on female carers in Northern Ireland found that many who had left employment to provide care did not want to have left their paid work. These women would have benefited from more support allowing them to stay in the labour market (Carers NI, 2024). Additionally, Wyadlowska et al (2024) indicate that poverty rates among carers, indicative of the financial costs they face, vary depending on characteristics that include hours of care provided, sex, and ethnicity. I add to this by using data with a larger sample size throughout my thesis for robust statistical analysis indicating employment behaviours of unpaid carers across various subgroups.

1.7 Data, Variables, and Methods

In the thesis, I work with two datasets: Understanding Society (2009-2021) and Census 2021. Understanding Society is a longitudinal panel study collecting data annually via interviews of a sample of the population with a resulting sample of roughly 40,000 households across the UK (Understanding Society, n.d.a). This is a commonly used dataset in the field of care for the exploration of the relationship between caring and employment (for example Carr et al., 2018; Brimblecombe et al., 2020; Brimblecombe and Farias., 2022). It is particularly appropriate for my research in Chapter 2 because I aimed to explore the effects of caring in one year on employment in the following year. Having a longitudinal data source with information on care patterns and multiple employment variables best facilitated this. Since the Census in 2021 only included England and Wales, I used England and Wales from the Understanding Society date for cohesiveness throughout the thesis.

The Census is a cross-sectional data source providing data for the entire population of England and Wales at 10-year time points. The partner organisation for my PhD is the Office for National Statistics (ONS) which provided me with access to the whole Census for my work. Although in Chapter 3 I took a 10% random sample (which resulted in the same sample accredited researchers can access), I gained experience in manipulating a large dataset by doing data pre-processing on the full Census before

taking the 10% sample. Other researchers in the field of care (for example Young et al., 2006; Ramsay et al., 2013; Evandrou et al., 2015; Robards et al., 2015) often use the ONS Longitudinal Study, however this only gives access to a 1% sample of the Census (ONS, n.d.a). For Chapter 4, having access to the entire Census (unlike accredited researchers or those using the ONS Longitudinal study) was particularly advantageous because I was able to under-sample the White population and over-sample minority ethnic groups in order to achieve adequate sample sizes for investigating smaller social groups (see Chapter 4 for details on sampling).

1.7.1 Variables

The caring variables used in Chapter 2 are based on three questions in the Understanding Society survey. People who became a co-resident carer in the last year are defined by those who answered 'Yes' to the following question (Understanding Society, n.d.b):

> *"Is there anyone living with you who is sick, disabled or elderly whom you look after or give special help to (for example, a sick, disabled or elderly relative, husband, wife or friend etc)?"*

People who became an extra-resident carer in the last year are defined by those who answered 'Yes' to this question (Understanding Society, n.d.b):

> *"Do you provide some regular service or help for any sick, disabled or elderly person not living with you?"*

People who increased care hours in the last year are included based on their answer to the following question (Understanding Society, n.d.b):

> *Now thinking about everyone who you look after or provide help for, both those living with you and not living with you - in total, how many hours do you spend each week looking after or helping them?*

These questions all exclude any care provided as part of paid employment. An issue with the increased care hours question is that while I separate out co-resident caring from extra-resident caring in my becoming a carer variables, I am unable to separate out these distinct types of caring for the increasing care hours variable.

Similarly, for Chapters 3 and 4, carers are identified in the Census as those who answered 'Yes' with a specification of hours to the following question (ONS, 2023a):

> *"Do you look after, or give any help or support to, anyone because they have long-term physical or mental health conditions or illnesses, or problems related to old age?"*

With a choice of the following specifications[3]:

- *Yes, 9 hours a week or less*
- *Yes, 10 to 19 hours a week*
- *Yes, 20 to 34 hours a week*
- *Yes, 35 to 49 hours a week*
- *Yes, 50 or more hours a week*

Survey design has to deal with carer identification because many people do not see the care they provide to a loved one as "caring". The 2021 question for the Census underwent many iterations based on feedback from the public to ensure that the question was well-understood. This led to the inclusion of "anyone" instead of a list of people who may receive support and the inclusion of a specific statement to instruct "outside of paid employment" to help the public better understand the question, aiding in a more accurate count of people who provide care in England and Wales (ONS, n.d.b).

All three papers in the thesis explore labour market participation (distinguishing between employed or unemployed/economically inactive). The key interest here is assessing an individual's probability of being employed. However, it is important to note when doing this that unemployment is different from economic inactivity. Unemployed individuals are those who are not in work but are available and looking for work. Comparatively, economically inactive people are those who are out of work but not available or looking for work for a variety of reasons such as being retired or looking after home or family (Freeman, 2019). As such, many carers will become "economically inactive" rather than unemployed, because their caring responsibilities make them unavailable to work.

Chapters 2 and 3 also explore paid working hours. In Chapter 2, I look at the relationship between a change in caring and a reduction in paid working hours whilst, in Chapter 3, I look at the probability of an employed carer being in full-time work. The advantages of examining paid working hours as well as unemployment/ economic activity are that both are demonstrated to be associated with caring responsibilities. For example, Bolin et al (2008) found that caring is associated with a reduction in paid working hours and Carr et al (2018) found that caring is associated with labour market exit. Both employment consequences are important to show the full picture of caring and its relationship with employment.

[3] This has changed since Census 2011 when the hours specifications amalgamated 1-19 hours of care per week (ONS, 2023a).

Net labour income is another employment outcome variable, but this is included only in Chapter 2 because it was only available in Understanding Society data, not Census 2021 data. This variable allows us to assess the likelihood of an individual reducing their take-home pay the year after a change in caring. Using net labour income instead of net income including benefits allows us to see changes in earnings solely associated with employment. Income information including benefits may be interesting regarding increasing care hours perhaps being associated with becoming eligible for Carer's Allowance but this was not relevant to answering my research questions for Chapter 2 and may have required too many assumptions to have been made during analysis.

1.7.2 Methods

In Chapter 2, I employed Random Effects Within Between (REWB) models (Bell and Jones, 2015) to data from Understanding Society data from the years 2009-2010 to 2020-2021. The use of REWB models in this research allowed for an interesting comparison of the within effects of becoming an unpaid carer/ increasing care hours and the between effects of becoming an unpaid carer/ increasing care hours. Within effects refer to within-individual differences. That is, how much employment changes for individuals in the data when individuals undergo a change in caring. Between effects, comparatively, refer to the average of groups in the data. That is, how being in the group of people who experience more care changes in the sample period is related to being in the group of people who experience more employment changes over the sample period. To examine gender differences, I ran the models separately for men and women to compare their odds of undergoing employment consequences. Quantitative research exploring gender differences in the relationship between care and employment longitudinally has been carried out (Bittman et al., 2007; King and Pickard, 2013; Pickard et al., 2018), but not using 12-years of data from England and Wales. Nor does any other research in this field use REWB models. By separating out within and between effects, I can examine not only the effect of a change in caring status or intensity but also the relationship between care and employment for people who experience more episodes of becoming a carer over the 12-year period.

In Chapters 3 and 4, I use logistic regression models with interaction effects. This allows me to examine what the joint, multiplicative effects of two characteristics are on an outcome variable, rather than the effect of each attribute singularly. Examples of research looking at the effect of each attribute singularly include Brimblecombe and Farias (2022), who found that female carers undergo greater income reductions than other carers and that Black carers have the greatest odds of being unemployed compared to other carers. Stratifying these models by a subgroup, such as gender, mimics a three-way interaction by assessing differences in the two-way interaction term by the subgroup which builds on Brimblecombe and Farias (2022) by exploring the effect of being a Black, female carer for example rather than separating these

attributes. Mimicking a three-way interaction, instead of including a three-way interaction term in a model, produces more interpretable results (Guan, 2021). This method is an appropriate way of answering my research questions in Chapters 3 and 4 because they are both concerned with whether there is a significant interaction between specific sociodemographic variables, caring and employment and whether this interactional effect varies across gender. In Chapter 3, I identify that there is no research on the probability of employment for carers who live in MGHs let alone how this varies by caring intensity and gender. Using the appropriate method of logistic regression with an interaction term stratified by gender on a representative 10% sample of Census 2021 makes a novel contribution to the field. In Chapter 4, I fill a gap identified in care and employment research since there is research exploring care, gender, and ethnicity and their relationship with employment (Brimblecombe and Farias, 2022), however their research does not examine the three-way interaction between these factors. Having the advantage of being able to sample from the full Census, I had sample sizes large enough to adequately explore these factors, namely ethnicity, where sample sizes can, typically, get quite small.

1.8 Thesis Structure

The thesis comprises three papers, all on the theme of care provision and employment, brought together by the underlying examination of gender differences. In Chapter 2, I focus specifically on gendered employment outcomes; in Chapter 3, I introduce multigenerational households into the gender, caring, and employment relationship. In the Chapter 4, I home in on the theme of intersectionality by examining the interaction effects of gender, care, and ethnicity on employment. Chapter 5, concludes the thesis, bringing together themes from all three papers, consolidating my research findings and suggesting directions for future research. The thesis as a whole provides a comprehensive study exploring gender and employment among carers in England and Wales by: caring intensity; several employment outcomes; multigenerational living; and self-reported ethnicity. The structure of this thesis is a PhD by Paper format which means that there will, inherently, be some repetition across the papers.

Chapter 2: The Gendered Employment Outcomes of Care Changes in England and Wales between 2009 and 2021.

Abstract: In this research, I used quantitative methods, namely REWB models, to explore the employment-related consequences associated with providing unpaid care or increasing the intensity of existing unpaid care provision, using 12 waves of data from Understanding Society, I assessed the gender differences in the following employment-related outcomes: net annual labour income, full-time or part-time employment, and economically activity or inactivity. The use of REWB models in this research enabled an interesting comparison of the within effects of becoming an unpaid carer/ increasing weekly hours of caring and the between effects of becoming an unpaid carer/ increasing weekly hours of caring. The research found that an increase in caring the previous year is generally associated with a reduction in work, but this varies by gender, and the exact way caring and employment are measured. In general, the effects are stronger for women than for men. A key finding from this research is that becoming a co-resident carer and increasing care hours are more associated with becoming unemployed, economically inactive or reducing net labour income than becoming an extra-resident carer but the latter is more associated with reducing working hours. This points to interesting differences in employment outcomes depending on proximity to the care recipient.

2.1 Introduction

Increasingly, people with care needs due to old age or long-term illnesses or disabilities rely on unpaid care from family while fewer family members are available to provide such care (Ophir and Polos, 2022). This is due to rising life expectancy (Buxton, 2021) and lower fertility rates across the UK (United Kingdom) (Ghosh and Mohammad, 2023). These demographic trends mean that "the numbers of older people are rising faster than the numbers in the younger generation" (Pickard, 2015, p114), producing a widening imbalance between care needs, which are growing with an ageing population (The King's Fund, 2025), and services to fulfil such needs as the number of younger people available to provide services in the health and social care sector is getting smaller (Scripps and Webb, 2025). This may result in not all people needing paid care receiving it and thus needing unpaid care (Jitendra and Bokhari, 2024). The resultant increase in demand for care services and unpaid care, makes research on the nature and outcomes of care an important, relevant and growing area. Following the language preferred by the International Journal of Care and Caring (IJCC), I refer to unpaid carers as carers in this paper (Yeandle et al., 2017).

The social care sector in England and Wales is facing rising challenges. Humphries (2022, p11) describes social care as more of "a random collection of uncoordinated cogs and wheels that grind together" than a 'system'. In 2021, the Conservative Government proposed a series of changes to the social care sector under a 2021 White Paper (Department of Health and Social Care, 2021). By 2023, these changes had been minimised; notably, "a key promise of at least £500 million to be spent on workforce training, qualifications and wellbeing has been cut to £250 million" (Bottery, 2023). In July 2024, the new Labour government, led by Kier Starmer, commissioned a review of the NHS in England. This review, published in September 2024, noted the need for more support to carers and prompted the preparation of a 10-year plan for reform to health care with a focus on bolstering community care (Merritt, 2024). This plan was released in 2025 (UK Government, 2025). For at least 20 years, politicians have recognised the need for social care improvements (Humphries, 2022) but little change has occurred. Many caring responsibilities fall on family members who do not receive financial compensation for the care they provide (Age UK, 2019). Female carers featured in an Age UK (2019) report discuss how the strain of balancing caring responsibilities with paid work pushes them to breaking point with some leaving paid employment. The report is one of many that shows that the unremunerated labour, largely carried out by women, has detrimental effects on the wellbeing and labour market participation of those who provide it (for example: Bolin et al., 2008; Carr et al., 2018; Gomez-Leon et al., 2019; Lane et al., 2020). Similarly, recent research documents the negative financial outcomes associated with care (Keating et al., 2021; Pietka-Nykaza and Hay, 2023).

Despite extant research on these topics, there are still gaps in our understanding of the financial costs of care, particularly those in England and Wales. The aim of the research discussed in this paper is to establish whether an individual changes employment when they become a co-resident carer, an extra-resident carer, or increase their caring hours in the previous year. Three types of change to employment are explored: moving from employment to unemployment/ economic inactivity; reducing average weekly paid working hours; and reducing net labour income. I apply a novel statistical method, Random Effects Within Between (REWB) regression, to explore this topic.

Previous research (for example: Hietmueller, 2007; Leigh, 2010; Van Houtven et al., 2013) tends to use Fixed Effects models which are preferred in much economic research (Bell and Jones, 2015). However, conducting REWB models allows me to specifically examine within-individual effects (that is, the effect of an individual changing their care status) separately from the between-group effects (the effect of being in the group of people who are more likely to change their care status). By applying this method to recent data for England and Wales, for the years 2009-2021, I contribute new evidence to the pre-existing literature on the relationship between care provision and paid employment. The key contribution I offer is an understanding of the nuances of labour market outcomes for carers based on exploring multiple types of employment change. Additionally, because I use longitudinal data, I assess what a change in caring pattern in the previous year means for the employment of an individual in the following year. Although other research shows the labour market outcomes of caring are gendered, much of this uses older data or data from other countries; my research aims to fill this gap.

In the paper, I begin by defining the concept of care and its theoretical underpinnings. I then examine previous research exploring gender, care and various employment-related outcomes and on the relationship between care and the socio- demographic variables that I control for: ethnicity, age, region, marital status, and socioeconomic status. I outline the data and methodology I use before discussing the results of the regression models.

2.2 Defining Key Concepts and Theoretical Background

Care is a difficult concept to define, with researchers in the field acknowledging the ambiguous conceptualisation of care (Daly, 2021). Engster (2007, p23) notes that many people view parenting as the prime illustration of caring although this “maternalist” perspective is contested. The opposing argument suggests that caring between adults cannot be defined in the same way as caring by an adult of a child. Carmichael et al (2010, p182) define carers as those “who look after a relative or friend who needs support because of age, physical or learning disability or illness, including mental illness” without financial reimbursement. Like those who oppose the maternalist perspective, Carmichael et al’s (2010) definition excludes routine childcare, and this is

also the case in the Census of England and Wales which asks “Do you look after, or give any help or support to, anyone because they have long-term physical or mental health conditions or illnesses, or problems related to old age?” (ONS, 2023a). This includes parental care of children with disabilities, but does not include routine childcare.

Moreover, Fine and Davidson (2018) describe caring as labour centred around responding to an individual’s needs. Much of the literature also notes the fundamental humanness of providing care, whether paid or unpaid, describing it as “one of the primary functions of any society” (Claassen, 2011, p43), “a vital sphere of human engagement” (Daly, 2021, p113), and an “essential social phenomena (Fine and Davidson, 2018, p504). These ideas relate to Tronto’s (2017) discussion of care as an ethic, that is, an ethical obligation that people owe to one another. This discussion draws on moral and political theory to argue that care should be central, rather than peripheral, to human social and political life. Tronto (1993, p127) argues that there are four elements of care that, when ignored, present “as a form of moral evil”. These are: attentiveness, responsibility, competence and responsiveness. Thus, a society with an ethic of care is responsible for the care of others and attentive to their needs; it provides care effectively and efficiently, and, because the caregiver to care-receiver relationship is one of power, it recognises the possibility of abuse and responds to it adequately when it occurs (Tronto, 1993). A society without an ethic of care is unlikely to provide the materials and resources necessary to provide efficient and effective care. When considering care as an ethic, it should be noted that ingrained societal gender roles can disproportionately burden women with the responsibility of providing care.

Drawing on the above, in this paper, care is understood to be a societal phenomenon carried out by people in “networks of obligation” (Twigg and Atkin, 1994, p10), a phenomenon that involves a form of labour without commensurate financial compensation. Not only this, but, following Tronto’s (1993) argument for an ethic of care, a care-centred society is a moral good and a fundamentally human arrangement. Tronto argues that carers are unable to provide competent care when they are not provided with the correct conditions or resources with which to do so. Considering this theoretical framing when researching the financial costs of care is important because caring exemplifies the crossover between the public and private spheres of society (Mills, 1975) and their inherent interdependence; care being traditionally considered part of the private sphere, whereas employment is traditionally seen as part of the public sphere. An example of this crossover is found in Tronto’s (1993) argument that care quality and competence is impeded when the conditions are not right. This suggests that one way of ameliorating these conditions is by better supporting carers to balance work and care.

2.3 Literature Review

2.3.1 Economic Context

The data used in this study spans 2009-2010 to 2020-2021, the periods of austerity and the subsequent cost-of-living crisis in England and Wales. Irving (2021, p107) finds that austerity measures[4] across the UK resulted in "chronic societal harm", with many people living in poverty even when in paid employment. Moreover, since the 2008 financial crisis which preceded austerity, policies promoting work/life balance have become low priority. Research shows that employers felt less able to consider and provide solutions for employees' personal circumstances due to austerity measures (Lewis et al., 2017, p599). Currently, people in England and Wales are experiencing a cost-of-living crisis in which high rates of inflation leave many people concerned about being able to afford their rent, bills and food costs (Hill and Webber, 2022, p14-15). It is important to understand this economic context when examining employment changes because such economic instability will change the way people respond to care through employment.

2.3.2 The Gendered Nature of Unpaid Care

A well-documented body of research demonstrates gender differences in caring. In many studies, women are shown to be both more likely to provide care (for example: Petrillo et al., 2022; Eley and John, 2023) and more likely to provide a higher intensity of care (Carmichael and Ercolani, 2014). Folbre (2008) notes that women dominate the provision of care for older people. Norman and Purdam (2013) also show a far higher percentage of women providing care than men, in all age groups apart from individuals aged 75 and older. Carmichael and Ercolani's (2014) research, using the British Household Panel Study (BHPS), found that carers were more often women than men.

Women are also more likely than men to spend a higher proportion of time on caring activities (Folbre, 2008). For example, Ferrant et al (2014, p2) found that women provide between 2.5 and 4 hours more care per day than men. Similarly, research has shown that higher-intensity caring (in this case defined as over 10 hours per week) is more likely to be provided by women (Carr et al., 2018). This finding is echoed in recent research by Lightman and Kevins (2021) who found that, controlling for individual level factors, women consistently provided more care than men.

An explanation for the gendered nature of care is offered by Marxist-feminist theories, using the concept of 'reproductive labour'. Reproductive labour refers to the domestic work traditionally carried out by women that sustains labourers and "replenish[es] the future supply of labourers through childbearing and childrearing (Dickenson, 2001,

[4] Austerity measures refer to a selection of economic policy measures, namely reducing public spending on all sectors including health and education. These measures are in response to financial constraints and lack of money. In this instance, austerity is a response to the 2008 economic crash (Williams, 2019).

p207). Twigg and Atkin (1994) noted the role of feminists in revealing how social policy perpetuates the assumptions dictating the position of women in the family. Feminist research criticises the assignment of care and domestic duties to women as a means through which patriarchal society reinforces "women's financial dependency and their marginalization from the public sphere" (Williams, 2018, p548). By limiting the employment opportunities of women, care reinforces the financial dependency of women on men and their exclusion from the labour market.

A further explanation for the higher proportion of women providing care than men comes from gender socialisation theory (Oakley, 1990; Oakley, 1985). This theory argues that gender roles are taught, particularly during childhood socialisation. For example, Oakley (1990, p61) writes about the production of people via the family through the process of socialisation and argues that the family stabilises "adult personalities in the socially approved moulds of wife-mother-housewife and husband-father". A similar argument is presented by Butler (2006) who discusses the social constructivism of the 'housewife versus breadwinner' gender roles that are intergenerationally transmitted through socialisation. Succinctly, Hines (2018, p75), writes that "Gendered norms, values, roles and expectations are assigned by a particular society or culture and presented as ideal characteristics". For example, one such 'ideal characteristic' assigned to women in society is the trait of being caring and empathic. When society conceptualises women as natural-born carers, women are both constructed to be caring and socialised into caring roles, often in a greater burden of care responsibilities.

2.3.3 The Gendered Nature of Employment and Unpaid Care

The concept of reproductive labour also explains women's lesser likelihood of participating in the labour market than men. Magnusson (2010) finds women's access to higher occupational categories is reduced by the reproductive labour assigned to them. Furthermore, women often work in occupations that pay low wages because these roles typically offer flexibility that works well with motherhood, such as part-time employment (Magnusson, 2010). Others find women struggle to reach their occupational potential when returning to the labour market after a period of leave for childrearing (Harkness et al., 2019), a finding that may extend beyond childcare. Similarly Paull (2018, p6), using Labour Force Survey data, found that a greater proportion of people identified as potential "returners" to the labour market after a period of caring are women than men. Paull (2018) also showed that people returning to employment are more likely to work fewer hours and have lower earnings, and are less likely to participate in permanent work than other workers.

Numerous studies demonstrate gender inequality in labour force participation (Andrew et al., 2024; Francis-Devine et al., 2025). This consistent finding is mirrored in the literature on gendered labour market participation and unpaid care. For example,

Carmichael et al (2010, p183) found an income reduction for both male and female carers compared to non-carers, but that loss of income was greater for women than men (£0.75 per hour versus £0.32). Additionally, for both men and women, co-resident caring is associated with higher-intensity caring (Berecki-Gisolf et al., 2008) and has greater employment consequences (Pickard et al., 2016; Peytrignet et al., 2023), and may exacerbate gender differences in employment outcomes. Nevertheless, extra-resident caring also takes its toll on employment and the additional travel time taken to reach the care recipient is often ignored (Nguyen and Connelly, 2014). It is therefore important to examine different types of caring separately.

Bolin et al (2008) found that increasing unpaid care hours was reflected in a reduction in paid working hours for both men and women, but that the effect was greater for women. Similarly, Carr et al (2018) showed that women are more likely than men to reduce their paid working hours because of providing care. Additionally, Gomez-Leon et al (2019) found that increasing caring hours increased the likelihood of men leaving the labour market by 1.5 times but doubled the likelihood of women leaving the labour market. Ahmed and Floro (2023) found that provision of daily or almost daily unpaid care to older people had greater effects on female than on male employment. Women's employment outcomes due to caring are greater than those for men, and have been attributed to women typically providing higher-intensity care than men (Carmichael and Ercolani, 2014).

Many carers do not want to leave employment. Female carers in Northern Ireland reported that they wanted to keep working while providing care because it provides them with "financial security and… dignity" (Carers NI, 2024, p8); many women interviewed also spoke of how their work feeds into their identity and said that stopping work because of care would take that part of their identity away (Carers NI, 2024). Additionally, an Age UK study found carers were eager to remain in work, not just because of the financial stability, but because it allowed them to form connections to other people and can offer some relief from the demands of caring (Age UK, 2016).

2.3.4 Socio-demographic Characteristics and Unpaid Care

The likelihood of being employed increases with age, regardless of gender (Hietmueller, 2007; Bolin et al., 2008; Magnusson, 2010) but this would likely decrease at a certain point due to people reaching state pension age which is associated with retirement[5].

[5] State pension age is when someone is eligible to receive their state pension but that does not mean a person has to retire and choose to receive their state pension at this age. Between the 1940s and 2010, state pension age was 60 for women and 65 for men. The Pensions Act 1995 stipulated that women's state pension age should be the same as men's. Therefore, from 2010, women's state pension began to incrementally become 65 in line with men's (this was completed in 2018). State pension age was increased for both men and women to 66 in 2020 (Hobson and Baker, 2023). Thus, there is some variation in what state pension age is across the sample period of my research. Though people may not retire at the state pension age, for standardisation I cut off my sample at 66.

Many studies find that mid-to-to late middle age is when a person is most likely to be a carer (see Bernard and Phillips, 2007; Carmichael et al., 2010; Longacre et al., 2021). This is a consistent finding over time, which suggests that there are strong age-based patterns in provision of care. For example, people are more likely to provide childcare during mid-adulthood because this is when people are most likely to have children and then, as they age, they are more likely to care for their parents because it is at this age that their parents have care needs (Infurna et al., 2020; Wray, 2024)

Previous literature discusses differences in care provision by ethnicity. Research using UK Census data (Norman and Purdam, 2013) found that Indian and Pakistani people were more likely to provide care than white people (Norman and Purdam, 2013). These ethnic minority differences may be explained in part by differences in cultural values which are particularly notable regarding the roles of family members in caring (Saperstein, 2004). Another factor that may affect ethnic minority differences is health variation across ethnic minority groups. For example, Indian, Bangladeshi and Pakistani individuals have higher rates of obesity, long-term and life-limiting illnesses and lower disability-free life expectancies (Public Health England, 2018). This means that more people from these groups may require care.

Maximiano-Barreto et al (2022) found that being married was among the characteristics associated with higher care burden due to spouses often being a sole carer. Carr et al (2018) found that caring for a spouse was associated with leaving employment but only for women, so there is a gendered dimension to the way we think about marital status regarding care.

Additionally, there is variation in the likelihood of providing care based on socioeconomic status, with women from lower socioeconomic backgrounds being more likely to be carers (Tooth and Mishra, 2014). Similarly, McKie and Jyrkinen (2021, p688) find that “Choices about caring and working are restricted by the parameters of social class”. This is further supported by Brimblecombe et al (2020) who write about how socioeconomic status constrains the choices carers are able to make. Research by Betrogg and Strauss (2020) found that those of higher socioeconomic status were more likely to outsource care to paid-for services while people from lower socioeconomic backgrounds were more likely to draw on resources from their informal network of friends and family to get support with spousal care. For example, women with higher household incomes, as one measure of socioeconomic status, are more able to afford paid for care services (Lightman and Link, 2021). These two studies indicate that it is the financial resources attained by having a higher socioeconomic status that is associated with employing outside, paid-for help with care. However, in this study, since employment is the outcome of interest so cannot be used as a control, I use education as a proxy for socioeconomic status which is further discussed in the variables section (Section 2.4.2).

There are regional differences, found using age standardised proportions to account for age differences in the population, in the amount of care provided across England and Wales, with proportionately more carers in Wales than in the English regions, and more people in Wales providing higher intensity care. In England, there are more carers in the North East with far fewer in the South East (ONS, 2023e). These regional differences in demand for care could be explained by regional health and deprivation variation. For example, the highest proportion of self-reported very poor health in England is in the North East (ONS, 2023f) and this same region has the highest proportion of deprived households (ONS, 2022d).

2.4 Methods

In this paper, my overarching research question is 'what is the relationship between changes in caring and changes in employment?'.

To answer this question fully, I consider three measures of caring: becoming a co-resident carer, becoming an extra-resident carer, and increasing hours of caring. I also consider three measures of employment outcomes: becoming unemployed/economically inactive, reducing weekly paid working hours, and reducing net labour income. Finally, I examine differences in outcomes for people who experienced a change in caring situation in the previous year (within effects), compared to people who experienced more changes to their caring situation over the 12-year sample period (between effects).

As such, my specific research questions are as follows:

1. What is the relationship between a change in caring situation in the previous year and becoming unemployed or economically inactive the following year, for men compared to women?
2. What is the relationship between a change in caring situation in the previous year and reducing weekly paid working hours the next year for men compared to women?
3. What is the relationship between a change in caring situation in the previous year and reducing net labour income the following year for men compared to women?
4. Are people who, on average, experience more changes in caring over a 12-year period, more likely to change their employment status/working hours compared to those who do not?

In examining three different changes in caring patterns, I examined the differences between caring experiences. Higher care hours are associated with higher intensity caring and it is often co-resident care that involves higher care hours (Robards et al.,

2015). This means that employment outcomes for people with these different caring patterns should not be homogenised as they are likely to be associated with very different experiences.

2.4.1 Data and Sample

Data used is from the UK Household Longitudinal Study (UKHLS) otherwise referred to as Understanding Society. This is a panel study that commenced in 2009 (Institute for Social and Economic Research, 2022). Data is collected in yearly interviews conducted either face-to- face or self-completed by respondents online (Institute for Social and Economic Research, 2022).

The sample used in this study is of carers and non-carers of working age, so I removed people younger than 18 and older than 66[6]. Although some people in these age categories do paid work, it is less likely to be in the same pattern as formal labour market participants of "working age". Additionally, in 2009, the beginning of my sample period, State Pension Age in England and Wales was lower[7] than in later years; by setting my age cut-off at the more recent, higher, threshold, I avoided removing too many potential workers from my sample unnecessarily. I removed observations that had no measurement for the outcome variables. The resulting sample size is 53,990 individuals (297,378 observations).

I ran the analysis on England and Wales only to situate it in the same geographic context as the whole thesis. In Chapters 3 and 4, I use data from Census 2021 which does not include Scotland and Northern Ireland so these nations are excluded in this paper for consistency. This is also, in policy- terms, a valid choice as following devolution[8]. Scotland has made greater progress on social care reforms than England and Wales (Needham, 2023). At the other end of the spectrum, Northern Ireland has made very little progress regarding funding reform in social care (Needham and Hall, 2023), while England and Wales sit somewhere in the middle. Although England and Wales have separate social care policies, Needham and Hall (2023, p173) claim it is important not to over-emphasise independence of the nations as "most money spent on care continues to come from the UK Government" and each nation learns from one another regarding policy reform (Needham, 2023). I include region as a control variable to account for, among other things, policy differences between these nations; this control variable also accounts, to some extent, for regional variations in care funding and demand across England.

[6] This is because Stage Pension Age in England and Wales is 66 (Hobson and Baker, 2023).
[7] In 2009, at the beginning of the sample period, the State Pension Age for men was 65, and it was 60 for women (Hobson and Baker, 2023).
[8] Devolution refers to the process that happened across the UK in 1998 whereby government policy was decentralised from just England so each of the UK's four nations now has its own government (Needham and Hall., 2023).

2.4.2 Variables

The key dependent variables in this study aresoc (1) whether an individual becomes unemployed or economically inactive, (2) whether they reduce their paid working hours, and (3) whether their net labour income reduces. The key independent variables concern changes in caring pattern: whether an individual becomes a co-resident carer or an extra-resident carer, or whether they increase their care hours. Further independent variables are added sequentially into the models to act as control variables. These are age[9], region, ethnicity, marital status, and highest qualification as a proxy for socioeconomic status. They are included as control variables as they have been shown to be related to both care and employment outcomes (see Section 2.3.4). Counts of the key variables are shown in Table 2.1 and counts for the control variables in Table 2.2.

Highest qualification is included as a proxy for socioeconomic status in this research. Socioeconomic status "reflects one's access to collectively desired resources, be they material goods, money, power, friendship networks, healthcare, leisure time, or educational opportunities" (Oakes and Andrade, 2017, p25). It is this multifaceted nature of socioeconomic status that makes it difficult to define and operationalise. Resultingly, there are many variables that can be used as a proxy for it such as highest qualification, income or the National Statistics Socio-Economic Classification (NS-SEC). Choosing a proxy for socioeconomic status came down to appropriateness for my research. Income is an outcome variable for this research so it could not also serve as a control variable. Similarly, NS-SEC is a socioeconomic classification based on employment status and occupation which makes it less suitable for research like mine where the outcome variables are employment outcomes (albeit not occupational category). Highest qualification is an appropriate proxy for socioeconomic status because education and socioeconomic status are highly correlated (Social Mobility Commission, 2024) and education is a commonly used proxy for socioeconomic status in research due to its ease of measurement (Khalatbari-Soltani et al., 2022). Much of the research points to the financial resources people from higher socioeconomic statuses employ to balance their caring responsibilities such as engaging outside help (Bertogg and Strauss, 2020; Lightman and Link, 2021). Highest qualification acts as an appropriate proxy in this context because, broadly speaking, it is, among other things, correlated with occupational attainment (Bukodi and Goldthorpe, 2011; Carlson and McChesney, 2015; Ordemann, 2023) and, therefore, is associated indirectly with the financial resources an individual may be able to use to hire outside help. The use of highest qualification as a proxy for socioeconomic status is applied with the understanding that socioeconomic status is much more multifaceted than education

[9] Age is scaled which is a linear transformation, standardising the variable, used to improve model convergence (Khoong, 2023) and was used to address model convergence warnings when I originally ran my models.

alone. However, since it is a control not an explicit variable of interest, a more multifaceted approach beyond the use of a proxy is not employed in this research.

For each employment variable, I mark any employment change as 1 in a binary variable of 1= change and 0 = no change, compared to the previous year. Similarly, I create binary variables for becoming a co-/extra- resident carer and increases in caring hours. I chose to transform continuous variables such as paid working hours or income into categorical, binary variables to align with the decision to examine change (reducing paid working hours rather than status of hours of work). My interest lies in whether an individual reduces their paid working hours not to what extent they do so or how many hours they work. That level of detail would be too much for this paper where I aim to explore and compare multiple different employment outcomes with multiple caring behaviours so there are already a lot of strands to be examined. Because I am interested in changes in caring patterns, I also code the caring variables as changes. Instead of having 1= 'is a carer' and 0= 'is not a carer', it is more informative for the research aims of this paper to code the variable as 1= 'became a co/extra-resident carer', 0= 'did not become a co/extra-resident carer'. The number of care hours an individual is providing is not the key focus of this study because I am focusing, instead, on whether those care hours have increased in the previous year and the potential effect this might have on employment outcomes.

Table 2.1- Counts and Proportions of Key Variables of Interest

Variable	Count (People[10])	% of People	Count (Obs.[11])	% of Obs.
Sex				
Men	24,685	45.72	131,824	44.33
Women	29,305	54.28	165,554	55.67
Care Changes				
Became Co-resident Carer	5,624	10.42	8,391	2.82
Became Extra-resident Carer	10,295	19.07	15,338	5.16
Increased Care Hours	11,604	21.49	19,383	6.52
Employment Changes				
Became Unemployed/ Economically Inactive	20,970	38.84	23,978	8.06
Reduced Paid Working Hours	31,085	57.58	48,647	16.36
Reduced Net Labour Income	42,411	78.55	99,466	33.45

[10] These are counts of people who became carers at least once between 2001 and 2021.
[11] For the key variables of interest, I show the number of observations (obs.) which is how many times someone became a carer over the 12 year period for example as well as how many people became a carer at least once over the sample period.

Table 2.2- Counts and Proportions of Control Variables

Variable	Count (People)[12]	% of People
Highest Qualification		
A-Level	15,195	28.14
Degree	14,883	27.57
GCSE	12,593	23.32
None	4,954	9.18
Other Higher	6,622	12.27
Other	4,680	8.67
Marital Status		
Divorced/ Dissolved Civil Partnership	3,286	6.09
Cohabiting Couple	11,954	22.14
Married/ In a Civil Partnership	30,268	56.06
Never Married	18,094	33.51
Separated	2,168	4.02
Widowed/ Surviving Civil Partner	828	1.53
Region		
East Midlands	4,652	8.62
East of England	5,247	9.72
London	10,581	19.60
North East	2,213	4.10
North West	6,618	12.26
South East	7,488	13.87
South West	4,601	8.52
West Midlands	5,675	10.51
Yorkshire and Humber	5,517	10.22
Wales	4,112	7.62
Ethnicity		
Asian: Chinese or Other	1,075	1.99
Any Other Ethnic Group	853	1.58
Black, Black British, Caribbean, or African	2,984	5.53
Mixed/ Multiple Ethnic Groups	1,055	1.95
Asian: Bangladeshi, Indian, or Pakistani	6,811	12.62
White	33,704	62.43
	Mean	**Std. Deviation**
Age[13]	41.6	13.3

[12] Some counts in Table 2.2 may add up to more than the number of people in the sample. This is because people will have moved during the 12 year period to a different region, obtained educational qualifications or become divorced.

[13] Age is treated as a continuous variable instead of categorical because there was no good reason for categorization other than to match it to the other variables. Since categorizing continuous variables can reduce statistical power (Beltran and Tarwater, 2024), it should only be done when there is good reason to do so. There is no such reason in this instance because age is being used as a control not as a key variable of interest.

2.4.3 A Note on Recoding

To have large enough samples, I recoded the ethnicity variable somewhat reductively by reducing the categories to the five categories used by the ONS (2023b) in their unpaid care statistics. One distinction is that I split the Asian/ Asian British category into Asian: Bangladeshi, Indian, or Pakistani background and Asian: Chinese or Other background. This is because people from some South Asian backgrounds are much more likely to provide care than any other ethnic minority group (Norman and Purdam, 2013).

2.4.4 Analysis

The UKHLS is panel data, that is, a series of observations on one panel of individuals that are repeated over time (Frees, 2004); for this project the time-period is 12 years (2009-2010 to 2020-2021).

Because the data is temporally hierarchical (observations nested in individuals) it requires statistical models that can analyse this structure. The method of analysis for this research is Random Effects Within Between (REWB) models, a flexible approach to random effects regression models whereby both within and between effects are estimated (Bates et al, 2014, p1; Bell and Jones, 2015). Both fixed effects models and random effects models are a useful approach to analysing hierarchical data (Bell and Jones, 2015, p133). However, random effects models are arguably advantageous to fixed effect models because of their flexibility and ability to measure time invariant variables (Bell and Jones, 2015; Bell et al., 2019). In this research, REWB models allow for the modelling of heterogeneity both between individuals (Level 2 observations) and within individuals, between individual-time observations (Level 1) (Bell et al., 2019, p1052.) Using REWB allowed me to model unexplained variance in the outcome variable (downward change in employment) which would be removed in fixed effects models. Using fixed effects models would lead to a reduction of important and interesting statistical information (Bell and Jones, 2015, p137).

In this analysis, the odds ratios associated with the within effects are interpreted as the percent change in the odds of experiencing a downward change in employment associated with a change of caring pattern in the last year. They may be interpreted causally if it is assumed there are no other time-variant confounders. Between effects are more complicated in their interpretation and cannot be interpreted causally due to a host of unmeasurable confounders that may be involved in the relationship. These suggest that people who more often change caring pattern on average (measured by multiple episodes of changing caring pattern) are more or less likely to be someone who experiences more downward changes in employment over the 12-year sample period (measured by multiple episodes of undergoing downward changes in employment).

This is the equation for the model I use in this research:

$$logit(y_{it}) = \mu + \beta_{1W}(x_{it} - \overline{x}_i) + \beta_{2B}\overline{x}_i + \beta_3 z_i + \beta_4 z_i + \upsilon_{i0} + \epsilon_{it}$$

- y_{it} refers to the dependent variable: measuring 1 if there is a downward change in the employment variable, zero otherwise.
- x_{it} refers to the time-varying independent variable: 1 if the individual became a co-/extra- resident carer or increased care hours, in the previous year.
- β_{1W}refers to the estimated within effect of x_{it}.
- β_{2B} refers to the estimated between effect of x_{it}.
- $\beta_3$refers to the estimated effect of a time-invariant variable control variable: e.g. ethnicity.
- β_4 refers to the estimated effect of a time varying control variable: e.g. age.
- υ_{i0} refers to the individual-level (level 2) random effect attached to the intercept.
- ϵ_{it0}refers to the observation-level (level 1) error term.

I ran multiple models for each outcome variable. Starting by regressing the one outcome variable by one independent variable (change in care hours or care status) before sequentially adding the other explanatory variables: age, ethnicity, region, marital status, highest qualification. I repeated this process for each of the outcome variables and each of the key care variables.

I ran separate models for each of the caring patterns and each of the employment outcomes. In the literature review above, I discuss variations in care-related employment outcomes by sociodemographic characteristics. Thus, in each model, I controlled for:

- Age [model 2 onwards]
- Ethnicity [model 3 onwards]
- Region [model 4 onwards]
- Marital Status [model 5 onwards]
- Highest Qualification [model 6 onwards]

The order in which the control variables were added was arbitrary because I was not examining the effects of these variables on the outcome variable specifically. Thus, when analysing the final model (with all controls, as is done in the results section below), the order in which the variables were added was not important. I conducted each regression model on female participants and then compared the results to male participants to draw gendered comparisons between the estimates.

Table 2.3- Counts of Individuals Who Experienced Unincluded Care Pattern Shifts At Least Once Over the 12 Year Sample Period

Type of Care Pattern Shift	Count (People)	% People	Count (Obs.)	% Obs.
Co-Resident to Extra-Resident	876	1.62	941	0.32
Extra-Resident to Co-Resident	1,220	2.26	1400	0.47
Non-Carer to Co- and Extra-Resident	788	1.46	816	0.27
Co-/Extra-Resident to Co- and Extra-Resident	1,178	2.18	1394	0.47

There are, of course, individuals who go from being one type of carer to another rather than from being a non-carer to either a co-resident or extra-resident carer. Similarly, there are individuals who go from being a non-carer to being both a co-resident and an extra-resident carer or who go from being one type of carer to both. I do not study these groups of carers in this thesis because it would add too many strands to the analysis, making the overall messages less clear. Additionally, the sample sizes are quite small especially in comparison to the sample sizes of the groups I do study. Table 2.3 above shows the sample size of each group I chose not to study in this thesis compared to 5,624 people who became a co-resident carer or 10,295 people who became an extra-resident carer from being non-carers. These are counts of people who experienced this care pattern change at least once in the 12 years of data.

2.5 Results

In this section, I describe the results of the REWB regression models. I start with the within effects which can be interpreted as the effect of a change in caring pattern on a given employment outcome. Then I describe the between effects which can be interpreted as the effect of being an individual in the group who, on average, have a higher propensity to become a carer/ increase care hours on employment. Importantly, within effects are more straightforward and have a more concrete interpretation of how changing a caring pattern in the last year is associated with a change in employment the following year. Comparatively, between effects have a looser interpretation that needs to be analysed with caution. However, we can glean from them, in this context, what the employment outcomes may be of an individual who goes back and forth in their caring patterns. Table 2.3 shows the key results mentioned from the final models (where all my specified control variables are included) as odds ratios; full regression output tables can be found in the Appendices (2.1-2.18). An odds ratio is a ratio of the odds of the outcome variable happening for one group compared to another. For example, in this chapter, it may be the ratio of the odds of exiting the labour market for people who became a co-resident carer in the last year compared to people who did

not. An odds ratio greater than 1 indicates increased odds while an odds ratio lower than one indicates reduced odds. For example, if someone who becomes a carer has an odds ratio of 1.24 of being unemployed, that can be interpreted as them having 24% higher odds of being unemployed compared to someone who does not become a carer.

Table 2.4- Key Odds Ratios of All Regression Models with All Control Variables

	Women			Men		
	Becomes Co-resident Carer	**Becomes Extra-resident Carer**	**Increases Care Hours**	**Becomes Co-resident Carer**	**Becomes Extra-resident Carer**	**Increases Care Hours**
Within Effects						
Becomes Unemployed/ Economically Inactive	1.49***	1.06	1.34***	1.21*	0.99	1.25***
Reduces Paid Working Hours	1.04	1.18***	1.00	1.07	1.14**	0.98
Reduces Income	1.22***	0.99	1.13***	1.01	0.96	1.08*
Between Effects						
Becomes Unemployed/ Economically Inactive	1.58***	0.95	1.21**	1.65***	1.73***	1.87***
Reduces Paid Working Hours	0.52***	1.13	0.74***	0.80*	1.05	0.84*
Reduces Income	0.52***	1.13*	0.68***	0.56***	1.03	0.64***

The within and between effects for men and women were mixed, with both positive, negative and null effects depending on the outcome of interest and the type of change in care pattern.

2.5.1 Within-Effects

What is the relationship between a change in caring situation in the last year and becoming unemployed or economically inactive for women?

Women who became a co-resident carer in the last year have 49% higher odds of becoming unemployed or economically inactive the following year compared to women who did not become a co-resident carer the year before, and this effect is statistically significant. This is not the case for women who became an extra-resident carer in the last year, for whom the effect is not statistically significant. Women who increased their care hours in the last year, compared to women who did not, have 34% greater odds of

becoming unemployed or economically inactive the following year. This figure is statistically significant.

What is the relationship between a change in caring situation in the last year and reducing paid working hours for women?

For the employment outcome of reducing job hours for women, the significance of care pattern changes reverses in that the only care pattern change with a statistically significant positive effect is women who became an extra-resident carer in the previous year. These women have 18% increased odds of reducing their paid weekly working hours the following year than women who did not become an extra-resident carer the year before. This relationship is statistically significant.

What is the relationship between a change in caring situation in the last year and reducing income for women?

As for women reducing their income the year after a change in caring, this is associated with becoming a co-resident carer or increasing care hours the year before, but not with becoming an extra-resident carer. Women who became a co-resident carer in the previous year have 22% greater odds of reducing their paid income the subsequent year than women who did not experience this caring change. This relationship is statistically significant. Similarly, women who increased their care hours in the previous year have statistically significantly 13% increased odds of experiencing a loss of income.

It makes sense that the care pattern changes associated with becoming unemployed or economically inactive are in the same direction as those associated with reducing income. However, it is odd that women who became an extra-resident carer in the last year have a higher odds of reducing paid working hours, but there is null relationship with reducing income. Perhaps, despite reducing hours, they are changing occupation to one with the same pay with fewer contracted hours so it may balance out through another type of employment change unexplored in this paper. This seems unlikely, because it would be hard to find employment with fewer working hours that offers the same level of pay. Another possibility is that people included work they did for their employer above and beyond their contract, counting that as reducing their hours when they started caring. Thus, they are still on the same contract and are, thus paid the same, but counted overtime hours (although the question asks them to exclude these) in their working hours in the previous year.

What is the relationship between a change in caring situation in the last year and becoming unemployed or economically inactive for men?

The within effects for men show a similar pattern to those for women. However, men's income seems to be less affected by changes in care pattern than women's. Men who became a co-resident carer have 21% greater odds of becoming unemployed or

economically inactive in the subsequent year. This is statistically significant but a smaller effect than the equivalent odds ratio for women. Although men experience an increase in the odds of becoming unemployed or economically inactive in the year after becoming a co-resident carer, their odds of experiencing this employment outcome is 28% lower than those for women who undergo the same care pattern change. There is a null relationship between becoming an extra-resident carer and becoming unemployed or economically inactive in the following year for men, which is similar to women who have a small, non-significant relationship between these variables. Men who increased their care hours in the previous year have 25% higher odds of becoming unemployed or economically inactive in the next year than men who did not increase their care hours. This relationship is as statistically significant, and in the same direction, as the relationship for women but the effect size is slightly smaller (by 11%).

What is the relationship between a change in caring situation in the last year and reducing paid working hours for men?

Similar to women, reducing job hours is only statistically significantly and positively associated with becoming an extra-resident carer, not a co-resident carer and with increased care hours. Men who became an extra-resident carer in the previous year have 14% higher odds of reducing their paid working hours; this is statistically significant. For women, this figure is slightly higher at 18%. The relationship between becoming a co-resident carer and reducing paid working hours for men is not statistically significant. This was also the case for increasing care hours.

What is the relationship between a change in caring situation in the last year and reducing income for men?

For income, there is a null relationship for men between becoming a co-resident carer in the previous year and experiencing a reduction in income in the subsequent year. Comparatively, women who underwent this care pattern change have statistically significantly 22% increased odds of reducing income the next year. There is a non-significant relationship between becoming an extra-resident carer for men and reducing income. Women also have a non-significant relationship for this care pattern change. Finally, there is a small, slightly significant, and positive relationship between increasing care hours and reducing income in the next year for men. Men who increased their care hours in the previous year have 8% greater odds of experiencing an income reduction than men who did not increase their care hours. This is statistically significant but less so than the relationship for women. Additionally, women who increased their care hours in the previous year have 5% higher odds of undergoing a loss of income than men who experience the same care pattern change. This suggests that women are more likely to experience income related consequences to their caring changes than men.

2.5.2 Between effects

What is the relationship between generally undergoing more episodes of a change in care pattern and generally being more likely to become unemployed or economically inactive for women?

Women who, on average, experience more episodes of becoming a co-resident carer have 58% higher odds of also experiencing more episodes of becoming unemployed/ economically inactive more times (during the 12-year sample period). Women who increase their care hours more times during the 12-year sample period have 21% increased odds of also becoming unemployed or economically inactive more times, on average, during the 12-year sample period. These figures are statistically significant.

What is the relationship between generally undergoing more episodes of a change in care pattern and generally being more likely to reduce paid working hours for women?

Comparatively, women who experience more episodes of becoming a co-resident carer have 48% reduced odds of undergoing more reductions in paid working hours over the 12-year sample period; this is statistically significant. Similarly, women who increased their care hours more times over the sample period have 26% decreased odds of reducing their paid weekly working hours, more times, during the sample period. This, too, is statistically significant. Interestingly, for the within effects, women who became a co-resident carer or who increased their care hours in the previous year do not have greater odds of reducing their paid working hours.

What is the relationship between generally undergoing more episodes of a change in care pattern and generally being more likely to reduce paid net labour income for women?

As for income, becoming a co-resident carer or increasing care hours more times during the sample period is negatively associated with more income reductions over the sample period. That is, women who became a co-resident carer more times or increased their care hours more times over the sample period have 48% and 32%, respectively, lower odds of experiencing more income reductions over the sample period. This is statistically significant. Comparatively, women who experienced more episodes of becoming an extra-resident carer over the 12 years examined have 12% greater odds of experiencing more income reductions over the 12-year period. This is also statistically significant, but has a smaller effect size than those who became a co-resident carer or increased their care hours more times during the sample period.

What is the relationship between generally undergoing more episodes of a change in care pattern and generally being more likely to become unemployed or economically inactive for men?

Like women, men who experience more episodes of becoming a co-resident carer or increasing their care hours, on average, have statistically significantly greater odds of also being someone who experiences more episodes of becoming unemployed or economically inactive over the 12-year sample period. A man who, on average, experiences more episodes of becoming a co-resident carer has 65% higher odds of being someone who experiences more episodes of becoming unemployed or economically inactive. This figure is 87% for men who, on average, undergo more increases in care hours. Both figures are statistically significant. Unlike women, men who, on average, undergo more episodes of becoming an extra-resident carer have statistically significantly 73% greater odds of being the type of person to undergo more episodes of becoming unemployed or economically inactive. This is interesting since the within effect for this employment outcome and care change relationship for men was neutral.

What is the relationship between generally undergoing more episodes of a change in care pattern and generally being more likely to reduce paid working hours for men?

The between effects for men reducing job hours are similar to those of women. Men who experience more episodes of becoming a co-resident carer over the 12-year sample period have 20% lower odds of being men who reduce their working hours more times over the sample period. This figure is 48% for women. Similarly, men who, on average, experience more increases of care hours over the sample period, have 16% reduced odds of also being the type of men who, on average, have more episodes of reducing their paid working hours over the 12-year period. This figure is 26% for women.

What is the relationship between generally experiencing more episodes of a change in care pattern and generally being more likely to reduce paid net labour income for men?

Finally, for income, the results for men are slightly different to those for women since men who experience more episodes of becoming an extra-resident carer are not more likely to experience more income reductions (while women were). However, like women, men who, on average, experience more episodes of becoming a co-resident carer or increasing care hours are have lower odds of also reducing their income more times, on average, during the sample period (44% and 36% respectively).

2.6 Discussion

The key findings of this research are that different changes in care patterns can have varying employment consequences, depending on the gender of the carer, the exact type of care undertaken, and the nature of the employment consequences. For example, women have greater odds of becoming unemployed or economically inactive or of reducing net labour income in the year after becoming a co-resident carer or

increasing their care, hours but not after becoming an extra-resident carer. This highlights that different types of caring are associated with different employment consequences. This echoes previous literature which suggests that co-resident caring is of a higher-intensity than extra-resident caring (Berecki-Gisolf et al., 2008) and that providing high-intensity care is associated with greater employment consequences (Pickard et al., 2016; Peytrignet et al., 2023). Similarly, King and Pickard (2013) found that providing more hours of care per week (over 10 hours weekly) is associated with lower employment rates. A similar finding from my research with pre-existing literature is that women providing care experience a greater reduction in income than men providing care (Carmichael et al., 2010). This is shown in my research with women who become co-resident carers having increased odds of reducing their income but this not being the case for men who become co-resident carers. Similarly, women who increased their care hours in the last year have 5% higher odds of undergoing an income reduction than men who increased their care hours in the last year. It appears counterintuitive that some carers have statistically significantly increased odds of becoming unemployed or economically inactive but not of reducing paid working hours. This is because the paid working hours variable is asked to employees only so individuals out of employment or who have become unemployed or economically inactive will not have job hours recorded for them so cannot "reduce paid working hours" in this analysis.

2.6.1 Between versus Within Effects

While within effects indicate the difference in employment outcome for one individual making a caring change over time, between effects take the average number of occurrences of a caring change and examine the relationship between that and the average number of occurrences of an employment change over time. Between effects are about groups of people. For example, do people who, in general, experience more episodes of becoming a co-resident carer, have greater odds, in general, to become unemployed or economically inactive? The between effects can thus be indicative of what being someone who, on average, experiences more episodes of a care pattern change means for their employment. However, they cannot be interpreted causally. With between effects, there many unmeasured characteristics that an individual with more episodes of becoming a carer may have, such as perhaps having smaller support networks, that may influence the patterns seen in the analysis. That is, patterns seen for between effects are hard to disentangle as they could be due to having more episodes of changing care pattern or to broader, unmeasured, characteristics of people with more changes in care patterns.

For the within effects, women who became a co-resident carer or increased their care hours in the previous year have greater odds of lower income in the following year. However, the between effects for these women may suggest that having more episodes

of changes in care pattern is associated with having more reductions in income. As the between effects may be less to do with changes in caring and more with unmeasured /unmeasurable characteristics of having more episodes of becoming a co-resident carer, this finding could be due to other factors affecting frequency of becoming a co-resident carer. Perhaps a woman who more often enters a period of co-resident caring is already in an occupation that suits balancing work and care, so does not need to change employment in a way that could result in loss of income. Paull (2018) found that people who return to the labour market after leaving it to provide care are more likely to be self-employed, work from home, work fewer weekly hours or enter occupations with lower earnings, and may support this hypothesis. Perhaps women experiencing a repeat episode of care, are already in an occupation more suited to balancing work and care. Alternatively, they may have financial support from other sources that allows them to maintain their prior whatever work without loss of income. These are speculations because between effects studies relate to group composition, making it difficult to identify the characteristics that may drive the patterns seen in my results.

Comparatively, women who became a co-resident carer and who increased their care hours in the past year have statistically significantly increased odds of becoming unemployed or economically inactive in the next year. This statistically significant effect remains for between effects too, suggesting that some women may re-enter the labour market after a caring episode but leave again to address another caring episode. Previous research indicates that a high proportion of women return to the labour market after leaving work to care for others. However, individuals who return to employment after leaving to provide care have lower working hours, lower pay, lower participation in permanent positions and are more likely to "experience occupational skill downgrading" (Paull, 2018, p10). Similarly, Harkness et al (2019) found that women returning to the labour market after childrearing struggle to regain their occupational potential. This finding may extend to other forms of care besides childrearing. This suggests that the increased odds of becoming unemployed/ economically inactive for women on the within as well as the between effect could be explained by lower attachment to the labour market for a host of reasons, such as increased participation in temporary work. However, the increased odds on the between effect may be due to various unmeasured characteristics forming the type of person to undergo more episodes of becoming a co-resident carer.

2.6.2 Gender Differences

This research highlights that the relationship between care and employment is nuanced regarding gender with women experiencing larger effect sizes on their propensity to exit employment, to reduce paid working hours, and to reduce income than men. Women who became a co-resident carer last year, have 28% higher odds of becoming unemployed or economically inactive than the odds of men who became a co-resident

carer last year. Additionally, there is a larger effect size for women who increased their care hours last year with greater odds of becoming unemployed or economically inactive compared to the effect size for men. This is true also for women who become an extra-residential carer in the previous year and their odds of reducing paid working hours. For income, there is no significant effect of becoming a co-resident carer last year on reducing income the following year for men but women who became a co-resident carer last year have 22% greater odds of reducing their income the next year than women who did not become a co-resident carer. Additionally, women who increased their care hours last year have 5% higher odds of reducing their income than the odds of men men who increased their care hours last year. This echoes previous research that suggests women experience greater employment consequences related to caring than men (Bolin et al., 2008; Carmichael et al., 2010; Carr et al., 2018). This may be because female carers are more likely than male carers to provide personal care which is indicative of higher-intensity caring (Carmichael and Ercolani, 2014).

Similarly, women experience mostly larger effect sizes than men on the between effects too. An exception to this is for becoming unemployed or economically inactive. Both men and women who undergo more episodes of becoming a co-resident carer or increasing care hours have increased odds of experiencing more episodes of becoming unemployed or economically inactive over the 12-year sample period. However, men who undergo more episodes of becoming a co-resident carer have 7% greater odds of undergoing more episodes of becoming unemployed or economically inactive than women. Men who undergo more increases in care hours have 66% higher odds than women who undergo more increases in care hours of experiencing more episodes of becoming unemployed or economically inactive. This may be that men may be more impacted by more care pattern changes or it may suggest that more men than women return to employment after a caring episode. By nature of being back in employment, they are able to leave said employment in a future caring episode. This latter suggestion supports childcare literature which suggests that women are often unable to meet their occupational potential when returning to work after childrearing (Harkness et al., 2019). My findings suggest that this may extend beyond childcare and women are less able to bounce back from the immediate employment consequences of caring so experience fewer and less significant repeat effects. The uncertainty around what could be driving the differences in within and between effects suggests that further research in this area is necessary.

2.6.3 Differences in Type of Caring

This research highlights the importance of understanding the different consequences associated with different types of change in caring. Across both within and between effects for men and women, becoming a co-resident carer and increasing care hours are more associated with employment changes. This supports existing research

showing that co-resident care is more intensive than extra-resident caring (Pickard et al., 2016; Peytrignet et al., 2023) and that increased care hours have greater employment consequences (King and Pickard, 2013). However, interestingly, it is becoming an extra-resident carer that is associated with reducing paid working hours for men and women, not becoming a co-resident carer or increasing care hours. This suggests that different types of support may need to be offered for different types of carers.

2.6.4 Policy Implications

The policy priorities from this research revolve around tailoring different forms of employment support to different types of care provision. There is also a research imperative to further explore the gendered differences in employment outcomes for "boomerang" carers who move back and forth between episodes of care. The between effects for men undergoing more episodes of caring or increasing care hours shows that there needs to be a safety net for the ebbs and flows of caring episodes in the life course so that people can experience employment stability during these intermittent episodes. My research suggests that the type of men to experience repeat care changes of any kind have greater odds than women of also being the type of person to leave the labour market more times. However, because of the nature of between effects and the inability to establish causality, I cannot identify what is driving the relationship. It might be that there are other, unmeasured characteristics comprising the type of person to undergo multiple episodes of care pattern changes that drive the relationship with employment rather than the multiple care pattern changes themselves. Thus, policy implications are hard to disentangle but understanding the diversity of support needs for male and female carers providing different types of care is a key factor going forward in future care research and policy.

2.6.5 Strengths

The strengths of this research lie in having used a representative dataset, the UKHLS, to research how three different changes in caring patterns are associated with three different employment outcomes. This shows that the care-employment relationship is not homogenous and varies by the type of care provided and the type of employment cost under investigation. They also lie in use of a novel method, REWB models. This enabled me to separate the within from the between effects, giving interesting insight into the care-employment relationship and offering pointers for future research avenues. Finally, by researching men and women separately, I have contributed to the field of research examining gender differences in the care-employment relationship.

2.6.6 Limitations

The small number of observations on some key variables is a limitation of this study. The calculation of the between effect, for example, is based on averages from individuals in the sample who have experienced more occurrences of becoming a co-

resident carer, an extra-resident carer, or increasing their care hours. Table 2.4 shows how many people had multiple episodes of care pattern change (Note this shows the number of people, not number of observations.)

Table 2.5- Counts of People Experiencing Multiple Care Pattern Changes

	Became a Co-resident Carer	Became an Extra-resident Carer	Increased Care Hours
1 Episode	4,638	7,817	6,918
2 Episodes	830	1,957	2,732
3 Episodes	139	447	1,141
4 Episodes	15	69	562
5 Episodes	2	5	187
6 Episodes			54
7 Episodes			9
8 Episodes			1

Table 2.5 shows that most people only experienced one change in caring pattern. Additionally, over the sample period there is more data for people increasing care hours multiple times, as more people have experienced this change and more people have experienced it more times. As the between effect is based on people who undergo more changes over the 12-year sample period, smaller sample sizes in those with more episodes of care pattern changes mean caution should be applied to the between effect interpretation as se there may not be enough statistical power to produce accurate estimates.

Additionally, between effects are limited more broadly. Though interesting in pointing to a general difference between those who experience one episode of changing care pattern compared to those who have more episodes, they cannot tell us those differences more concretely. This is because people who experience more episodes of care changes are likely different in a variety of unmeasured ways to those who only experience single episodes. The unmeasured characteristics of these individuals could explain away some of the differences we see between the within and between effects documented in this paper.

2.7 Conclusion

The aim of this research was to explore the gendered relationship between caring and changes in employment, particularly to explore the nuances of this relationship across

different changes in caring patterns and different employment outcomes. Using 12 years of data from the UKHLS and REWB models, I found disparate employment outcomes for both men and women and for different types of caring pattern. For example, a woman who became a co-resident carer in the previous year has 22% higher odds of reducing her paid working hours than a woman who did not. No statistically significant relationship was found for a woman who became an extra-resident carer. Here we can see that co-resident caring and extra-resident caring are not homogenous and should be investigated separately. Additionally, women experience far greater and more significant losses to income than men, which suggests a need for greater, specifically financial, protections for female carers. This research aligns with previous research which found that men and women experience employment consequences of their caring but women often more so than men (Gomez-Leon et al., 2019).

An advantage of using REWB models is the ability to separate the within effects from the between effects. Women experienced more significant within-individual effects (the effect of a change in caring pattern on employment changes), while men experienced larger (though not more statistically significant) between-group effects (the effect of being a person with a higher propensity to change caring pattern on employment). This suggests that men are perhaps at risk of experiencing repeated effects to employment because of repeated caring episodes while this is less true for women. This may seem advantageous to women but could also suggest that women are not recovering from the initial caring episode in terms of their labour market participation, which is unlikely to change with repeated caring episodes. To establish whether this is true, further research would be needed.

This research has contributed to the field of care and employment research by exploring more types of caring and more employment outcomes within one project and disaggregating the analysis by gender. By applying a novel statistical technique to analyse the data, I have indicated future research avenues for more research to explore the effects of more caring episodes longitudinally on carer employment.

Chapter 3: Investigating the Relationship Between Caring and Employment for Men and Women Living in Multigeneration Households in England and Wales.

Abstract: Census 2021 shows that there was a 0.3% increase in the proportion of multigeneration households (MGHs) in England and Wales since 2011 (ONS, 2023g). An MGH is where "two or more generations of related adults" live in the same household (Burgess and Muir, 2020, p322). Research indicates that multigenerational living has increased since the 2008 financial crisis (Burgess and Muir, 2020). As the cost of renting in the UK is the highest it has been in decades (Mulheim et al., 2023) and house prices are increasingly unaffordable (Miles and Monro, 2021), it is likely that more people will turn to multigenerational living in the future. Traditionally, multigenerational living has been associated with care for older generations (Burgess and Muir, 2020), and the study reported here provides interesting insight into carers living in this increasingly common household type. Using data from Census 2021 and applying logistic regression models with two-way interaction terms, I assessed the probability of employment for carers providing different intensities of care, comparing those living in MGHs with those not doing so. The results show that men and women providing low-intensity care in MGHs have higher employment probabilities, even when compared with those providing no care. Those providing high-intensity care, especially women, have higher employment probabilities when living in MGHs compared to those providing the same amount of care living in a non-MGH. This suggests that living in an MGH may provide support to carers that allows them to balance employment alongside their caring responsibilities.

3.1 Introduction

Between 2011 and 2021, the proportion of multigenerational households (MGHs) in England and Wales rose from 1.8% to 2.1% of all households (ONS, 2023d). MGHs are broadly defined as households with "two or more generations of related adults" (Burgess and Muir, 2020, p322). Traditionally, MGHs, particularly in some Asian countries, have been associated with cultural norms of "filial piety" (Burgess and Muir, 2020, p324) and an underlying obligation to care for older generations. However, the rapid rise of MGHs globally since the 2008 financial crisis suggests that cohabiting with other generations is increasingly necessary for many families that, previously, would not have lived together (Maye-Banbury and McNally, 2020). Nethercote (2019) writes that, in Australia, rising housing costs, combined with broad financial insecurity, have prevented many people from buying a home and have led to a rise in MGHs. In England and Wales the cost of renting is the highest it has been in decades (Mulheim et al., 2023) and house prices have risen rapidly in all regions (Miles and Monro, 2021). The rising cost of housing is hitting advanced economies in countries such as the US, UK, and Canada as well as in Australia (Lee et al., 2022). This suggests that Nethercote's (2019) finding may also apply outside of the Australian context.

For England and Wales, research on multigenerational living and employment outcomes for carers living in households of this type is limited. Therefore, it is hard to establish whether people in MGHs are more or less likely to provide co-resident or extra-resident care. However, it is perhaps more likely that they would provide co-resident care because the structure of MGHs "does facilitate the exchange of care and support" (Smits et al., 2010). This is further true since one of the reasons individuals move into an MGH is to provide care to a family member (Burgess and Muir, 2020). Spousal care is often associated with co-residential caring and this is an "increasingly important" dimension of multigenerational caring (Patterson and Margiolis, 2019) but it may not be the most common form of caring in MGHs since the decision to live in an MGH for caring reasons is typically associated with more vertical care transfers; an adult child needing help with childcare or an elderly parent needing care from their adult child (Burgess and Muir, 2020).

Since the data used in this thesis does not have information on whether care provided is co- or extra-residential, I do not disaggregate the analysis by these types. However, there is an assumption that those living in MGHs are perhaps more likely to be providing co-resident care. Co-resident caring is typically of higher intensity than caring for someone in a separate household (on average, longer weekly hours of care and more likely to involve personal care) (Carmichael and Ercolani, 2014; Robards et al., 2015; Vangen, 2021). Higher intensity care is also associated with lower labour market participation (Pickard et al., 2016), but whether this effect holds for co-resident carers in MGHs is not known. Research from the Czech Republic found that, in MGHs,

everybody is at once a carer and a care-receiver and that care in this household type is "multidirectional" (Souralová, and Žáková, 2019, p2647). Additionally, Souralová, and Žáková (2019, p2653) note that physical caring does not have to be provided for there to be a caring effect; just the presence of others in the household "contributes to the well-being of cohabitants". A further finding from the Czech Republic is the distribution of tasks and caring that happens in MGHs with grandparents helping by picking grandchildren up from school and grandchildren switching from being the receivers of grandparental care to care- givers (Souralová et al., 2022). This suggests that there may be different dynamics of care exchange that take place in MGHs compared with other household types. However, the finding may not extend beyond the Czech Republic, and the findings were based on qualitative interviews, as are other research papers on this topic (Dudová et al., 2015.; Hamilton and Cass, 2017; Pietka-Nykaza and Hay, 2023).

In this paper, I explore the relationship between caring and employment for men and women living in MGHs compared with non-MGHs. This is important for several reasons. First, it contributes a quantitative analysis to a predominantly qualitative field, meaning the external validity of those qualitative findings can be investigated. Second, in the landscape of an underfunded social care sector, it is important to continuously improve understanding of how providing care affects labour market participation. Third, rising house prices and rents affect how and with whom people live, and it is important to know how the relationship between caring and employment may be affected by such living arrangements. Research exploring care-related employment outcomes for people living in MGHs, a minority but increasingly prevalent, household type, is thus of interest.

In the paper, I assess how the probability of being in employment for individuals in MGHs differs between non-carers and carers providing care at different levels of intensity, and compare this to those not living in MGHs. In line with the other studies in my thesis, and because care is a gendered phenomenon, I also explore gender differences in these relationships, aiming to answer the following research questions:

- Does the relationship between caring and employment status vary by living arrangement? Specifically, is there a significant interaction effect between living in an MGH and care provision, regarding the probability of being in employment, and does this vary by gender?
- For employed individuals, is there a significant interaction effect between living in an MGH and care provision regarding the probability of being in *full-time* employment, and does this vary by gender?

I begin with a review of the relevant literature and summarise what is already known about the relationship between care provision and employment for men and women living in MGHs. I then describe the use of logistic regression models with interaction terms to address my research questions; present the results of these models; and

situate the results in a broader discussion, linking back to the existing literature and exploring implications. I find that, for some caring intensities, MGHs are associated with higher employment probabilities than non-MGHs. This is particularly true for women providing high-intensity care who, across all models, have higher probabilities of employment or full-time employment living in an MGH than a non-MGH.

3.2 Literature Review

The increase in MGHs, in the context of rising care needs, makes it important to research the effects of providing care while living in MGHs compared with living in other types of household. De Valk and Bordone (2019, p1791), discussing Austria, Belgium, France, Germany and the Netherlands, anticipate that the number of MGHs will grow over time due to the ongoing reduction in "formal care arrangements". Given England and Wales have similar strains on formal care resources, it is possible that MGHs may become more important here too. Haberkern et al (2015) found that the likelihood of intergenerational care decreased when family members lived further away from each other. This suggests that intergenerational care of a family member with an illness or disability may be more likely in MGHs due to their proximity to each other. Here, I examine what extant research says on household composition and employment related outcomes for carers and consider sociodemographic variations in this relationship.

Burgess and Muir (2020) outline three key types of MGH: those that arise because (1) adult children move back in with their parents, or never leave the parental home, due to pressures in the job market and a lack of the financial security needed to live independently (Burgess and Muir, 2020); (2) parents move in with their (often middle-aged) adult children, due to the adult child's need for childcare, an older parent's need for care from their adult child, or because several generations decide to combine their financial resources to live together (Maye-Banbury and McNally, 2020); and (3) 'custodial grandparent families' where a grandchild lives with grandparent(s), without the parent, due to 'parental young age, incarceration, substance abuse, or abuse and neglect of the child by the parent' (Burgess and Muir, 2020, p325). Although the available data does not permit me to distinguish between these MGH types, the second type are the most likely to include people providing care that others have described as arising from 'the social pressures of coping with an ageing population' (Burgess and Muir, 2020, p324-5).

A growing body of research about multigenerational living arrangements is emerging as these appear to have become more common since the 2008 financial crisis (Maye-Banbury and McNally, 2020). Much of this literature is concerned with other countries, rather than England and Wales, and few of these studies focus on provision of unpaid care within MGHs. Those that do often concern the caring process and its dynamics, rather than how living in an MGH may affect carers' financial or employment behaviour.

3.2.1 Theoretical Framework

Three theories of intergenerational exchange are relevant in exploring multigenerational co-residence and care: exchange theory, altruism theory, and convoy model theory. The first two are referred to more often in the literature. The key argument of exchange theory is that families provide help and money to each other in a way like the exchange of goods and services in wider society (Keene and Batson, 2010). An example of exchange theory in practice would be an implicit or explicit understanding that adult children will care for their older parents with the expectation of receiving an inheritance[14]. Similarly, older parents may give financial support to their adult children with the implicit or explicit expectation of care from their children later in life (Keene and Batson, 2010). In contrast, theories of altruism take a different view and posit that people care for their family members out of love and for altruistic reasons without any expectation of financial compensation (Keene and Batson, 2010).

The convoy model does not speak to the motivations behind care and financial provision but considers how relationships of kinship and choice are formed and play out. It is relevant to caring because the model views social relationships as founded in social norms that ensure the well-being of one another (Antonucci and Akiyama, 1987). It stems from an anthropological view of social relationships as a "protective layer" (Antonucci and Akiyama, 1987, p519), whereby family and friends are organised around an individual in concentric circles of significance. Individuals draw support from these circles of people to cope with life's challenges. The convoy model offers a helpful way of understanding care by addressing the fluidity of relationships and acknowledges how relationships change over time and vary, culturally and by gender (Fuller et al., 2020).

Some researchers argue that one cannot unravel the motivations for providing care, let alone in a multigenerational context. Instead, they claim this takes place at an intersection whereby "family members and social norms operate within particular social, economic, historical and policy contexts" (Burgess and Muir, 2020, p325). For example, Nethercote's research (2019, p260) showed that people may choose to live in an MGH for economic reasons initially but note that "these living arrangements mobilize a range of other maternal and material exchanges, including housework, laundry, and meals…, and emotional support, chores, shopping, social stimulus, and childcare". Perhaps those living with others in an MGH hold those they live with in closer circles, as described in the convoy model, which increases the propensity to draw on one another for various forms of support manifest in the exchanges described by Nethercote (2019).

[14] Nearly half of people in England and Wales have received some form of inheritance in the past and over half of people think they will receive inheritance of some kind going forward. It is fairly common practice in England and Wales to give or expect to receive some form of inheritance (Rowlingson and McKay, 2005).

3.2.2 Multigenerational Living and Unpaid Care

Although the proportion of MGHs in England and Wales is increasing, Census data show that, in 2021, the proportion of MGHs with carers in them is going down. 36% of MGHs included one or more carers in 2021, compared with 40% in 2011 (ONS, 2023d). People who live with additional people, most often a parent, are more likely to provide co-resident care than people who live with only their partner and/or children (De Koker, 2009). This suggests that people in MGHs are more likely to provide co-resident care than those in single-generation households. With the rise of MGHs in England and Wales combined with the dearth of knowledge about them, it is important to research how these household structures compare to others in their employment-related care outcomes.

3.2.3 The Relationship between Unpaid Care and Employment in MGHs

As noted above, De Koker's (2009) research suggests that people living in MGHs may be more likely to provide co-resident caring. Several studies have shown that co-resident caring is more intensive than extra-resident caring (Pickard et al., 2016; Peytrignet et al., 2023). Previous research shows that co-resident carers have the highest labour market opportunity costs associated with caring (Carmichael et al, 2010). Michaud et al (2010) found that co-resident caring had a small but statistically significant negative effect on re-entering the labour market or continuing with existing employment, which was not found for extra-resident caring. Comparatively, Pickard et al (2015) found that co-resident carers were more likely to be employed than extra-resident carers. Additionally, Meng (2013, p959) found co-resident care did not have an "economically relevant" impact on labour market participation. Meng's (2013) research is based on German data and findings may be different in England and Wales. Nevertheless, these varied findings highlight how little we know about the employment-related care outcomes of carers in different living situations.

If carers living in MGHs are indeed more likely to provide co-resident care, they may experience greater employment related consequences than those living in other types of household. However, it may be that the MGH structure acts as a supportive network for carers balancing work and care. Research from the Czech Republic shows that carers may receive relief from their responsibilities when living in an MGH because having more people in the household allows for greater distribution of said responsibilities (Souralová et al., 2022). If a carer can focus on care provision because they know that the housework is taken care of by other family members, it lessens the load and may even allow for them to undertake paid work as well as provide care. Since the Czech Republic is an ex-Communist country with high rates of familism where care for both children and older adults is expected to be provided in the home by family networks (Souralová and Žáková, 2019), the findings may be different in England and Wales which do not have the same normative family relations and social care systems.

There is a common misconception that the rising prevalence of MGHs is related to older people needing more care from family members (Burgess and Muir, 2020). However, much research on multigenerational living highlights that there is a diverse range of, often multifaceted, needs that lead people to live in an MGH; it cannot only be attributed to providing care for older relatives (Simpson, 2015; Burgess and Muir, 2020). As shown in research from the Czech Republic, people may choose to form an MGH because of "caring responsibilities, emotional support, and companionship" (Souralová et al., 2022, p201) but, as shown in UK research, also "as a means of insulating themselves from economic and social instability" (Maye-Banbury and McNally, 2020, p439). Further UK based research shows that the 'insulation' gained from living in an MGH can "manifest through housing assistance, childcare by grandparents, care for aging parents by adult children, household labor, or other forms of economic, social, or emotional support" (Ansari-Thomas, 2024, p745). An American study found that only 30% of a sample of co-residing parent and adult child pairs chose to live in an MGH primarily due to the older parents needing care (Choi, 2003, p397). UK research shows that horizontal transfers (between people of the same generation) are the most common form of intergenerational caring, closely followed by downward transfers (from an older generation to a younger one) (Patterson and Margolis, 2019). The more common occurrence of horizontal and downward transfers suggests that multigenerational caring is not all upward transfers (of care to the older generations). Accordingly, caring may be less intensive in MGHs because there are other benefits gained from living in such a structure (Ansari-Thomas, 2024) that may facilitate caring. However, Patterson and Margolis' (2019) research is not about those living in MGHs, just about the transfer of care between generations so the findings may differ regarding people living in an MGH. Extending the literature by researching whether multigenerational living impacts employment related caring outcomes in the context of England and Wales is important for broadening our understanding and influencing context specific policies.

3.2.4 Gender Differences in Unpaid Care, Multigenerational Living, Care, and Employment

Despite women being increasingly more likely to participate in the labour market, Chanfreau (2022, p994) argues that women's employment participation is still stratified by the "heteronormative family ideal" within which women are assumed to do the bulk of domestic labour (Federici, 2014; Williams, 2018; Renault, 2021). Women typically provide more hours of care or higher intensity care than men (Duffy et al., 2013; Ferrant et al., 2014; Carmichael and Ercolani, 2014) and are more likely to provide care than men in general (Lightman and Kevins, 2021; Petrillo et al, 2022).

There are also gender differences in unpaid care outcomes on employment. Both men and women are less likely to be in employment when providing more than 10 hours of

care per week compared with non-carers (King and Pickard, 2013). Interestingly, both men and women are more likely than non-carers to be in employment even when they provide fewer than 10 hours of care per week. Female carers experience larger losses of income than male carers (Carmichael et al., 2010), greater reductions in paid working hours (Carr et al., 2018) and increased likelihood of exiting the labour market than male carers (Gomez-Leon et al., 2019). Women in general are more likely than men to be in part-time employment than full-time employment (Magnusson, 2010; Francis-Devine et al., 2025) and the female employment rate is 6.4% lower than that of men (Francis-Devine et al., 2025). Due to women's greater employment consequences associated with their care provision, female carers are more likely than men to experience impacts on their pensions and savings (Age UK, 2018; Carers UK, 2019).

Men are more likely than women to live in MGHs (Lofquist, 2013). American research from over 30 years ago found that there were gender differences in the residency of MGHs. Whilst adult sons were more likely to live in two-generation MGHs, adult daughters were more likely to live in three-or-more generation MGHs (Coward and Cutler, 1991). This may have changed since and be different in the context of England and Wales.

3.2.5 Sociodemographic Variations in Care, Employment, and Multigenerational Living

The relationship between care and employment for men and women in MGHs may be influenced by certain sociodemographic factors; age, ethnicity, partnership status, region, disability, number of dependants, and socioeconomic status. These are included as control variables in my analysis (see Section 3.3.5) but below I describe how each of these variables is related to my key variables of interest.

Data from Census 2021 found that, among women, there are more carers aged 55-59 and, among men, there are more carers aged 60-64 (ONS, 2023e). Women are more likely than men to provide care in all age groups until they reach 75 or older which is the age at which men are more likely than women to provide care (Norman and Purdam, 2013). Age also influences engagement with MGHs with motivations behind moving into MGHs being for adult children to look after older parents or older parents to help with caring for grandchildren (Ansari-Thomas, 2024).

Research shows that certain minority ethnic groups, such as Pakistani and Bangladeshi groups, have a higher prevalence of long-term illness. Minority ethnic differences in health can, in part, be explained by socioeconomic inequalities experienced by some minority ethnic groups (Chouhan and Nazroo, 2020). It is more likely that there will be a greater need for care among these groups (Public Health England, 2018). Additionally, Marani (2021, p3) notes that "care recipients from minority ethnocultural backgrounds" often live in MGHs, while, the ONS reports that people who are Asian, Asian British, or Asian Welsh are the most likely to live in MGHs (ONS, 2023d).

Married people are less likely to live in MGHs, which suggests that we are investigating a population of people who are mostly single, widowed, or divorced. Previous research showed that lone parent unpaid carers found it harder to stay in the same job whilst combining it with childrearing and care provision (Millar and Ridge, 2008). Employment related care outcomes have also been shown to vary by partnership status. Married women providing co-resident care were even less likely to be in employment than single women providing co-resident care when this topic was first researched in the UK nearly 30 years ago (Arber and Ginn, 1995). Married or partnered women providing care were more likely to leave work than non- partnered/married women (Berecki-Gisolf et al., 2008).

Health varies geographically for a variety of reasons, including poverty levels, employment rates and local authority funding for health and social care, so the need for care by family members in certain areas is greater (Ellis and Fry, 2010; Newton et al., 2015). Different areas of England and Wales have higher proportions of people requiring care. Census 2021 shows that regions with the highest proportions of carers are the North East, the North West, Yorkshire and the Humber, and the Midlands (ONS, 2023f). Although not much is known about the geographical distribution of MGHs in England, there is likely to be a higher concentration of this type of household in areas with higher proportions of some minority ethnic groups. ONS data has also shown that Asian, Asian British and Asian Welsh people are more likely to live in MGHs (ONS, 2023d).

People with disabilities may be disadvantaged in multiple ways regarding employment outcomes of caring. Carers are more likely than non-carers to have a disability themselves and Census data from 2021 shows that 1.4 million carers are disabled (Carers UK, 2024, p10). Additionally, people with disabilities are less likely to be in employment compared with people without disabilities (53.5% compared with 81.6%) (ONS, 2022a).

Number of dependants may play an important role in care-related employment outcomes. Research on the 'sandwich generation', those sandwiched between two generations requiring care (e.g. their own children and their older parents), face particular stress around finances (Watkins and Overton, 2024). To further exemplify this, Henz (2004, p868) found that female carers with dependent children were 28% more likely to stop work than those who did not have dependent children.

Care provision is found to vary by socioeconomic status, with women from lower socioeconomic backgrounds being more likely to provide care (Tooth and Mishra, 2014). Additionally, Brimblecombe and Farias (2022) found, using highest qualification as a proxy for socioeconomic status, that non-carers were more likely than carers to have a degree as their highest qualification. Both Brimblecombe et al (2020) and McKie and Jyrkinen (2021) have written about the constraining effect socioeconomic status can have on the ability of carers to have choice around caring. This is likely due to

higher socioeconomic status being associated with higher incomes which offer the freedom to engage paid-for care services in lieu of unpaid care or to support and facilitate more balanced caring (Bertogg and Strauss, 2020; Lightman and Link, 2021).

3.2.6 Summary

In sum, there is a foundation of literature discussing MGHs and care, mostly from outside England and Wales, that can be drawn upon to inform new research in this area. Co-resident care, compared with extra-resident care, is likely to be of a higher intensity (Pickard et al., 2016; Peytrignet et al., 2023). Higher intensity care is associated with a higher probability of labour market exit (King and Pickard, 2013; Carr et al., 2018) and loss of earnings (Brimblecombe and Farias, 2022). However, it is hard to identify whether these worse employment outcomes remain for higher intensity carers in MGHs. To assess what the employment outcomes are for carers in this increasingly common household type, new research using recent data from England and Wales is needed. This is the gap I fill with this study by examining data from Census 2021.

3.3 Methods

3.3.1 Data

The data used for this research is drawn from Census 2021. The census is a compulsory survey of all households and individuals in England and Wales which is carried out by the ONS every 10 years (ONS, 2022). It provides a snapshot of the whole population with information about behaviours that includes labour market participation, home ownership, and education. Data was collected in March 2021, just under a year after lockdown measures for the COVID-19 pandemic were imposed in March 2020. Some lockdown measures were still in place at the time of the Census, although they had been eased, with plans to return students to schools (Institute for Government, 2022). During the pandemic many carers said they were providing more care than in pre-pandemic times as the care receiver's needs became more intensive (Carers UK, 2020).

Participation in the census is mandatory, so Census data has the benefit of being a very large dataset. To avoid computational limitations in processing power, I produced a 10% random sample of the original data. However, this remains representative because the sample was taken randomly and the percentages in each category are near identical to those percentages in the full data. Additionally, the study population was filtered before sampling to include only: usual residents; living in private households; with valid region data; and working age adults (I define asv18-66 years). The final sample size is 3,608,980[15] individuals.

[15] All counts are rounded to the nearest 5, following ONS guidance.

3.3.2 Variables

In this research, a carer is defined as anyone who answered 'Yes' to the following question in Census 2021: "Do you look after, or give any help or support to, anyone because they have long-term physical or mental health conditions or illnesses, or problems related to old age? excluding anything carried out for paid employment " (GSS Harmonisation Team, 2020; ONS, 2023a; ONS, 2023e).

3.3.3 Defining Multigenerational Households

MGHs comprise "two or more generations of related adults" (Burgess and Muir, 2020, p322). This typically involves grandparents living with their adult children and grandchildren or adult children living with their parents. Similarly, the ONS define MGHs as "Households where people from across more than two generations of the same family live together" including households with grandparents and grandchildren whether the intervening generation also live in the household" (ONS, 2023g). There are multiple types of MGH which comprise the overall category of MGH used in this research. These types are broken down in Table 3.1 for context but I cannot distinguish between these types of MGH in this research. In the analysis presented, I compare MGHs to any other household type.

Table 3.1- Defining Multigeneration Households

Multigeneration Household Type	Example
Single grandparent or married/ civil partnership/ cohabiting couple with step(children) and grandchildren but where the children are not parents of the grandchildren.	A family where the older parents live with their adult children from one marriage and the grandchildren of another marriage where the intervening generation is not present due to death/ incarceration/ long-term hospitalisation.
Married/ civil partnership/ cohabiting couple who are grandparent(s) or any other unspecified relation of the second generation.	A family where older parents live with any combination of their adult children/ nieces/ nephews/ any other relatives and perhaps that generation's children also.
Married/ civil partnership/ cohabiting couple with grandchildren but no children (of the intervening generation).	Grandparents living with their grandchild(ren) but not the grandchild(ren)'s parents who are not present due to death/ incarceration or long-term hospitalisation.

3.3.4 Key Variables of Interest

There are two dependent variables for this research: whether the individual is or is not in employment or whether employed individuals are in full-time employment or not. The key independent variables of interest are gender, multigenerational living, and caring. The use of these variables allows me to answer whether multigenerational living (Table

3.1) is associated with employment outcomes for carers and whether this varies by sex. Other independent variables that I control for are age, ethnicity, disability, marital status, number of dependent children in the household, and region because these have all been shown to play a role in the caregiving-employment relationship and are potentially confounders in the relationship between care, multigenerational living, and employment (Section 3.2.5).

Table 3.2- Recoding Categories of Care Hours to Care Intensity

Hours of Care per Week	Caring Intensity
9 hours or less	Low Intensity
10-19 hours	Low Intensity
20-34 hours	Mid Intensity
35-49 hours	Mid Intensity
50 or more hours	High Intensity

Caring intensity is derived from the caring hours variable in the Census with the following groups (Table 3.2). The grouping is inspired by Zigante et al (2021) with minor differences since their work used data from the 2001 and 2011 Census which had fewer breakdowns of hours spent caring. I chose to recode caring hours from the 5-category variable present in the Census data to a 3-category variable in line with Zigante et al (2021) to reduce the number of cross-category comparisons being made. This improves the interpretability and readability of the results section. Additionally, I adhered to the low-, mid-, and high-intensity recoding done by Zigante et al (2021) apart from having the additional category of 9 hours or less in the low-intensity category which was not a breakdown available when they conducted their analysis using 2001 to 2011 Census data.

To answer the research question of whether living in an MGH is associated with a carer's probability of being in employment, the outcome variables are binary variables:

1= 'is in employment' / 0 = 'is unemployed or economically inactive'[16]

1 = 'is in full-time employment' / 0 = 'is in part-time employment'[17] [this variable uses a cut-down sample of only employed people].

[16] For this research, economic inactivity and unemployment are combined into one category to create the binary variable of "is employed versus is not employed". It is worth noting though that someone who is unemployed is still economically active because they are looking for work while economic inactivity refers to someone who is out of work and not seeking work (ONS, 2022b).

[17] Part-time work is defined as working for 30 hours or fewer per week while full-time work is defined as working for 31 to 49+ hours per week (ONS, 2024).

I use the care intensity variable (Table 3.2) to see how different intensities of caring interact with living in an MGH is associated with the probability of employment. By stratifying the regression by the subgroups of male and female, I can identify gender differences in the relationship between care, multigenerational living and employment probability. This technique essentially acts as a three-way interaction but provides more interpretable results than the parameter estimates of a three-way interaction term.

3.3.5 Control Variables

As discussed in the literature review, previous research has shown that there are differences in caring, employment, and likelihood of living in an MGH according to age (ONS, 2023e; Ansari-Thomas, 2024), ethnicity (Public Health England, 2018; Marani, 2021; ONS, 2023d), marital status (Millar and Ridge, 2008; Berecki-Gisolf et al., 2008), different geographies (Ellis and Fry, 2010; Newton et al., 2015), disability (Carers UK, 2024; ONS, 2022a), number of dependants (Henz, 2004; Watkins and Overton, 2024), and highest qualification as a proxy for socioeconomic status[18] (Tooth and Mishra, 2014; Social Mobility Commission, 2024). Additionally, there is a relationship between age and employment with employment probability rising, to an extent, with age (Hietmueller, 2007) and individuals in mid-to-late middle age being most likely to be a carer (Longacre et al., 2021). I control for all these sociodemographic characteristics to ensure that I am isolating the effect of the interaction between care and multigenerational living on employment, holding constant for any variation these characteristics are likely to be responsible for. The variables' counts and proportions are as shown in Table 3.3. Age is the only continuous variable and, due to it being continuous, I was able to model it as a cubic spline[19] to allow for non-linearity in the relationship between it and the outcome variable.

[18] There is a strong correlation between highest qualification and socioeconomic status so the former is often used as a proxy for the latter (Social Mobility Commission, 2024). Education is used as an appropriate proxy for socioeconomic status due to it being easy to measure (Khalatbari-Soltani, 2022) and being, to some degree, associated with higher occupational attainment (Ordemann, 2023). For a more in-depth discussion of the use of education as a proxy, see section 2.4.2 of the thesis.

[19] Splines are used to allow for the modelling of a non-linear relationship between a continuous predictor and categorical outcome variable. A spline works by splitting the continuous variable, in this case 'age' into a number of intervals defined by the researcher and applying a cubic polynomial at each interval. The joins between each interval are smoothed which creates a smooth, continuous curve (Gauthier et al., 2020; Lopez-Ayala et al., 2025). Knots can be specified in the spline function by using the degrees of freedom parameter and "generally five or fewer knots are sufficient" (Gauthier et al., 2020, p677). I use BIC (Bayesian Information Criterion) scores to determine which number of degrees of freedom has the best model fit (these can be found in Appendix 3.7).

Table 3.3- Counts and Proportions of Variables (10% Sample)

Variable	Level	Count	%
Carer status	High-intensity carer	97,400	2.7
	Mid-intensity carer	84,950	2.4
	Low-intensity carer	194,635	5.4
	Non carer	3,232,530	89.6
Dependent children in household	One dependent child under 18 years	635,610	17.6
	Two dependent children under 18 years	555,355	15.4
	Three or more dependent children under 18 years	236,010	6.5
	No dependent children or children	2,182,005	60.5
Disability	Disabled: Activity Limited a Lot	221,630	6.1
	Disabled: Activity Limited a Little	345,660	9.6
	Not Disabled: Long-Term Condition, Activity Not Reduced	281,525	7.8
	Not Disabled: No Long-Term Conditions	2,760,165	76.5
Employment	Unemployed/Economically inactive	954,760	26.5
	Employed	2,654,750	73.5
Ethnicity	Other ethnic group	83,035	2.3
	Black, Black British, Black Welsh, Caribbean or African	154,290	4.3
	Mixed or Multiple ethnic groups	81,360	2.3
	Asian, Asian British or Asian Welsh: Chinese or Other Asian	95,565	2.6
	Asian, Asian British or Asian Welsh: Bangladeshi, Indian, or Pakistani	260,150	7.2
	White	2,934,575	81.3
Full-time Employment	Part-time employed	751,620	20.8
	Full-time employed	1,903,130	52.7
	N/A (unemployed/economically inactive)	954,760	26.5
Highest qualification	No qualifications	434,810	12
	Level 1 qualifications	356,975	9.9
	Level 2 qualifications	490,690	13.6
	Apprenticeship	157,595	4.4
	Level 3 qualifications	702,825	19.5
	Level 4 + qualifications	1,388,640	38.5
	Other qualifications	77,450	2.1
Marital status	Married/in a civil partnership	1,575,155	43.6
	Separated/Divorced/Legally dissolved civil partnership	410,125	11.4
	Widowed/Surviving partner of civil partnership	44,890	1.2

	Never married/Never registered civil partnership	1,578,815	43.7
Multigeneration Living	Multigenerational Household	139,365	3.9
	Not a Multigenerational Household	3,469,620	96.1
Region	East	377,065	10.4
	East Midlands	291,350	8.1
	London	584,885	16.2
	North East	157,840	4.4
	North West	447,360	12.4
	South East	551,645	15.3
	South West	332,835	9.2
	West Midlands	354,615	9.8
	Yorkshire and the Humber	328,090	9.1
	Wales	183,300	5.1
Sex	Female	1,840,645	51
	Male	1,768,335	49
		Mean	**Std. Deviation**
Age		41.72	13.42

Source: Descriptive statistics from Census 2021 sampled data, ONS

NB: Counts rounded to nearest 5.

3.3.6 Method

In this study, I use logistic regression to estimate the probability of employment for non-carers and carers of different intensities in MGHs and non-MGHs. Logistic regression is an appropriate modelling technique to answer my research question because of the binary outcome variables and categorical variables of interest. Two-way interaction terms between multigenerational living and care status/ care intensity are included in the model to assess whether this form of household composition interacts with the effects of caregiving on employment, to exacerbate or lessen them. The inclusion of interaction terms in regression models is apt when there is interest in how the relationship between two variables (care and employment) may depend on a third variable (multigenerational living) (Brambor et al., 2006; Scott and Siltanen, 2017; Mize, 2019). I employ the glm() function from the 'stats' package in R to run these models and calculate predicted probabilities using the 'ggeffects' package.

The baseline equation for each model, shown without controls for simplicity, is:

$$\log\left(\frac{\pi_i}{1-\pi_i}\right) = \beta_0 + \beta_1 X_1 + \sum_{j=2}^{J} \beta_{2j} Z_{2j} + \sum_{j=2}^{J} \beta_{3j} X_1 Z_{2j}$$

- $\log\left(\frac{\pi_i}{1-\pi_i}\right)$ is the log of the odds of the probability that that the individual (i) is employed/ in full-time employment.

- β_0 is the intercept – the estimate of the log odds of employment for a non-MGH, non-carer.
- X_1 is the binary variable of whether someone lives in an MGH.
- β_1 is the coefficient associated with X.
- Z_{2j} is a dummy variable for the care intensity category j (with a value of j for each category bar the reference category, non-carer).
- β_{2j} is the coefficient associated with care intensity for category j – in comparison to non-carers.
- β_{3j} are the coefficients of the interaction term between X_1 and each Z_{2j} for each category other than non-carers.

Separate models are run for men and women. Control variables are sequentially added into each model.

3.3.7 Analysis

Interpreting interaction effects in logistic regression is not as straightforward as it is in linear regression because logistic regression coefficients are typically presented as odds ratios which are exponentiated coefficients. The nature of exponentiated coefficients means that an odds ratio of an interaction term is essentially a multiplication of a multiplication which is not intuitive to interpret (Mize, 2019). Therefore, instead of using odds ratios, here I calculate the predicted probability for each possible interaction and compare these probabilities (Li and Barry, 2022). Additionally, Best and Wolf (2013) recommend using graphs to investigate the results of logistic regression models with interaction effects. Combining these two recommended interpretation techniques, I interpret the predicted probabilities numerically and plot them to view the overall pattern.

3.3.8 Adjusted Probabilities Versus Marginal Means

There are several different ways of calculating predicted probabilities. First, one can make predictions which fix categorical variables to their modal category. For example, London is the most frequently occurring region so the predicted probabilities in this instance are calculated for London. Comparatively, another way of getting predicted probabilities is using marginal means which calculate probabilities weighted across the sample values of each control variable. These techniques answer two related but different questions. The former is: What is the probability of employment for the typical individual in the sample? The latter is: What is the probability of employment across the sample? (Lüdecke, 2018).

Due to the large number of controls in my analysis, I was unable to get marginal means predictions since the reference grid for calculating them via emmeans() became too

large. One option was to calculate marginal means on a model with fewer control variables, but to do this I needed to determine which control variables could be removed. My literature review had indicated that all the control variables I was using were potential confounders in the care and employment relationship, but I wanted to ensure that they were contributing to the model. To do this, I used a Likelihood Ratio Test (LRT). The LRT compares models, traditionally nested models where control variables are sequentially added (Lewis et al., 2011). The result of an LRT is a likelihood ratio of how well the model observations fit to the data (Glover and Dixon, 2004). If the ratio for one model is statistically significantly better than the other, that suggests that the difference between the models is an appropriate one. The LRT score (available in Appendices 3.5 and 3.6) was statistically significant for each control variable added, suggesting that each variable improves the fit of the model to the data and is, therefore, a valuable addition. Additionally, I compared the two types of predictions on plots which proved them to be not substantively different (Appendices 3.1-3.4). Thus, I chose to calculate adjusted predictions instead because this could be done on a model with all the controls. For this, I calculate the probabilities adjusted to the modal category of each control variable (Table 3.4).

Table 3.4- Table Showing the Mode Category of Control Variables

Control Variable	Mode Category
Region	London
Disability	No Disability
Marital Status	Never Married/ Never Registered Civil Partnership
Dependent Children	None
Highest Qualification	Level 4+ Qualifications
Ethnicity	White

3.4 Results

In this section I explore the results of my analysis, starting with an overview of the odds ratios indicating the statistical significance of the interaction terms. To more meaningfully investigate the interaction effects, I discuss the relationship between multigenerational living, care, gender, and employment using predicted probabilities displayed on grouped bar charts. Though the counts displayed in the methods section of this paper are rounded to the nearest 5, the analysis was carried out on unrounded data. In this section, I display the first model (unadjusted, no control variables) and the final model (adjusted, all control variables). For all the models[20], of which there are 8 in total, see the appendices (3.8-3.11 for nested regression models, 3.12-3.13 for predicted probabilities, 3.14-3.25 for plotted predicted probabilities).

[20] All the outputs for this paper are also available on the ONS website (ONS, 2026).

3.4.1 The Relationship Between Caring and Probability of Employment

Table 3.5 displays the odds ratios from a regression model assessing the relationship between caring, multigeneration living, and employment for men and women before and after the introduction of any control variables. It shows that, for those not living in an MGH, men and women providing high- and mid-intensity care are less likely to be in employment than non-carers both before and after controlling for sociodemographic characteristics. Women providing low-intensity care, living in non-MGHs, in both models are more likely to be in employment than non-carers. This is also true for men before controlling for any sociodemographic characteristics. Men and women providing no care, before controlling for any sociodemographic characteristics, are less likely to be in employment when living in an MGH compared with a non-MGH. This also is true of men after controlling for all sociodemographic characteristics but not for women providing no care, who are 15% more likely to be in employment living in an MGH compared with those in a non-MGH, after controlling for all sociodemographic characteristics. Before controlling for any sociodemographic characteristics, the interaction terms between caring and living in an MGH are statistically significant for men and women across caring intensities. However, this statistical significance may be largely explained by variations in sociodemographic characteristics since it has largely gone in the adjusted model. The significance of the interaction effect for female high intensity carers living in an MGH is persistent across models, suggesting that the host of characteristics controlled for in this study do not explain the differences in employment probability for women living in an MGH compared with those not in an MGH. Additionally, for both men and women, the significance of the low-intensity X MGH interaction remains which is interesting.

Table 3.5- Odds Ratios from Logistic Regression Models of Employment Probability by Care and Multigenerational Living (Unadjusted and Adjusted Models)

	Unadjusted Model (No Controls)				Adjusted Model (All Controls)			
	Men		Women		Men		Women	
	Odds Ratio	95% CI	Odds Ratio	95% CI	Odds Ratio	95% CI	Odds Ratio	95% CI
Care Status (Ref: Non-Carer)								
High-Intensity Carer	0.26***	0.25-0.26	0.25***	0.25-0.26	0.23***	0.23-0.24	0.29***	0.29-0.30
Mid-Intensity Carer	0.52***	0.51-0.53	0.51***	0.50-0.52	0.55***	0.54-0.57	0.59***	0.57-0.60
Low-Intensity Carer	1.03***	1.01-1.05	1.24***	1.23-1.26	0.97**	0.95-0.99	1.14***	1.12-1.15
MGH (Ref: Non-MGH)								
Multigeneration Household	0.82***	0.81-0.84	0.64***	0.63-0.65	0.93***	0.90-0.95	1.15***	1.13-1.17
Interaction (Ref: Non-Carer x Non-MGH)								
High-Intensity Carer x MGH	1.32***	1.21-1.44	1.73***	1.63-1.83	1.10	0.99-1.21	1.12***	1.05-1.20
Mid-Intensity Carer x MGH	1.15**	1.05-1.27	1.50***	1.41-1.60	0.90	0.81-1.00	1.05	0.98-1.13
Low-Intensity Carer x MGH	1.29***	1.19-1.40	1.39***	1.31-1.48	1.22***	1.11-1.34	1.14***	1.06-1.23

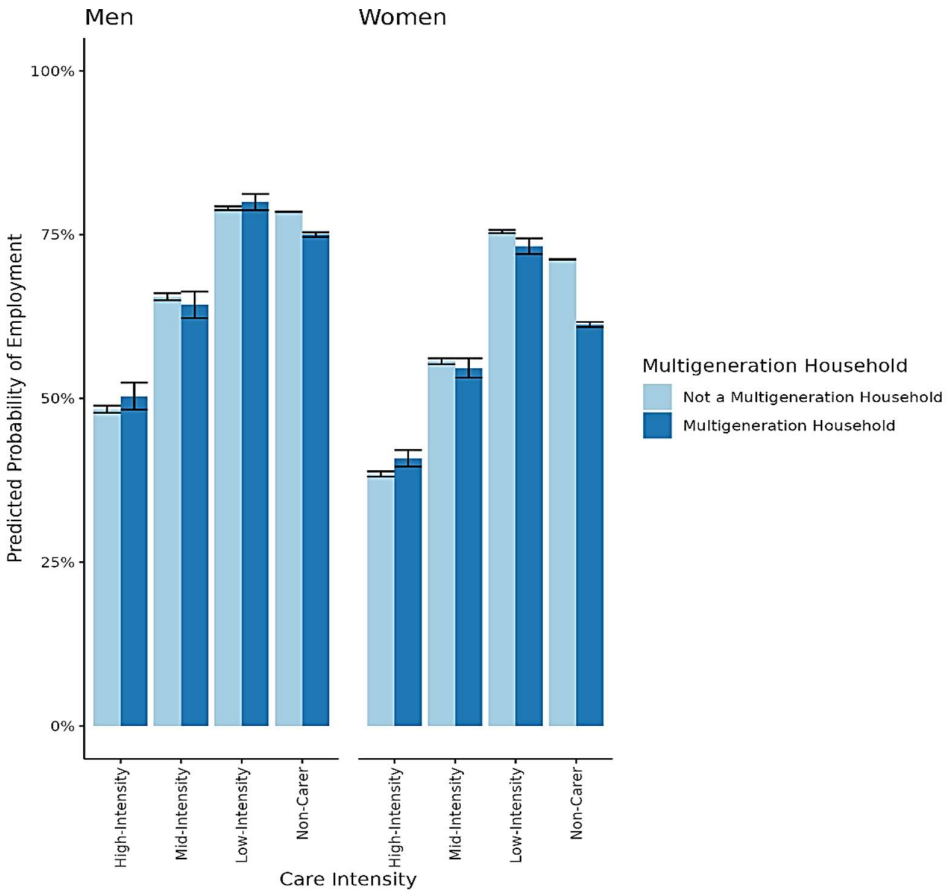
Source: Inferential analysis on Census 2021 data, ONS

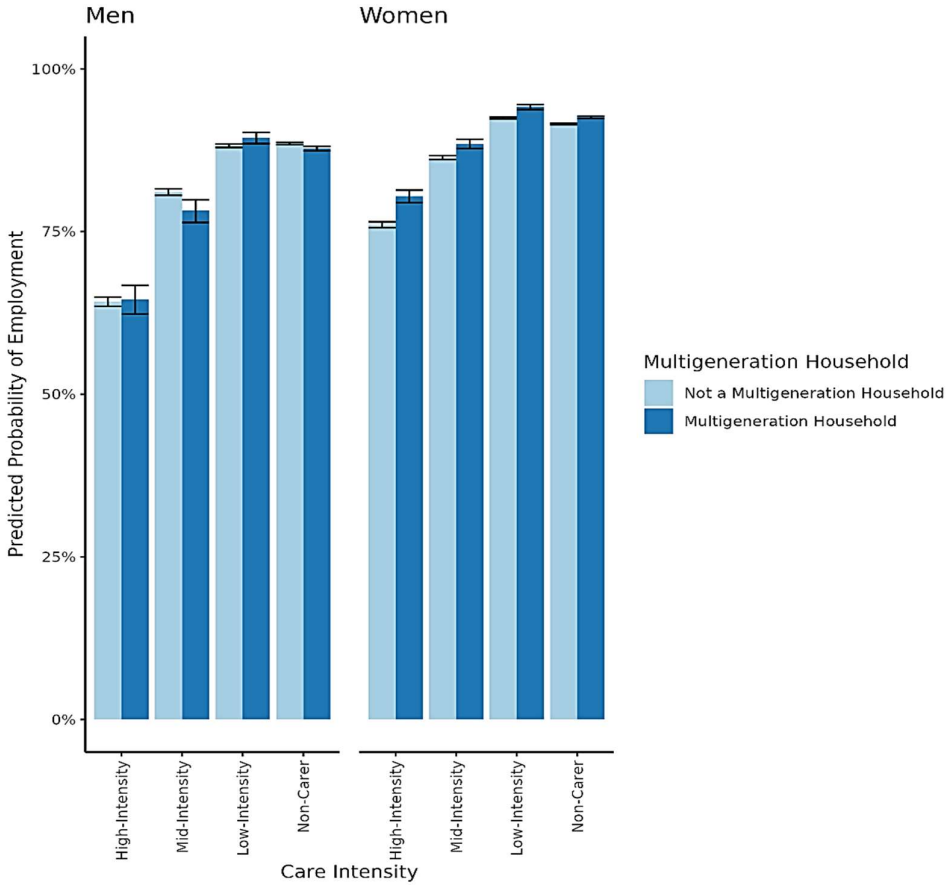
**p≤0.05*

***p≤0.01*

****p≤0.001*

Figure 3.1- Predicted Probabilities of Employment by Care and Multigenerational Living (Left: Unadjusted Model and Right: Adjusted Model)





Source: Inferential analysis on Census 2021 data, ONS

Figure 3.1 shows the predicted probability of being in employment depending on carer intensity and whether an individual lives in an MGH, calculated from the regression model shown in Table 3.5. On the left-hand side of the figure are the probabilities for a model with no control variables whilst those on the right-hand side are for a model with all the control variables: age, region, disability, marital status, dependent children, highest qualification, and ethnicity. For the unadjusted models, women providing mid-intensity care living in an MGH have a 54.7% probability of employment which is lower than that of female mid-intensity carers living in a non-MGH (55.7%). Similarly, in the unadjusted models, women providing low-intensity care have a lower probability of employment in an MGH (73.3%) than in a non-MGH (75.5%). Women providing no care living in an MGH have a 10% lower probability of employment compared to those living in a non-MGH (61.3% compared with 71.2%). However, in the unadjusted models, women providing high-intensity care living in an MGH have an employment probability of 40.9% which is higher than for high-intensity, female carers living in a non-MGH (38.5%). As for men, in the unadjusted models, those providing low-intensity care living in an MGH have a higher probability of employment (80%) compared to those living in a non-MGH (79%). This is also true of men providing high-intensity care living in an MGH (50.4%) compared to those living in a non-MGH (48.4%). Both men and women having higher probabilities of employment living in an MGH compared with a non-MGH when providing high-intensity care is interesting and suggests that there is something about this intensity of caring and living in this household type that facilitates employment regardless of gender, before controlling for any other sociodemographic characteristics.

As for the model adjusted according to all control variables, the key differences compared with the unadjusted model are that women now have a higher probability of employment living in an MGH compared with a non-MGH, regardless of caring status and intensity. In the adjusted models, men providing low-intensity care have a higher employment probability living in an MGH (89.4%) compared to those in a non-MGH (88.2%). This is also true of male high-intensity carers living in MGHs (64.6%) compared to those living in non-MGHs (64.2%) but the percentage point size of the difference is smaller than it was in the unadjusted model. Comparatively, the difference between female high-intensity carers living in an MGH compared with a non-MGH has increased (a percentage point difference of 4%). This suggests that, particularly for women, MGHs are associated with higher employment probabilities when controlling for a host of sociodemographic characteristics.

The comparison between the unadjusted and the adjusted models suggests that the average man and woman (before controlling for sociodemographic characteristics) providing high-intensity care has a higher probability of employment when living in an MGH compared with a non-MGH. However, when controlling for these characteristics and estimating a probability according to the categories of an individual who is: 42

years old, living in London, without a disability, never married, without dependent children, educated to Level 4 or above, and white, the size of the difference between household types reduces for men but not for women. Interestingly, after having controlled for these characteristics, women have a higher employment probability than men in each category of caring regardless of whether they live in an MGH or not. The opposite of this is true in the unadjusted models. A persistent finding across the models is that women providing high-intensity care living in an MGH have a higher probability of employment than those in a non-MGH.

3.4.2. The Relationship Between Caring and Probability of Employment

Table 3.6 shows the odds ratios of being in full-time employment for men and women providing different intensities of care and living in MGHs compared with non-MGHs for both the unadjusted (no control variables) and adjusted (all control variables) models. These results indicate that employed men and women, living in MGHs, are less likely to be in full-time employment when providing any intensity of care compared with providing no care, which is true before and after controlling for sociodemographic characteristics. Before controlling for any sociodemographic characteristics, men and women providing no care are less likely to be in full-time employment living in an MGH compared with a non-MGH. However, this is not the case after controlling for sociodemographic characteristics where both men and women providing no care are more likely to be full-time employed living in an MGH than a non-MGH. For both men and women, there is a statistically significant interaction effect between living in an MGH and providing low-intensity care regarding the probability of employment. The statistical significance of this interaction term remains between the model with no controls and the model with all controls. For women, the interaction between providing high-intensity care and living in an MGH is also statistically significant regarding employment across the models. The continuation of the statistical significance of these interaction terms between the model with no controls and the model with all controls suggests that the relationship between these variables cannot be explained by the various sociodemographic characteristics controlled for in this research.

Table 3.6- Odds Ratios from Logistic Regression Models of Full-Time Employment Probability by Care and Multigenerational Living (Unadjusted and Adjusted Models)

	Unadjusted Model (No Controls)				Adjusted Model (All Controls)			
	Men		Women		Men		Women	
	Odds Ratio	95% CI	Odds Ratio	95% CI	Odds Ratio	95% CI	Odds Ratio	95% CI
Care Status (Ref: Non-Carer)								
High-Intensity Carer	0.68***	0.65-0.70	0.53***	0.52-0.55	0.71***	0.69-0.74	0.73***	0.71-0.75
Mid-Intensity Carer	0.69***	0.67-0.72	0.76***	0.74-0.78	0.80***	0.77-0.83	0.89***	0.87-0.91
Low-Intensity Carer	0.79***	0.77-0.81	0.78***	0.77-0.79	0.78***	0.76-0.80	0.83***	0.82-0.84
MGH (Ref: Non-MGH)								
Multigeneration Household	0.74***	0.73-0.76	0.77***	0.75-0.78	1.05***	1.02-1.08	1.34***	1.31-1.37
Interaction (Ref: Non-Carer x Non-MGH)								
High-Intensity Carer x MGH	1.22**	1.06-1.41	1.43***	1.31-1.56	1.12	0.96-1.30	0.94	0.85-1.03
Mid-Intensity Carer x MGH	1.00	0.89-1.14	1.25***	1.15-1.36	0.89	0.78-1.02	0.95	0.87-1.05
Low-Intensity Carer x MGH	1.17***	1.07-1.28	1.37***	1.28-1.46	1.12*	1.02-1.24	1.09*	1.01-1.17

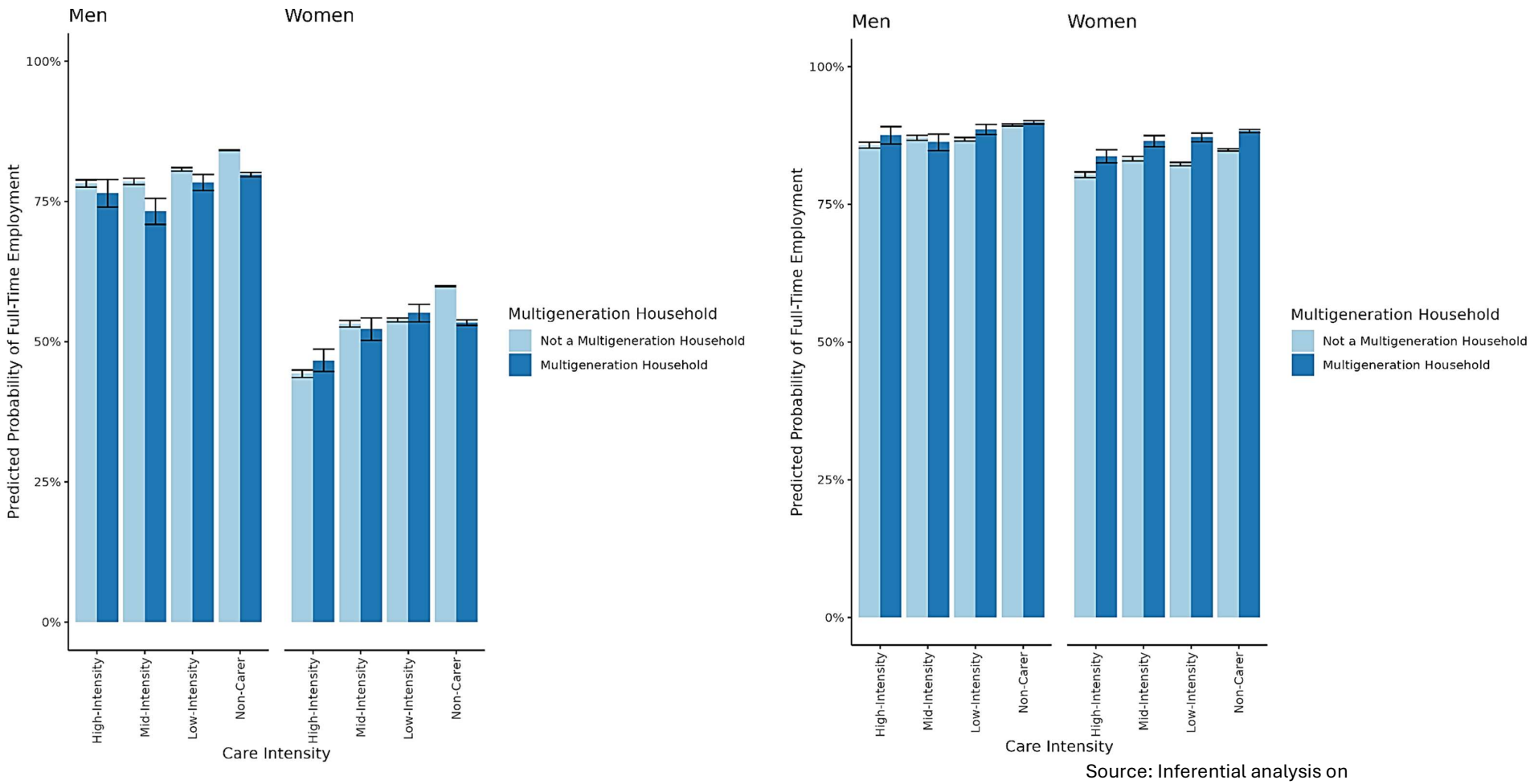
Source: Inferential analysis on Census 2021 data, ONS

**p≤0.05*

***p≤0.01*

****p≤0.001*

Figure 3.2- Predicted Probabilities of Full-Time Employment for Men and Women by Care and Multigenerational Living (Left: Unadjusted Model, No Control Variables and Right: Adjusted Model, All Control Variables)



Source: Inferential analysis on Census 2021 data, ONS

Figure 3.2 shows the predicted probabilities of employed men and women being in full-time employment depending on care intensities and whether they live in an MGH with the unadjusted probabilities on the left-hand plot and the adjusted probabilities on the right-hand plot. These predicted probabilities are calculated from the regression model shown in Table 3.6. Before controlling for any sociodemographic characteristics, women providing high-intensity care have a higher probability of full-time employment when living in an MGH (46.7%) compared to those providing the same intensity of care in a non-MGH (44.3%). This is also true of female, low-intensity carers living in an MGH (55.1%) compared to those in non-MGHs (53.9%). Men, regardless of caring, have a higher probability of full-time employment living in a non-MGH compared with an MGH. Comparatively, after controlling for all sociodemographic characteristics, women providing any amount of care have a higher probability of full-time employment living in an MGH compared with a non-MGH with the largest difference between household types being for those providing low-intensity care (87.2% compared with 82.3%). However, it is interesting that again there is a higher probability of full-time employment for female high-intensity carers living in an MGH compared to a non-MGH before and after controlling for sociodemographic characteristics. It is the persistence of this finding which suggests that living in an MGH is particularly protective, regarding employment, at higher caring intensities for women. Men have higher probabilities of full-time employment living in an MGH compared with a non-MGH apart from for men providing mid-intensity care. However, the gap between individuals in MGHs and non-MGHs is larger for women than for men. This suggests that perhaps living in an MGH is more protective, regarding full-time employment, for women than for men.

The differences between the unadjusted and adjusted models in Figure 3.2 suggest that gender differences are smaller regarding care and full-time employment when controlling for various sociodemographic characteristics. Additionally, on average (when controlling for no sociodemographic characteristics), women providing high- or low-intensity care living in an MGH have a higher probability of full-time employment than those in a non-MGH, but this is not the case for men. This pattern for women remains but extends also to mid-intensity carers and non-carers in the adjusted models when holding all control variables constant at their modal categories. For men, holding the aforementioned variables constant, there is a higher-probability of full-time employment when providing high-intensity or low-intensity care living in an MGH compared with living in a non-MGH which was not the case in the model with no controls. Women in both the unadjusted and adjusted models, thus irrespective of control variables, still have a lower probability of full-time employment than men, apart from a slightly higher probability of full-time employment for women than men for mid-intensity carers living in an MGH (a percentage point difference of 0.1%). Employed women providing high-intensity care living in an MGH consistently, regardless of control variables, have a higher probability of full-time employment than those in a non-MGH.

3.5 Discussion

A key finding of this paper is that women providing high-intensity care have a higher probability of employment and, among employed people, full-time employment when living in an MGH compared with equivalent people living in a non-MGH. This suggests that MGHs may provide a supportive structure that allows individuals to work even when they have substantial caring responsibilities. For women, after controlling for various sociodemographic characteristics, those providing any intensity of care or no care have higher probabilities of employment when living in an MGH compared to a non-MGH. Additionally, men providing high-intensity care in the adjusted models for employment probability and full-time employment probability have higher probabilities of the respective employment outcome living in an MGH compared with a non-MGH but the size of the difference between the two household types is smaller for men than it is for women. This may suggest that MGHs, in terms of facilitating employment, are more beneficial for women than they are for men. If the increased employment probabilities are due to the greater distribution of domestic tasks in these households (Souralová et al., 2022), then it may be that this household type benefits women more than men because they are, traditionally, the people doing the bulk of the domestic labour in a household (Federici, 2014; Williams, 2018; Renault, 2021; Chanfreau, 2023).

Regarding the probability of full-time employment, the interaction term between providing low-intensity care and living in an MGH is statistically significant for both men and women before and after controlling for all sociodemographic characteristics in this research. However, it is less statistically significant in the final model (with all control variables). The statistical significance of high-intensity care and living in an MGH disappears by the final model. Looking at the nested regression outputs (appendices 3.8-3.11), the statistical significance for this interaction term goes in model 6 for men and women which is the model where number of dependent children is controlled for. This suggests that differences in the probability of full-time employment for men and women living in MGHs compared with non-MGHs could, to some extent, be explained by the number of dependent children living in their household.

3.5.1 Probability of Employment

An interesting finding that warrants further research is that female high-intensity carers living in MGHs have much higher employment probabilities than those living in non-MGHs. Considering previous research shows that high-intensity care has particularly large employment consequences such as increased labour market exit (Carr et al., 2018), it is surprising that this seems to be less so for those living in MGHs, both when controlling for sociodemographic characteristics and not. High-intensity carers still have lower probabilities of employment than non-carers. It is just when comparing high-intensity carers living in MGHs to those in non-MGHs, those in MGHs have higher probabilities of employment than those in non-MGHs. This, again, could point to the

supportive structure of MGHs enabling people who want to work while caring to sustain that employment. Ansari-Thomas (2024) notes that a variety of support could be gained by living in an MGH, such as grandparents helping with childcare as well as adult children caring for older parents, distribution of domestic labour, financial support, and emotional support. Similarly, Souralová and Žáková (2019) found that the presence of other people in MGHs created a supportive environment which facilitated improved wellbeing. MGHs can come with their own strains and difficulties such as lack of privacy and lack of control (Easthope et al., 2015), but it may be that they create a network of support that allows carers to stay in the labour market should they choose to do so. It would be useful to do further research, including qualitative methods, to better establish why my findings indicate higher probabilities of employment for women providing high-intensity care and living in MGHs.

Male and female low-intensity carers living in MGHs have a consistently higher probability of employment than non-carers regardless of whether they live in an MGH or not. This aligns with research which shows that carers providing less than 10 hours of care per week are more likely to be employed than individuals providing no care (King and Pickard, 2013). However, my low-intensity care category also includes individuals providing up to 19 hours of care per week. Perhaps there is something in the structure of an MGH that either requires the carer to stay in employment (perhaps contributing financially to the household) or that better enables them to balance paid work with caring responsibilities (such as better distribution of labour in the household due to there being more people). The latter explanation is corroborated by research from Souralová et al (2022) which found, interviewing carers living in MGHs in the Czech Republic, that the distribution of domestic tasks is more equal in MGHs compared with other household types.

3.5.2 Probability of Full-Time Employment for Employed Individuals

For men, the probability of full-time employment across all care levels was higher in a non-MGH compared with an MGH before controlling for any sociodemographic characteristics. However, this switches on all care levels apart from mid-intensity care to be the other way: men providing no care, or high- or low-intensity care living in an MGH have a slightly higher probability of full-time employment than those in a non MGH. This, again, corroborates with the multigenerational living literature which suggests that this household type fosters a more equal distribution of domestic labour and responsibilities (Souralová, and Žáková, 2019; Souralová et al., 2022). This may explain the increased probability of full-time employment for male, employed carers and non-carers (apart from those providing mid-intensity care) demonstrated in my research. For women, after controlling for all sociodemographic characteristics, this pattern is the same, except that it also extends to those providing mid-intensity care, and the difference in probability of full-time employment between those living in MGHs

and those in non-MGHs is larger than it is for men. This indicates that the interaction between care and multigenerational living is gendered to some degree.

3.5.3 Strengths

A key strength of this paper is that I randomly sampled the whole of Census 2021 which means I used a representative data set to examine differences in employment probability for carers of different intensities living in MGHs compared with non-MGHs. Using even just 10% of the Census resulted in a large sample size which contributes to the statistical power of this research. Researching this household type filled a gap in the literature around the care-employment relationship.

3.5.4 Limitations

A limitation of this research is that I cannot disaggregate the analysis by co-resident or extra-resident caring which would provide valuable insight on the type of care provided and how it relates to employment. De Koker's (2009) research finds that carers living with additional persons beyond their partner and/or child are more likely to provide co-resident care but that does not mean this is the case for the individuals in our sample living in MGHs. However, we have shown how employment probability varies depending on care intensity for those living in MGHs compared with non-MGHs which offers valuable insight.

A further limitation is that causality is hard to establish. I find that MGHs seem to be associated with higher employment and full-time employment probabilities for some carers but particularly for female high-intensity carers. Drawing on research from Souralová, and Žáková (2019), Souralová et al. (2022), and Ansari-Thomas (2024), I suggest that this increased employment probability could be due to a supportive structure offered by MGHs. However, without qualitative research based in the UK or quasi experimental research using longitudinal data, I cannot establish whether that is true. Additionally, although I can control for a lot of variables using Census 2021, I cannot control for everything so there may still be unexplained variance in the adjusted models.

3.5.5 Future Research

Future research could go on to explore the MGH and care interaction on other employment outcomes such as income. As an extension to this, it would be interesting to see whether living in an MGH better enables carers to contribute to their savings, including pensions. This could perhaps be examined by joining in earnings data. This is particularly important considering the pension losses experienced by many female carers due to early labour market exit taken to facilitate caring responsibilities (Age UK, 2018; Carers UK, 2019). Future research could also build on the qualitative literature from Souralová et al (2022) to establish if the support received from other household

members in an MGH is a reason for being in employment whilst providing care in the context of England and Wales.

3.6 Conclusion

This research explores the relationship between care, multigenerational living, gender and employment by applying logistic regression models to data from Census 2021. Interaction effects are used to examine how care and living in an MGH intersect regarding the probability of employment or probability of full-time employment for employed individuals. Previous research explores reasons why more people are moving into MGHs such as filial piety, financial support, and caring for older parents (Burgess and Muir, 2020; Maye-Banbury and McNally, 2020; Nethercote, 2019). However, the research exploring carers in MGHs or, more specifically, the employment probability of carers living in MGHs is scant. In this thesis, I fill this gap in the literature by estimating the probabilities of employment and full-time employment for carers providing different intensities of care living in MGHs compared with non-MGHs.

The key findings of this research are that men and women who care, particularly at high- and low-intensities, and live in an MGH have higher probabilities of employment than those living in non-MGHs. This is particularly true of male and female low-intensity carers living in MGHs who, regardless of control for sociodemographic characteristics, have a higher probability of employment than non-carers living in MGHs and non-MGHs. This finding echoes King and Pickard's (2013) finding which indicates that carers providing fewer than 10 hours of care per week are more likely to be employed than non-carers. However, since my low-intensity carer group also includes carers providing up to 19 hours of care per week, there may be something else happening behind this finding that may be more associated with the MGH structure. A further interesting finding from this research is that female high-intensity carers living in an MGH have a higher employment probability than women providing the same intensity of care living in a non-MGH. This could support qualitative findings from the Czech Republic that indicate a greater distribution of domestic tasks in MGHs compared with other household types (Souralová et al., 2022). Finally, after controlling for all sociodemographic characteristics, employed women providing any intensity of care, including no care, have a higher probability of full-time employment in an MGH compared with a non-MGH. This finding is true to a lesser extent for men in all care intensities apart from those providing mid-intensity care to whom it does not apply. This again further aligns with existing literature suggesting greater support networks in MGH structures may facilitate full-time employment for carers who wish to balance care responsibilities with paid employment. However, an alternative perspective could come from a financial need to remain in work, especially full-time work, when living in an MGH. Much research points to financial stress being a key factor in choosing to live in an MGH structure (Burgess and Muir, 2020; Maye-Banbury and McNally, 2020). It

could be that this financial strain persists after moving into an MGH or individuals want to work to build savings to later move out of the MGH. Further research, particularly qualitative research, would be useful to build on this research to disentangle the reasons behind employment choices for carers providing varying intensities of care living in MGHs compared with non-MGHs.

This research suggests that MGHs offer a potentially supportive environment that facilitates carers' employment if employment is something they want to do alongside caring. While, in policy terms, MGHs cannot be enforced for the supportive effects, the findings indicate that the support offered by MGHs could be replicated by appropriate policies. For example, having a greater distribution of domestic tasks in MGHs potentially being the reason behind higher employment probabilities for high-intensity carers in these household types points to the benefit of having outside help. This could take the form of better availability of respite care to help with caring or providing carers with adequate financial support so that they can fund help with domestic responsibilities.

Chapter 4: Exploring the Probability of Employment of Carers by Ethnicity and Gender in England and Wales, 2021: An Intersectional Approach in England and Wales.

Abstract: The provision of care has long been associated with employment-related consequences such as exiting the labour market (Henz, 2004; Ciani, 2012; King and Pickard, 2013; Carr et al., 2018; Gomez-Leon et al., 2019; Brimblecombe and Farias, 2022) and these outcomes are well established as gendered (Lightman and Kevins, 2021; Pietka-Nykaza and Hay, 2023). However, very little is known about the labour market outcomes for carers in different minority ethnic groups. In this study, I fill this gap using data from Census 2021 and logistic regression models to explore the interaction between gender, ethnicity and care regarding employment probability. In this study, I found that there are diverse predicted probabilities of employment varying by gender, ethnicity, and intensity of care provided. A key finding of this research is that regardless of gender, Arab, Pakistani, and Bangladeshi groups, have particularly low employment probabilities when providing high-intensity care, which suggests that these groups may need more targeted or accessible employment support to help them balance work and care if that is what they want to do or ensure that they are financially supported when caring and not working.

4.1 Introduction

Providing unpaid care can have significant financial consequences, especially in influencing participation in the labour market (Henz, 2004; Ciani, 2012; King and Pickard, 2013; Carr et al., 2018; Gomez-Leon et al., 2019; Brimblecombe and Farias, 2022). Additionally, the highly gendered nature of caring has been demonstrated across the literature (Folbre, 2008; Himmelweit, 2008; Eriksson et al., 2013; Hamilton and Cass, 2017; Lightman and Kevins, 2021; Pietka-Nykaza and Hay, 2023). However, research specifically into the gendered labour market participation of carers across minority ethnic groups is limited.

Whilst gender and ethnicity are known to affect experiences of caring and employment, the multiplicative effects of these characteristics on the employment outcomes of carers are understudied. Hankivsky (2014, p252) observes that care researchers rarely consider the ways in which sociodemographic characteristics "are co-constructed in multiple ways" and instead think of them only additively. More recently, a scoping review of care research showed that just over half of the papers considered examined such characteristics as separate entities, while just below half studied sociodemographic characteristics intersectionally (Hengelaar et al., 2023). This highlights the need for new, intersectional research in the field of care.

Additionally, guided by feminist theory, I contend that research in the field of care also needs to consider the wide range of experiences and circumstances of women in different minority ethnic groups. Considering the effects only of gender, without exploring the complexities of living not just as a woman but also as a racialised individual, is not sufficient to answer my research question about the multiplicative effects of gender, ethnicity and care intensity. Thus, intersectionality is a vital tool in investigating how social phenomena are experienced. In preparing this paper, I had access to the full Census 2021 which allowed me to identify more granular minority ethnic groups than would be possible with the more widely available ONS Longitudinal Study, which is based on a 1% sample of the Census (ONS, n.d.a) or, for those on the accredited researcher scheme, a 10% sample. Using the full Census, I over-sampled minority ethnic groups and under-sampled White: English/ Welsh/ British people before employing weighted logistic regression models with interaction effects to examine the probability of employment among carers in different minority ethnic groups. I aimed to investigate the employment probability of carers of different ethnicities and genders and how this varies by caring intensity.

The research is situated in the geographic context of England and Wales. Data collection for Census 2021 took place during pandemic restrictions, on the 21 March 2021 so the temporal background for the study is the COVID-19 pandemic (ONS, 2021). This is important as these restrictions changed the living circumstances of many people, resulting in some providing more care than they otherwise would have done

(Carers UK, 2020; Cantillon et al., 2023). Additionally, due to breaks in service provision among many community care providers due to lockdown measures, more people took on caring responsibility for their loved ones (Petrillo et al., 2024). It is necessary to have an awareness of the slightly elevated number of carers present at the time of data collection.

The pandemic is one of many factors shaping the context for this research. By the time census data was collected in 2021, the UK was also in its 11th year of austerity spending (Emmerson et al., 2024). Although austerity measures did not directly target the social care sector, the economic consequences of these decisions affected both carers and people receiving care, including through the closure of many community-based support services (Lloyd, 2023). The ageing population and falling fertility rates form the broader sociodemographic context for the study, changes that mean more people are requiring care with fewer people available to provide it (Harper and Levin, 2005; Yeandle et al., 2017). I refer to unpaid carers throughout this paper as 'carers'[21].

4.2 Literature Review

4.2.1 Intersectionality

Intersectionality has been described as an analytical tool for investigating "how intersecting power relations influence social relations across diverse societies as well as individual experiences in everyday life"; the approach involves viewing diverse social categories "as interrelated and mutually shaping one another" (Collins and Bilge, 2020, p2). Chapter 2 in this thesis was founded in a care ethics approach (described and defined there). Care ethics and intersectionality go hand in hand because both are social constructivist approaches (Hankivsky, 2014). The notion of interconnectedness and interdependency is embedded within care ethics, making it logical to relate this approach to that of intersectionality (Hankivsky, 2014). Although intersectionality is a vital tool for understanding the complexities of various social phenomena, its appropriate application relies on a clear grasp of its history and how it has been situated in broader discourses of power.

Intersectionality is particularly relevant to care and caring due to the gendered and racialised contexts of care. This is exemplified in research on global care networks where, increasingly, more affluent White people rely on care obtained through networks of migration and the labour of racialised people. These present-day care networks have been theorised as embedded in colonialism and its resultant "fracturing" of "caring units" (Raghuram, 2019, p617), making it important to acknowledge the intertwining of colonialism and gendering in the distribution of care. Care is "deeply imbued with racial

[21] Per the recommended terminology of the *International Journal of Care & Caring* (Yeandle et al., 2017).

politics present and past" and "the gendered ascriptions of care are always being written and rewritten in these racialised settings" (Raghuram, 2019, p618).

Intersectionality is usually attributed to the work of Kimberlé Crenshaw who coined the term in the late 1980s, and it is her work 'Mapping the Margins' (1991) that brought the term into wider use and into the academic realm in the way we know it today (Collins and Bilge, 2020). However, intersectionality as a concept stems from much earlier discourses. For example, women in the American Civil Rights Movement of 1960s and 1970s who felt left behind by "antiracist social movements, feminism, and unions organizing for worker's rights" promoted discourses that understood the complexity of being both a woman and a racialised individual (Collins and Bilge, 2020, p3). Notably, the work of these women, as well as that of Kimberlé Crenshaw, developed intersectionality as the tool for critical inquiry that allows us to explore social injustices when using intersectionality in contemporary research. Rice et al (2019, p409) argued that any 'intersectional' research must hold "social justice and a move toward social transformation" at its core. Acknowledging this, a key aim of this paper is to inform changes in current care arrangements in which women and minority ethnic groups may experience greater disadvantage.

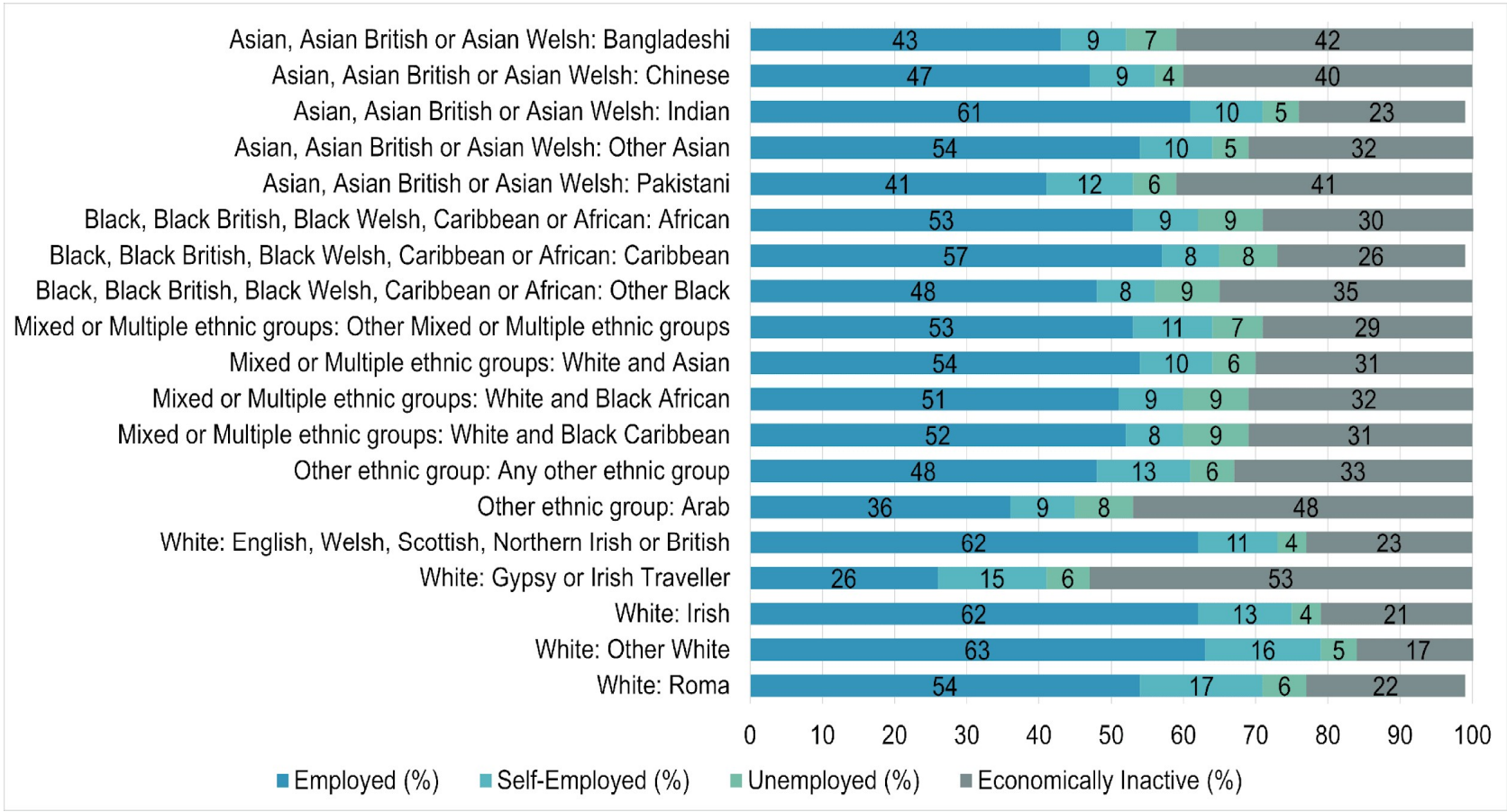
4.2.2 Defining 'Race' and 'Ethnicity'

The terms 'racial discrimination' and 'ethnic discrimination' are often used interchangeably (Quillian and Midtbøen, 2021). It is, however, important to understand the backgrounds within which notions of 'Race' and 'Ethnicity' are situated. The term 'Race' began in the 17th and 18th centuries, when the term was used to crudely organise "human beings into biological categories" whilst constructing an arbitrary hierarchy (Mirza and Warwick, 2022). The term 'ethnicity' came into mainstream discourse in the 20th century and has been used to describe an ever-fluid, self-defined group identity (Burton et al., 2010; Mirza and Warwick, 2022). Characteristics of shared identification that have been seen as comprising ethnicity include skin colour, national identity or nationality, religion, belief, language, country of birth, culture, heritage and shared history (Burton et al., 2010; Mirza and Warwick, 2022). Although ethnicity (as opposed to Race) has been the main focus of data collection, in the UK Race is still prominent in many statistical outputs which often use "phenotypical visible skin colour ('Black') alongside country of origin (Caribbean)" (Mirza and Warwick, 2022, p9). Cognisant of this issue, I adopt Mirza and Warwick's (2022, p9) suggestions about terminology, whereby 'race'/Race or 'Black'/Black are written "in quotation marks and/or expressed with a capital letter" to indicate that these concepts are socially constructed as opposed to being "genetically inherent or measurable biological fact". Acknowledging that there is no perfect way of conceptualising differences between ethnicities, I also use the term 'minority ethnic group' rather than 'ethnic minority group' (Queen Mary University of London, n.d.).

4.2.3 Labour Market and Ethnicity

There are variations in employment rates between different ethnicities with earnings inequalities being particularly prevalent among Black Caribbean and African people and Pakistani and Bangladeshi people (Li and Heath, 2020). Further research shows particularly low rates of employment among Bangladeshi and Pakistani women (Hirsch et al., 2011). Figure 4.1, below, displays data from the Census 2021 about the proportions of different ethnicities across economic activity statuses. As shown, the highest proportions of employment, not including self-employed, are among the White: English, Welsh, Scottish, Northern Irish or British, White: Irish, and White: Other White groups. Comparatively, the lowest proportions of employment, excluding self-employment, are among White: Gypsy or Irish Traveller and Arab populations. Employment is around 20% lower for Bangladeshi and Pakistani groups than for the White: English, Welsh, Scottish, Northern Irish or British group. 4% fewer Black Caribbean people are employees than White English, Welsh, Scottish, Northern Irish or British people. Zwysen et al (2021) found that minority ethnic groups were less likely to be employed and more likely to be underemployed than White groups. This was mostly the case for Black African, Black Caribbean, Pakistani, and Bangladeshi people but less so for Chinese or Indian people. In general, women were more likely than men to be economically inactive but less likely to be unemployed (Francis-Devine et al., 2025). However, this seems to be slightly different for minority ethnic groups, among whom women "are more likely to be unemployed than any other group" (Francis-Devine et al., 2025, p17). Francis-Devine et al (2025) also found that the gap between men's and women's employment rates is larger in minority ethnic groups. This highlights the need for intersectional research into labour market inequalities for carers since the intersectional experience of being both a woman and from a minority ethnic group could be again intersected by caregiving to exacerbate these inequalities further.

Figure 4.1- Plot Showing Differences in Economic Status by Ethnicity, Using Data from the 2021 Census (ONS, 2023h)



There are various reasons for ethnic variations in labour market participation. In Census 2021, economically inactive women were consistently more likely than men to give the reason for their economic inactivity as "looking after home or family"; this was particularly the case for Bangladeshi, Pakistani, White Gypsy and Irish Traveller, and Arab women (ONS, 2023h). Another reason behind these ethnic inequalities in employment is discriminatory hiring practices (Mirza and Warwick, 2022). Quillian and Midtbøen (2021, p392) define the direct form of this discrimination as that which "involves differential treatment of individuals or groups on the basis of race". They define indirect racial/ethnic discrimination as "treatment on the basis of inadequately justified factors other than race that [disadvantage] a racial group" (Quillian and Midtbøen, 2021, p392). Employers may participate in direct discriminatory behaviours in multiple ways, such as discriminating based on biased stereotypes which occurs when an employer chooses employees based on "exaggerated or even entirely incorrect" stereotypes about an ethnic group regarding productivity (Quillian and Midtbøen, 2021, p394). Indirect discrimination is exemplified in the use of employee referral in hiring, which "may disadvantage minority applicants who are less likely to have contacts at supervisory levels in organizations" (Quillian and Midtbøen, 2021, p393). Gabrielli and Impicciatore's (2022) research points to the disadvantages faced by first-generation migrants that carry on into the following generation with the children of these migrants also facing high rates of unemployment and underemployment. They explain the persistence of these inequalities by drawing on the idea of 'ethnic penalties', whereby first-generation migrants struggle to integrate into the labour market of the country they have migrated to and may experience both difficulty in finding work and workplace discrimination, whether this discrimination is direct or indirect.

There is a historical background to these discriminatory hiring practices. Ashiagbor (2021) talks about the colonial roots of discriminatory hiring practices, arguing that the industrial revolution took place on the back of the exploitative use of indigenous land, resources, and labour. This is similarly noted by Mirza and Warwick (2022, p4) who observe that ethnic labour market inequalities "are not new: they reflect historical and contemporary processes of migration, exclusion and racialisation – and resilience". Ashiagbor (2021, p517/518; p525) argues that "Race is thus constitutive of these early labour markets but, like women's unpaid work, is invisibilised", and that "histories of racial thinking" are intrinsic to the way modern labour markets are formed. In the UK context, Ashiagbor (2021) shows that many minority ethnic workers are situated in precarious labour situations through zero-hours contracts and casual employment. This preponderance of non-standard employment among minority ethnic groups means many of these groups struggle more than majority groups during periods of economic decline (Ashiagbor, 2021). In this research, which uses data from 2021 (at the tail end of the COVID-19 pandemic, following over a decade of austerity and marking the

beginning of a new cost of living crisis), minority ethnic inequalities in employment may be particularly prominent.

4.2.4 Unpaid Care and Ethnicity

As well as variations in labour market experiences across different ethnicities, there are also variations in the provision of unpaid care. Barriers to accessing paid care services have been identified as an influential factor affecting rates of caring among minority ethnic groups. Ahmed and Rees Jones (2008, p73) found that some minority ethnic groups struggle to access services due to language barriers, lack of information about what services are available and a lack of "culturally sensitive" services. Greenwood et al (2015) identified similar issues among some minority ethnic groups in accessing care services, with lower awareness of available services among these groups also a relevant factor. Wells et al (2025, p99) argue that certain minority ethnic groups struggle to access care services because of "the historical and contemporary effects of structural racism". Research shows that people in minority ethnic groups with care needs are 5% less likely than White people with such needs to receive it (Brimblecombe and Burchardt, 2021). Lower access to paid care services may increase the provision of unpaid care in these groups.

Even when paid care services are accessed, some minority ethnic groups experience poorer quality of care. Studies show some minority ethnic groups have worse experiences of care services than White people, with reports of not receiving food or drink on time, not feeling clean, and not feeling that their needs are met (Brimblecombe and Burchardt, 2021). This may also explain the lower uptake of paid services by these groups (Ahmed and Rees Jones, 2008).

Another factor contributing to ethnic variations in care patterns is health. There are higher rates of illness among some minority ethnic groups than among White people (Harriss and Salway, 2009) but White people are more likely than any minority ethnic group to have alcoholic liver disease and abnormal liver function (Alazawi et al., 2014) and White women have a higher prevalence of lung cancer (Chen et al., 2025). Hirsch et al (2011) found that older Bangladeshi people have worse health than other groups. This is further supported by Patel et al (2017), who found higher rates of Type 2 diabetes among South Asian, Black African and Black Caribbean people. These groups may struggle to establish healthy lifestyles because exercise cultures, such as typical workout gear, do not align with their cultural values, or because reducing the amount of oil or ghee used in cooking may be seen as "shameful" (Patel et al., 2017, p1114). Platt and Warwick (2020) found high rates of obesity among the Black British population and high levels of cardiovascular disease among older Pakistani men. Additionally, Brimblecombe and Burchardt (2021, p3) found that "Black/ Black British and Asian/ Asian British over 65s are significantly more likely than their White counterparts to need help with one or more ADLs [Activities of Daily Living]". Crucially, many ethnic

differences in health outcomes also arise from socioeconomic inequalities and the racial discrimination often experienced by minority ethnic groups (Chouhan and Nazroo, 2020).

The lower use of paid-for care services and poorer health outcomes among minority ethnic groups is linked to higher intensities of care provision among these groups. Although the highest proportions of carers in England and Wales are in the White: English, Welsh, Scottish, Northern Irish and British groups (ONS, 2023b), people from Asian backgrounds have been shown to provide more hours of care than White people (Brimblecombe and Burchardt, 2021). Research of a small sample of individuals in England and Wales shows elevated levels of caring among Indian, Pakistani, and Bangladeshi groups (Victor and Dobbs, 2019). Similarly, Bangladeshi and Pakistani people are more likely to be providing the highest intensity of caring (Wells et al., 2025). Additionally, more carers from Asian or Black backgrounds report financial difficulties because of their caring than White carers (Brimblecombe and Burchardt, 2021). Minority ethnic groups are not homogenous, however, and there are likely to be differences in how specific groups interact with paid and unpaid care (Patel et al, 2017). These include differences in attitudes to using paid care services and in the availability of extended networks to help with caring (Hirsch et al., 2011), as well as differences in location of care provided. Norman and Purdam (2010) found that White people were typically more likely to provide extra-resident care, while South Asian people were more likely to provide co-resident care over for over 20 hours a week.

4.2.5 Labour Market and Gender

Gendered labour market inequalities are well documented (Grimshaw et al., 2017; Olsen et al., 2018; Qian and Hu, 2021; Kowaleska, 2023). Ashiagbor (2021, p525) claims that, in addition to racialised inequalities, the "standard employment relationship" is structured around a male breadwinner model whereby men work and women provide care with 'care' largely referring to childcare and household tasks in this context. Comparatively, Chanfreau (2022) argues that there has been a shift away from the male breadwinner model with policies encouraging women into the labour market. However, the gendering of the care/employment split persists with a societal adherence to the "heteronormative family ideal" (Chanfreau, 2022, p994). Women are more likely than men to be economically inactive, but slightly less likely than men to be unemployed (Francis-Devine et al., 2025), probably because 'looking after home and family', one reason given for being economic inactive, is mainly carried out by women (Ferrant et al., 2014). Francis-Devine et al (2025) note that the employment rate in the UK is 6.4% higher for men than it is for women, with 22% more women than men working part-time. Women's greater representation in part-time work may be explained by their childcare obligations. Olsen et al (2018) found that women with children were more likely to pursue part-time employment rather than full-time. The gender pay gap is a persistent

feature of labour market inequalities (Perales, 2013) which women's higher propensity to work part-time does not explain because, even among full-time workers, women's median wage is £101 lower per week than men's (Francis-Devine et al., 2025). The pay gap may be explained by the occupational segregation. Perales (2013) notes that occupations more dominated by men have typically higher earnings than those more dominated by women. Such "occupational sex-composition accounts for between 14 and 25 per cent of the gender wage gap in Britain" (Perales, 2013, p615). For example, 5% more men than women in the UK work in managerial occupations whilst women are more represented in professional occupations such as teaching, law, accountancy, and healthcare (Francis-Devine et al., 2025). Managerial occupations are ranked as higher-paying than professional occupations (Francis-Devine et al., 2025). The wage gap can also, in part, be explained by the concept of undervaluation in feminist socioeconomics. This suggests that wages are lower in female-dominated fields because they are female-dominated and the work done by women is inherently valued less by a patriarchal society (Grimshaw et al., 2017).

Another layer of gendered labour market inequalities relevant to the present study is the COVID-19 pandemic and how it exacerbated existing inequalities. Wiegloszeska et al. (2023) found that women's employment was disproportionately affected by the pandemic due to its impact on female-dominated sectors such as hospitality and healthcare, where workers were in high demand. Additionally, the difficulty maintaining employment faced by parents due to school closures was experienced more by mothers than their partners Wiegloszeska et al. (2023).

4.2.6 Unpaid Care and Gender

Research has shown that women spend much more time than men on caring activities (Folbre, 2008; Himmelweit and Land, 2011; Duffy et al, 2013; Ferrant et al., 2014). This has been attributed to socialisation into gendered norms, with women seen as inherently 'caring' or responsible for the domicile (Oakley, 1985; Poole and Isaacs, 1997; Leaper and Friedman, 2007; Raghuram, 2019). As many choices about providing care are made within the family "where gender norms and power imbalances are often at their most acute" (Himmelweit, 2008, p11), it is unsurprising that care is such a gendered phenomenon. Gendered labour market dynamics and the devaluation of women's work mean that decisions within families that women will leave paid work to care are often made because men's work is better rewarded than women's, making it less economically viable for men to leave employment (Himmelweit and Land, 2011). Further, women leaving paid work earlier in the life course than men has direct, tangible implications on their pension entitlements leaving many older women in poverty (Himmelweit and Land, 2011; Age UK, 2018; Carers UK, 2019).

4.2.7 Unpaid Care and the Labour Market

Unpaid care has documented labour market consequences (Carr et al., 2018; Gomez-Leon et al., 2019; Spann et al., 2020; Brimblecombe and Farias, 2022). Providing co-resident care and starting a caring role are both associated with increased likelihood to stop paid work for women (Carr et al., 2018). Providing higher hours of care is associated with increased risk of leaving the labour market for men and women, albeit to different extents (1.65 times for men, over double for women) (Gomez-Leon et al., 2019). King and Pickard (2013) found that when providing under 10 hours of care per week, female carers had higher rates of employment than female non-carers, identifying a carer's employment begins to be 'at risk' when providing over 10 hours of care per week (King and Pickard, 2013). Spann et al's (2020, p705) systematic literature review identifies clear patterns of "absenteeism" and "presenteeism" for carers combining their care with paid work. Associated with this are opportunity costs, when a carer cannot find the time to participate in training or career progressing events, or feels unable to accept promotions (Spann et al., 2020). Research using data from Census 2001 shows that, for men and women, Pakistani and Bangladeshi carers are less represented in employment and this is particularly the case for women (Yeandle and Buckner, 2007). Brimblecombe and Farias (2022) find that caring is associated with both lower odds of being in employment and with lower earnings. These employment consequences are exacerbated by gender and ethnicity with the highest reduction in earnings for female carers and the highest odds of not being employed for Black carers (Brimblecombe and Farias, 2022).

4.2.8 Ethnicity, Gender, and Caring

Research on the intersectional differences in caring is limited, particularly in the context of England and Wales. Brimblecombe and Farias (2022) examine intersectional differences in labour market outcomes for carers by gender and by ethnicity separately but do not examine this using three-way interactions between care, gender, and ethnicity. However, they find that female carers experience higher income reductions than male carers and Black carers have greater odds of being unemployed or economically inactive compared to carers from other minority ethnic groups. This may point to the intersectional, multiplicative effect whereby perhaps that means Black, female carers have worse employment outcomes than other groups. However, there does not seem to be research in the context of England and Wales to that effect.

Adopting a broader scope, research from America shows that while women carry out more caring than men, this is even more so of women from minority ethnic backgrounds. Regarding adult care, Black and Asian women spend a particularly large amount of time providing it compared to other groups. In Hispanic, White, Black, and Asian groups, a higher percentage of women report not participating in the labour market due to caring responsibilities than men. Additionally, this research shows that

Asian women provide more hours of care than Asian men regarding adult care but there are small gender differences in care provision for these groups regarding child care (Jacoby et al., 2024). Earlier research from America also found that Black female carers provided more care related to Instrumental Activities of Daily Living (IADLs) than Black male carers (Cohen et al., 2019). Though in an American context, this indicates that there might by wider gender differences in probability of employment for Black and Asian carers in the context of England and Wales used in my research.

4.2.9 Summary

To summarise the previous literature, research has identified the employment consequences associated with unpaid care such as labour market exit (King and Pickard, 2013; Carr et al., 2018; Gomez-Leon et al., 2019) and "absenteeism" and "presenteeism" within employment (Spann et al., 2020, p705). Gender differences in this have been well documented with women shown to spend more time on caring than men (Duffy et al., 2013; Ferrant et al., 2014), being more likely to leave the labour market when providing unpaid care than men (Gomez-Leon et al., 2019), and female carers having the greatest earnings reductions compared to any other group (Brimblecombe and Farias, 2022). Research indicates that there are difficulties accessing formal care services for certain minority ethnic groups (Ahmed and Rees Jones, 2008) and that some minority ethnic groups receive more hours of care (Brimblecombe and Burchardt, 2021). However, little research explores the relationship between care and employment for minority ethnic groups although some indicates that Black carers have the highest odds of not being employed compared to any other group (Brimblecombe and Farias, 2022). No research in England and Wales examines the interaction between gender and ethnicity regarding care and employment. In this thesis, I aim to fill this gap in the literature by exploring the intersectionality of gender and ethnicity regarding the employment probability of carers providing different intensities of care.

4.3 Methodology

4.3.1 Research Question

In this paper, I explore whether the relationship between providing care and labour market participation varies across gender and ethnicity. I address the following question:

- Is there a significant interaction effect between ethnicity and care provision on the probability of being in employment, and does this vary by gender?

4.3.2 Data and Sample

The data used in this study is from Census 2021. The census is a survey of the entire population of England and Wales which is carried out by the ONS every 10 years (ONS,

2022a). As cross-sectional data, it provides a snapshot of the population of England and Wales at each 10-year time point. In 2021, this snapshot of the population was at the tail-end of the COVID-19 pandemic in which many carers reported providing more care during the pandemic than they had before it (Carers UK, 2020).

The study population was filtered before sampling to include only: usual residents; living in private households; with valid region data; and working age adults (18-65 years). To maintain the benefits of the Census' large size for investigating ethnicity, I under-sampled 'White: English/ Welsh/ British' responses, taking just a 5% sample of this group, while oversampling minority ethnic groups, taking a 25% sample of these[22]. This approach is advantageous because it allows me to take a sample of the data, aiding in promoting computational efficiency, without having sample sizes too small for meaningful analysis in some of the minority ethnic groups. The 25%/ 5% split was to ensure a sample size small enough to run using the computational power available to me while maximizing the sample sizes of smaller minority ethnic groups which would have been too small for meaningful analysis if I took a 10% random sample. The resulting sample size is 3,797,860[23] individuals.

4.3.3 Variables

Unpaid carers are defined in this research as those who answered 'Yes' to the following question in the 2021 Census: "Do you look after, or give any help or support to, anyone because they have long-term physical or mental health conditions or illnesses, or problems related to old age? excluding anything carried out for paid employment " with a specified response of how many hours of care they provide each week (GSS Harmonisation Team, 2020; ONS, 2023c; ONS, 2023d). Those care hours are then used to inform a care intensity variable (Table 4.1), grouped in a similar way to that of Zigante et al (2021).

Table 4.1- Table Showing Recoding from Hours of Care to Care Intensity

Hours of Care per Week	Caring Intensity
9 hours or less	Low Intensity
10-19 hours	Low Intensity
20-34 hours	Mid Intensity
35-49 hours	Mid Intensity
50 or more hours	High Intensity

[22] This does not affect the analysis other than for the White majority group (where statistical power is not a concern because the sample remains substantial even after under-sampling), because the analysis is stratified by ethnicity. Then, because of weighting in the regression models, the over-sampling of minority ethnic groups and the under-sampling of the White majority group is accounted for by due influence being given to each group according to the sample taken.

[23] As per ONS guidance, all counts have been rounded to the nearest 5.

4.3.4 Key Variables of Interest

The dependent variable of interest in this research is whether an individual is employed or not. This is derived from economic activity status: economically active (in employment), economically active (unemployed), and economically inactive. The latter refers to people who are out of work and not seeking work for a multitude of reasons such as looking after home or family (ONS, 2022b)[24]. This variable is binarized with 0 indicating that an individual is unemployed or economically inactive and 1 indicating that an individual is employed.

The key independent variables in this research are caring intensity (see above), ethnicity and gender.

Following guidance from the ONS Health and International Directorate (2024), I use the 13-category ethnicity variable. Though it is advised to use the 19-category variable where possible, I could not for this analysis since disaggregating by employment and care intensity led to very small sample sizes for some ethnicity-by-care combinations, which would reduce the statistical power of the analysis. Unlike the 19-category variable, the 13 category variable groups White Other categories together ('Irish', 'Gypsy, Traveller or Irish Traveller', 'Roma', and 'Any other White background') and groups all 'Mixed or multiple' ethnic groups together ('White and Black Caribbean', 'White and Black African', 'White and Asian', and 'Any other Mixed/Multiple ethnic background').

4.3.5 Control Variables

Additional sociodemographic variables used in this research are age (included with a cubic spline[25]), marital status, region, number of dependent children in the household, disability, and highest qualification (as a proxy for socioeconomic status). These are included as control variables because previous research shows that they are all predictive characteristics of an individual providing unpaid care. In England and Wales, women aged 55-59 and men aged 60-64 are the age groups in which people are most likely to be carers (ONS, 2023d). More carers than non-carers are married or in a civil partnership (ONS, 2023b). Wales has a higher percentage of carers than any English region, while within England, the highest proportion of carers is in the North-East. Wales and the North East both also have high percentages of higher-intensity carers.

[24] For more detailed information on inputs into the Census economic activity variable and resulting employment/ unemployment information, see GSS Harmonisation Team (2019)

[25] Splines are used on the continuous variable 'age' to allow for non-linearity in the relationship between it and employment. The use of splines splits 'age' into a number of intervals defined by the researcher, and a cubic polynomial is applied at each of these intervals, and each interval is smoothly joined to create a curved, continuous relationship (Gauthier et al., 2020; Lopez-Ayala et al., 2025). Gauthier et al (2020, p677) notes that "five or fewer knots are sufficient" and I use BIC (Bayesian Information Criterion) scores to determine which number of knots, defined by degrees of freedom in the model specification, elicits the best model fit (results of the BIC scores can be found in Appendix 4.4).

London and the South East have the lowest percentage of carers (ONS, 2023d); having three or more dependent children is also shown to increase the likelihood of being a carer (Redican et al., 2025). Compared to non-carers, a higher percentage of carers are disabled, especially among higher-intensity carers (ONS, 2023b). Research shows that carers' decision making is restricted by socioeconomic status (Brimblecombe et al, 2020; McKie and Jyrkinen, 2021) with individuals from lower socioeconomic backgrounds being less likely to engage paid-for care services to help balance caring responsibilities while individuals from higher socioeconomic backgrounds use their greater financial resources to employ paid-for support with caring (Bertogg and Strauss, 2020; Lightman and Link 2021). Additionally, propensity to care is influenced by socioeconomic status since Tooth and Mishra (2024) found that women with lower socioeconomic status were more likely to provide care. In this research, I follow Brimblecombe and Farias (2022) in using qualification as a proxy for socioeconomic status, consistent with their finding that carers are more likely than non-carers to have a highest qualification below degree level. The counts and proportions for all variables used in this research can be found in Table 4.2 below.

Table 4.2- Counts and Proportions of Variables after Sampling

Variable	Levels	Count	%
Carer status	High-intensity carer	88,935	2.3
	Mid-intensity carer	87,435	2.3
	Low-intensity carer	165,715	4.4
	Non carer	3,455,780	91
Dependent children in household	One dependent child under 18 years	727,950	19.2
	Two dependent children under 18 years	633,960	16.7
	Three or more dependent children under 18 years	323,005	8.5
	No dependent children under 18 years	2,112,950	55.6
Disability	Activity reduced a lot	194,230	5.1
	Activity reduced a little	298,940	7.9
	Activity not reduced	234,685	6.2
	No disability	3,070,010	80.8
Employment	Unemployed/Economically inactive	1,074,575	28.3
	Employed	2,723,290	71.7
Ethnicity	Arab	51,480	1.4
	Asian/Asian Welsh/Asian British: Bangladeshi	99,770	2.6
	Asian/Asian Welsh/Asian British: Chinese	73,460	1.9
	Asian/Asian Welsh/Asian British: Indian	310,465	8.2
	Asian/Asian Welsh/Asian British: Other	163,905	4.3
	Asian/Asian Welsh/Asian British: Pakistani	240,300	6.3
	Black/Black Welsh/Black British: African	240,775	6.3
	Black/Black Welsh/Black British: Caribbean	107,175	2.8
	Black/Black Welsh/Black British: Other	35,735	0.9
	Mixed or Multiple ethnic groups	204,335	5.4
	Other ethnic group	157,215	4.1
	White: English/Welsh/British	1,303,565	34.3
	White: Other White	809,675	21.3
Highest qualification	No qualifications	518,270	13.6
	Level 1 qualifications	338,100	8.9
	Level 2 qualifications	419,180	11
	Apprenticeship	143,840	3.8
	Level 3 qualifications	631,385	16.6
	Level 4 + qualifications	1,630,240	42.9
	Other qualifications	116,850	3.1
Marital status	Married/In a civil partnership	1,737,280	45.7
	Separated/Divorced/Legally dissolved civil partnership	388,220	10.2
	Widowed/Surviving partner of civil partnership	44,745	1.2

	Never married/Never registered civil partnership	1,627,615	42.9
Multigeneration Living	Multigenerational Household	192,365	5.1
	Not a Multigenerational Household	3,605,500	94.9
Region	East	366,080	9.6
	East Midlands	274,515	7.2
	London	1,049,255	27.6
	North East	109,880	2.9
	North West	398,505	10.5
	South East	531,835	14
	South West	259,065	6.8
	West Midlands	385,675	10.2
	Yorkshire and the Humber	294,765	7.8
	Wales	128,290	3.4
Sex	Female	1,963,590	51.7
	Male	1,834,270	48.3
		Mean	**Std. Dev**
Age		40.23	12.86

Source: Descriptive statistics from sampled Census 2021 data, ONS

NB: Counts are rounded to the nearest 5

4.3.6 Method

The method used to examine the intersectional relationship between gender and ethnicity in employment behaviours associated with unpaid care provision is binomial logistic regression stratified by gender. In the regression models, I include two-way interaction terms between care and ethnicity to assess their intersectional relationship and run the models separately for men and women. Additionally, I run these models adding each of the aforementioned control variables sequentially (not included in the equation below for simplicity). To run these models in R, I use the glm() function from the 'stats' package. I use the 'ggeffects' package to extract and plot the predicted probabilities of employment for easier interpretability than odds-ratios alone. As stated above, in the regression models, I weight the data according to the percentage sampled. I weight White: English/ Welsh/ British by 20 times to weight in proportion to the 5% sample taken and I weight any other ethnicity by 4 times to weight in proportion to the 25% sample taken. The equation for the models is as follows:

$$log(\pi_{i1} - \pi_i) = \beta_0 + \sum_{j=2}^{J} \beta_{1j} X_{1j} + \sum_{k=2}^{K} \beta_{2k} Z_{2k} + \sum_{k=2}^{K} \sum_{j=2}^{J} \beta_{3k}\ X_{1j} Z_{2k}$$

$\log(\pi_{i1} - \pi_i)$ - is the log odds of the predicted probability that the individual (i) is employed

β_0 - is the intercept

X_{1j} - is a series of dummy variables (J) representing different caring intensities

β_{1j} - is the coefficient associated with care for its respective category (j)

Z_{2k} - is a series of dummy variables (K) representing different ethnicities

β_{2k} - is the coefficient associated with ethnicity for each category (k)

β_{3k} - is the coefficient associated with the interaction terms X_{1j} and Z_{2k}

The predicted probabilities will be presented plotted on heatmaps showing the interaction between care and ethnicity. By comparing the plots across gender, we can see how the interaction between care and ethnicity varies between men and women.

The predicted probabilities used for analysis are adjusted to the mode category of each control variable. This means we find the probability of employment for the typical individual in the data (Lüdecke, 2018). Since age, is continuous, this is adjusted to the mean age, weighted according to the specified weights from the ethnicity sampling. The mode category for each control variable is as follows (Table 4.3):

Table 4.3- Table Showing the Mode Category of Control Variables

Control Variable	Mode Category
Region	London
Disability	No Disability
Marital Status	Never Married/ Never Registered Civil Partnership
Dependent Children	None
Highest Qualification	Level 4+ Qualifications
Multigeneration Household	Non-MGH

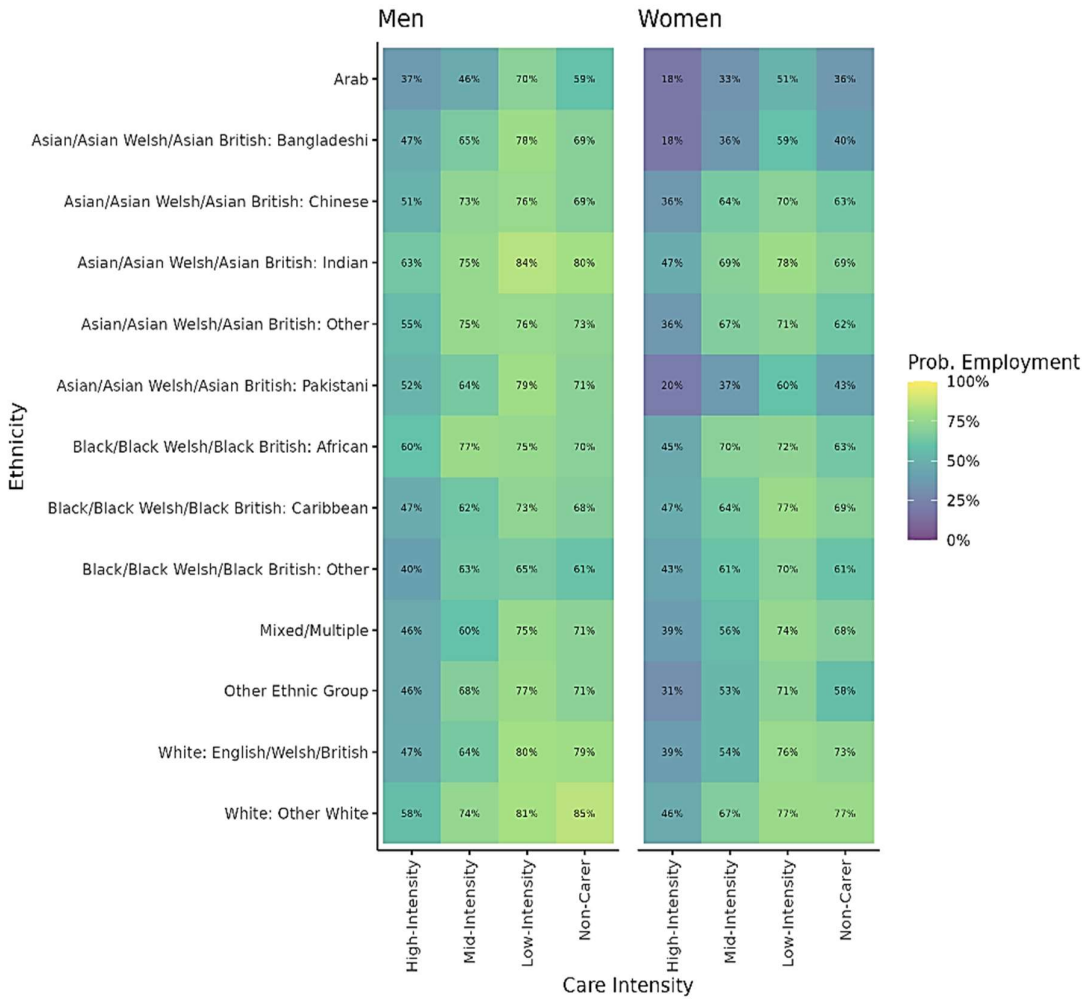
4.4 Results

In this results section, I discuss the predicted probabilities of employment for men and women of different minority ethnic groups depending on care intensity. The predicted probabilities are displayed on heatmaps with blues and purples indicating lower employment probabilities and greens and yellows indicating higher employment probabilities. Heatmaps are shown for the unadjusted model with no controls (model 1) and the adjusted model with all control variables included (model 8). These control variables are age, region, disability, marital status, number of dependants, highest qualification, and multigenerational living. Note that models 2 to 7 with control variables added sequentially[26], can be found in the appendices (4.5-4.6 for predicted

[26] All outputs for this paper can also be found on the ONS website (ONS, 2026).

probabilities, 4.7-4.8 for nested regression outputs, and 4.9-4.14 for plotted predicted probabilities). The predicted probabilities are calculated from the odds ratios shown in the regression outputs. The regression outputs, found in the appendices (50-51), indicate statistical significance and show that almost all the interaction effects between ethnicity and care intensity on employment, compared to non-carers in the White English/ Welsh/ British group, are statistically significant (perhaps unsurprising given the large sample size). The only interaction effects that are not statistically significant are male high-intensity carers from the other White group, before any sociodemographic characteristics are controlled for, and male low-intensity carers from the other White group, after all sociodemographic characteristics are controlled for. This indicates that the interaction between ethnicity and caring on employment is statistically significant and unlikely to be due to chance. Additionally, confidence intervals for the predicted probabilities can be found in the appendices (4.5-4.6).

Figure 4.2- Predicted Probabilities of Employment by Care and Ethnicity (Unadjusted Model: No Control Variables)



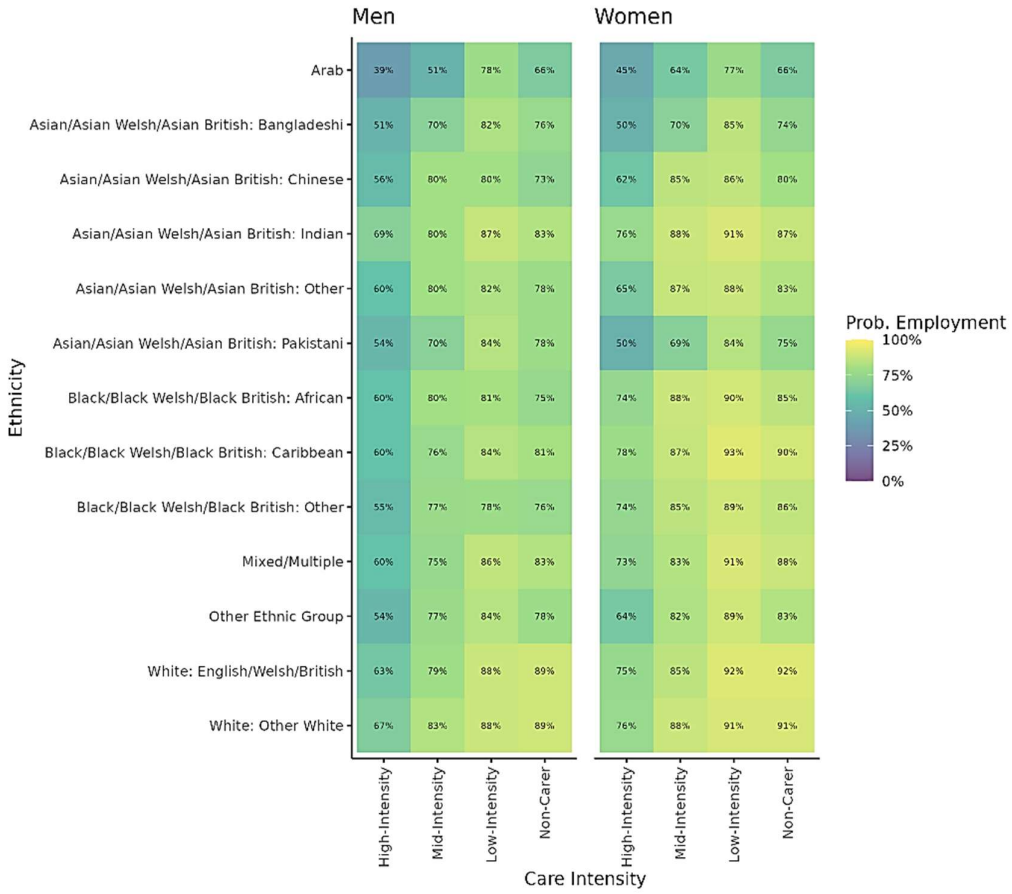
Source: Inferential analysis on Census 2021 data, ONS

Figure 4.2 is a heatmap showing the predicted probabilities of employment for carers of different care intensities and different ethnicities, without controlling for any socioeconomic characteristics, and comparing men and women. The overall pattern for both men and women is that the lowest employment probability is for high intensity carers, for all ethnicities, and that men typically have higher probabilities of employment than women.

There are particularly low probabilities of employment for female high-intensity carers in the Arab (18%), Bangladeshi (18%), and Pakistani (20%) groups. Similarly, the bands of shading on the plot indicate that it is among these groups, excluding low-intensity carers, that there are the lowest employment probabilities. The lowest employment probability for men is for Arab high intensity carers (37%). Another shaded band is for men in the Other Black group, indicating lower employment probabilities for all care intensities among this group.

Interestingly, for both men and women, across minority ethnic groups, the highest probability of employment is not for non-carers but for low-intensity carers. For example, Arab women providing high-intensity care have an 18% probability of employment. This figure is 33% for mid-intensity carers and 36% for non-carers but a much higher 51% for low-intensity carers. This is similar for Arab men among whom high-intensity carers have a 37% probability of employment, mid-intensity carers have a 46% probability of employment and non-carers have a 59% probability of employment. Comparatively, low-intensity carers in this group have a 70% probability of employment. This pattern repeats for men and women across nearly all minority ethnic groups with variations in the size of the difference. For example, the difference between male low-intensity carers and non-carers in the White English/Welsh/British group is only 1%. An example of a group where the pattern is not found is for women in the other White group where there is no difference in employment probability between low-intensity carers and non-carers.

Figure 4.3- Predicted Probabilities of Employment by Care and Ethnicity (Adjusted Model: All Control Variables)



Source: Inferential analysis on Census 2021 data, ONS

The broad patterns in the adjusted model, Figure 4.3, where all sociodemographic characteristics are controlled for, are similar to those in the unadjusted model (Figure 4.2). It remains true that, across the board, high-intensity carers have lower probabilities of employment, regardless of gender and ethnicity. However, what is interesting is that where men had generally higher probabilities of employment than women in the unadjusted model, here that is not the case. For example, male, African high-intensity carers have a 60% probability of employment, but female, African high-intensity carers have a 74% probability of employment. This suggests that a gender inequality in employment probability was masked by the control variables included in this model. The adjusted model shows that most women aged approximately 40 years old, living in London, with no disability, who have never married or registered a civil partnership, with no dependent children, with qualifications at level 4 or above and not living in an MGH have higher probabilities of employment than men with the same characteristics across minority ethnic groups. However, this is not true for Bangladeshi and Pakistani women providing high-intensity care who have lower probabilities of

employment that men in the same groups also providing high-intensity care. Comparably, the unadjusted model shows that, on average (without controlling for any of the above characteristics), men have higher employment probabilities than women across minority ethnic groups.

Similar to the probabilities shown in the unadjusted model, the adjusted probabilities show that the highest employment probability is among low-intensity carers for men and women of different minority ethnic groups. Another similarity that carries forward into the adjusted model concerns the minority ethnic groups with the lowest probabilities of employment. For women, this is again in the Arab, Bangladeshi, and Pakistani groups (45%, 50%, and 50% respectively). For men, it is in the Arab group at (39%). After controlling for all sociodemographic characteristics, the lowest employment probability across all genders, ethnicities and care intensities, is for Arab men (39%). Comparatively, before controlling for any sociodemographic characteristics, this was for both Arab and Bangladeshi women (18%). This suggests that there are differences depending on varieties of factors such as region and marital status that may play a role in the relationship between ethnicity, care intensity, and employment.

Additionally, there are some minority ethnic groups whose employment probability does not vary as much depending on care intensity. For men and women, this is true for those of Indian ethnicity. For women, this is true for those of African, Caribbean, other Black, White: English/ Welsh/ British and other White ethnicities. For example, the range of employment probabilities depending on care intensity for Pakistani women varies across a range of 34% (50%-84%) but only varies across a range of 16% (74%-90%) for African women. Additionally, the probability of employment for Arab men varies across a range of 41% (39%-78%) depending on care intensity but this figure is 18% (69%-87%) for Indian men. This variability is also gendered, with different minority ethnic groups for men and women experiencing different patterns of employment probability by care intensity.

4.5 Discussion

4.5.1 Ethnicity

The findings shown in this thesis build on pre-existing literature by demonstrating nuance in the ethnicity-employment relationship through disaggregating the analysis by caring status and gender. My results indicate that ethnic labour market inequalities alone are not necessarily the same when additionally considering care and gender in the relationship too. For example, Francis-Devine et al's (2025) statistical analysis of women's role in the UK economy (which did not examine their caring status) found that minority ethnic women were more likely to be unemployed than any other group. My examination of the ethnicity-employment relationship by caring status, however, found

that many minority ethnic women have higher probabilities of employment many minority ethnic men (after controlling for all the sociodemographic confounders included in my research), suggesting that caring plays an interesting role in this relationship. It is likely that the composition of the groups studied in this research plays a role in the relationship between care and employment. For example, there may be unmeasured characteristics that make up a high-intensity Bangladeshi or Pakistani male carers that drive their relationship with the labour market that are not seen in this research. Brimblecombe and Farias (2022), who examined caring and ethnicity (but not stratified by gender), found Black carers had the highest odds of not being employed. Stratifying this relationship by gender, I found relatively high probabilities of employment for Black groups, especially among high-intensity carers (men and women), compared to Arab, Pakistani, and Bangladeshi groups.

Zwysen (2021) explored the whole population (most of whom are non-carers), finding that after controlling for various socioeconomic characteristics, people in the African, Caribbean, Pakistani and Bangladeshi groups had a lower likelihood of employment than those in the White group. My exploration of gender and care intensity in the ethnicity-employment relationship builds on Zwysen's (2021) findings and shows that Caribbean women providing high-, mid-, and low- intensity care all have slightly higher probabilities of employment than White English/ Welsh/ British women providing the comparable amounts of care. It highlights the importance of assessing the intersectionality of the ethnicity-employment relationship as interesting variations arise when both care and gender differences are considered.

Bangladeshi and Pakistani individuals have lower predicted probabilities of employment than other minority ethnic groups, regardless of gender, care status, care intensity, or the inclusion of control variables. This is particularly true of those providing high-intensity care which may be explained by people who identify as South Asian being more likely to provide co-resident care than White groups, as found by Norman and Purdam (2010). Since co-resident caring may be reflective of higher care needs (Colombo et al., 2011), this may explain why, among both male and female high-intensity carers, Bangladeshi and Pakistani individuals have lower probabilities of employment than White English/ Welsh/ British people. This finding also supports the work of Yeandle and Buckner (2007) which found, using Census 2001 data, that there were fewer Bangladeshi and Pakistani carers in employment than other ethnic groups. My findings using Census 2021 data suggest this remains true 20 years later. My research adds to theirs by disaggregating by care intensity, showing particularly low employment rates among high-intensity carers in the Bangladeshi and Pakistani groups.

4.5.2 Gender

Although UK statistics show a higher rate of employment for men than women (Francis-Devine et al., 2025), my analysis finds this is not the case for all ethnicity-care combinations. Other pre-existing literature also shows that, before controlling for any sociodemographic characteristics, men have higher employment probabilities than women. My findings reveal, however, that Black Caribbean women providing mid-intensity, low-intensity or no care have slightly higher employment probabilities than Black Caribbean men with these care statuses. 'Other Black' women providing low-intensity care also have a 5% higher probability of employment than their male counterparts. This shows that there is some variation in the gendered employment relationship by care and ethnicity. Interestingly, women in the unadjusted models have mostly lower employment probabilities than men, but this changes in the adjusted models with women having mostly higher employment probabilities than men. This suggests that women in many ethnic groups, providing various intensities of care, have an equal or greater probability of employment than men when variations in age, region, disability, marital status, number of dependants, highest qualification, and multigenerational living are controlled for. Women's employment probabilities increased the most in the model where dependent children were controlled for and the model where highest qualification was controlled for (full models are provided in appendices 4.5 and 4.6). suggesting that these confounders play a role in gendered employment participation. Women's probability of employment being somewhat masked by number of dependent children makes sense due to women typically being more responsible for childcare and domestic labour than men (Ashiagbor, 2021; Chanfreau, 2023).

4.5.3 Intersectionality

My literature review found that no prior research on England and Wales had examined employment outcomes at the intersection of care, ethnicity and gender, and that much research on care had explored ethnicity and gender separately (Hengelaar et al., 2023). Here I apply the analytical lens of intersectionality to explore diverging employment-related outcomes of caring for men and women of different ethnicities. By applying an intersectional lens, I show that intersectionality is an important part of the care and employment relationship, leading to diverse outcomes.

My findings show notable variations in the probability of employment for carers of different ethnicities and genders, highlighting what happens at the intersection of these identities. For example, the gender gap in employment is particularly high for people from a Bangladeshi or Pakistani group in the unadjusted model. Bangladeshi male high-intensity carers have an employment probability of 47% while this figure is 18% for Bangladeshi female high-intensity carers. A further example is for Pakistani men and

women where a Pakistani male high-intensity carer has an employment probability of 52% compared to a Pakistani female high-intensity carer who has an employment probability of 20%. This is supported by the Census 2021 which found that economically inactive women, particularly those from Bangladeshi and Pakistani backgrounds, frequently gave "looking after home and family" as the reason for their economic inactivity (ONS, 2023h). This also, in part, supports research from Jacoby et al (2024) based in an American context which found female carers were more likely to not participate in the labour market than male carers in Hispanic, Asian, Black, and White ethnic groups. My research indicates that there is indeed a particularly large gender gap in probability of employment for people from some Asian backgrounds but this is not the case for all Asian backgrounds nor is it the case for people from White or Black backgrounds. Additionally, Hispanic is not a category in Census data for England and Wales but this group would be captured in the Other Ethnic Group category for which there also are not particularly large gender differences in probability of employment. Thus my research only partly supports the American literature on intersectional differences in caring and employment but it is understandable that the findings vary in different geographical, political and economic climates. Interestingly, in the adjusted models where all variables are controlled for, female high-intensity carers across all ethnicities apart from Bangladeshi or Pakistani had a higher probability of employment than men. This, combined with them having the largest gap in employment probability, may suggest that gender inequalities in these groups are particularly entrenched which furthers care-related employment inequalities. Although, overall, carers have lower labour market participation than non-carers as has recently been argued (Treneman et al., 2025) this picture can be misleading and changes when hours of care provided/care intensity are taken into account. My research found that, after controlling for multiple sociodemographic characteristics and for none, the highest probabilities of employment were seen for individuals providing low-intensity care. This was true for both men and women across most ethnicities (although not for 'Other White' men), and the probabilities were higher for these carers than for people providing no care. It concurs with King and Pickard's (2013) finding that caring for 10 hours per week was the threshold at which a carer's employment was affected and that women caring for less than 10 hours per week ('low-intensity care' in my research) had higher employment rates than women providing no care. Nevertheless, despite the higher employment probability of low-intensity carers, the broader pattern is that higher care intensity is associated with a lower probability of employment.

4.5.4 Strengths

The strengths of this research lie in the use of a detailed measure of ethnicity to research ethnic differences in employment probability for carers providing different intensities of caring. To ensure adequate sample sizes within each ethnicity subgroup, I

used Census 2021 data; I under-sampled the White English/ Welsh/ British groups and over-sampled all minority ethnic groups and then weighted my regression models according to the samples taken.

Using an intersectional approach provides an important contribution to the field by researching gender, ethnicity, and care intensity together in exploring employment probability, an approach not used in other research covering England and Wales.

4.5.5 Limitations

A limitation of this research is its use of cross-sectional data. Longitudinal data could provide insight into how the length of a caring episode is related to employment probabilities for male and female carers of different minority ethnic groups providing different intensities of care. However, such data would need to be based on a panel study covering England and Wales with much larger sample sizes than currently exist to achieve the granularity of minority ethnic groups achieved using Census 2021.

Additionally, it would also be beneficial to disaggregate the analysis by whether an individual provides co-resident or extra-resident care, as this would provide greater insight into caring circumstances, beyond weekly hours of care provided.

There may also be further confounding variables in the relationship between care, gender, ethnicity, and employment that are unmeasured in this research. I cannot, therefore assume any causal effects based on the relationships uncovered here.

4.5.6 Policy Implications and Future Research

This research is exploratory, examining what patterns exist between ethnicity, care, gender, and employment. We cannot conclude from this why these patterns exist and why some minority ethnic groups appear to have much lower probabilities of employment when providing high intensity care. For example, in both models displayed in the results section, Arab men and women have the lowest employment probabilities when providing high-intensity care, suggesting a particular employment penalty for this group.

Qualitative research could be used to explore why employment differences between minority ethnic groups are present and propose ways of supporting these groups to address this. For example, as studies have indicated that certain minority ethnic groups are unaware of support available to them (Ahmed and Rees Jones, 2008; Greenwood et al., 2015), combining research such as I have conducted with qualitative methods could help make support more accessible, so that carers can balance work and care if they wish or be financially supported to leave the labour market to prioritise caring responsibilities. My research, in combination with such studies, suggests better

dissemination of information on support services to Arab, Bangladeshi, and Pakistani carers, particularly those providing high-intensity care, regardless of gender may be needed. This could include improved translation services at each stage in the system of supports for carers.

4.6 Conclusion

In this research, I aimed to find if there is an interaction effect between ethnicity and care provision in the probability of being in employment, stratified by gender. By implementing logistic regression models with a two-way interaction term between care and ethnicity, stratified by gender, I identified that the interaction between ethnicity and care for both men and women is statistically significant, except in a few cases (male high-intensity carers from the other White group, before any sociodemographic characteristics are controlled for, and male low-intensity carers from the other White group, after all sociodemographic characteristics are controlled for). By using data from Census 2021, I was able to examine the probability of employment for 13 minority ethnic groups by gender due to the large size of the Census dataset. A key finding is the lower employment probabilities for male and female high-intensity carers in Arab, Pakistani, and Bangladeshi groups. This may indicate that these groups struggle to balance paid work and care; other research suggests this may be explained by some minority ethnic groups facing difficulty accessing care support services due to language barriers and or lack of information (Ahmed and Rees Jones, 2008; Greenwood et al., 2015). It is also possible that caring is not the driving factor inhibiting participation in paid employment for these groups, as other research indicates that Pakistani and Bangladeshi people are less likely to be employed than White groups (Zwysen et al., 2021).

The analysis presented in this chapter is primarily descriptive and indicates general patterns in the relationship between ethnicity, gender, caring and employment. It creates an important foundation for research in the future to better identify carers' needs regarding employment support. My findings highlight that the relationship between caring and employment is not straightforward and is very much affected by gender, ethnicity and the intensity of care provided. Many factors could explain the patterns found which are not within the scope of this paper to identify. However, the finding that some minority ethnic groups, including Arab, Pakistani, and Bangladeshi men and women, have lower probabilities of paid employment when providing high-intensity care suggests that better dissemination to improve accessibility of support services is needed for people in these groups.

Chapter 5: Conclusion

In this thesis, I have examined the employment outcomes of being a carer at different levels of intensity compared to non-carers, in three papers, each with a different focus. In Chapter 2, I explored the differences in whether men and women reduce their employment (becoming unemployed/ economically inactive, reducing paid working hours, or reducing net labour income) when they became a co- or extra-resident carer or increased their care hours in the previous year. In Chapter 3, I examined male and female carers providing high-, low-, and mid-intensity care living in multigeneration households (MGHs) and how the interaction between caring and living in this household type is associated with the probability of employment. Finally, in Chapter 4, I looked at the interaction between gender, ethnicity and care regarding employment, using an intersectional lens to explore employment probability among carers in different minority ethnic groups and providing different intensities of care. In this chapter, I conclude the thesis by summarising my research aims, contributions, limitations, policy recommendations and suggestions for future research.

5.1 Summary of Research Aims

In the thesis, I contributed to the literature on the economic consequences of care using quantitative research methods and focusing on the gendered employment behaviours of carers providing different intensities of care. I did this using contemporary data, namely Census 2021 for two of the papers and data spanning 2009-2021 from the UK Household Longitudinal Study (UKHLS) for one of the papers. My overarching findings show varied employment outcomes depending on the intensity of care provided and various socio-demographic characteristics, enabling me to contribute to policy discussions and recommendations relevant to ways of enabling carers to be better supported as they transition in and out of different employment statuses and the labour market.

In Chapter 2, I explored the relationship between caring and employment longitudinally. To do this, I examined whether becoming a carer or increasing care hours in one year is associated with an increased likelihood of reducing employment (becoming unemployed/ economically inactive, reducing paid working hours, or reducing net labour income) in the following year. I used a representative and longitudinal data source for this analysis: the UKHLS (I merged 12 years of data from the datasets collected from 2009-2010 to 2020-2021). Interested in gender differences in caring and employment, I ran regression models to examine this separately for men and women to establish whether the likelihood of experiencing a change in employment varied depending on gender.

In Chapter 3, my research aim was to explore interaction effects on the probability of employment of: living in a multigeneration household (MGH); providing varying

intensities of care; and gender. MGHs are defined as households with “two or more generations of related adults” (Burgess and Muir, 2020, p322). This household type is traditionally associated with care for older generations (Burgess and Muir, 2020). The proportion of these households in England and Wales rose slightly between 2011 and 2021 (ONS, 2023g). As there was no prior research on multigenerational living and the probability of employment for carers living in England and Wales, I aimed to fill that gap in the literature by examining an increasingly chosen household type and how it is associated with employment for carers. I used data from Census 2021, using a 10% random sample of the data to promote computational efficiency. The random sample was representative of the full data set. I applied logistic regression models separately for men and women with interaction terms between multigenerational living and care intensity to examine the probability of employment and full-time employment among these groups.

The aim of my research in Chapter 4 was to apply an intersectional lens to care research on the employment of carers from different sociodemographic backgrounds. Building on research by Brimblecombe and Farias (2022) which had explored gender and ethnicity and their relationship with care and employment separately, I explored the intersection of care, gender, ethnicity and its relationship with employment probability. I used data from Census 2021 to which I had full access. Having full access allowed me to sample the data to make it small enough for handling whilst maintaining sample sizes for minority ethnic groups large enough to enable meaningful analysis. I applied logistic regression models with interaction terms between ethnicity and care intensity to explore this research question.

5.2 Findings and Contributions

The overall contribution of this research has enhanced and updated the literature on gendered employment outcomes for carers in England and Wales. There is already extensive research indicating disproportionate employment outcomes and higher rates of caring among women. However, my research considers a wider range of explanatory factors, examining if there might be additional inequalities beyond the inequalities of gender thus providing a more detailed analysis. In doing this, I highlight complexity in the gendered relationship by considering whether the care is provided to someone in the same household, the intensity of care, multigenerational living, and ethnicity as well as examining multiple employment outcomes. The more detailed analysis, building on phenomena already explored, exhibited in this thesis is a further contribution to the field by unifying three research papers in one cohesive thesis under the theme of gender inequalities in employment-related care outcomes. Additionally, the contribution of my thesis as an overall project stems from the use of contemporary data sources such as the UKHLS up to and including 2021 and Census 2021 giving an

indication of the care – employment relationship for various groups at a recent point in time.

5.2.1 Nuance in the Relationship between Care and Employment

All three papers in the thesis point to variations in the relationship between care and employment, showing it is not simply that 'caring leads to decreased employment rates.' In Chapter 2, I found that becoming a co-resident carer or increasing caring hours in the previous year were more associated with certain downward changes in employment in the subsequent year than becoming an extra-resident carer. This is true for becoming unemployed/ economically inactive or reducing net labour income, but not for reducing paid working hours. This suggests it is not just hours of care that is relevant in a carer's likelihood of experiencing employment consequences, as found by King and Pickard (2013), and that the intensity and location of care are also important. Additionally, my research adds a temporal element to the research field by exploring an association between becoming, rather than just being, a co-resident carer and employment consequences.

In Chapter 3, I demonstrate that the care-employment relationship is, to some extent, intersected by multigenerational living, with high-intensity carers living in MGHs having higher employment probabilities than those providing the same amount of care living in a non-MGH. This contributes to the field by showing employment differences for carers in MGHs compared to non-MGHs; it also points to a potentially fruitful opportunity for future research exploring other household types. The key finding of this research is that men and women providing care at certain intensities while living in MGHs have higher probabilities of employment than those living in non-MGHs, especially among those providing low-intensity care. The higher employment probability for many low-intensity carers, including when compared to non-carers, shown in Chapter 3, develops the research of King and Pickard (2013) who found, using data from the English Longitudinal Study of Ageing (ELSA), people providing fewer than 10 hours of care a week were more likely to be employed than those providing no care.

My findings[27] build on this existing research, making a new contribution to the field by showing that women providing high-intensity care and living in an MGH have a higher employment probability than women providing the same intensity of care but living in a non-MGH. After controlling for all sociodemographic characteristics, I also found that employed women providing any intensity of care while living in an MGH are more likely to be in full-time employment than women providing the same care intensity in a non-MGH. While it cannot be observed in my research whether living in an MGH drives this increased employment probability, literature based on research in the Czech Republic

[27] My research uses data from Census 2021 which is the first year of the Census that gathered information on 1-9 hours of care provided. Prior to that it had been 1-19 hours as the lowest bracket. My low-intensity care variable does, however, conglomerate 1-19 hours of care.

found people living in MGHs there share domestic responsibilities more equally (Souralová et al., 2022). It may be that having a better distribution of labour within a household enables women to better balance work and care, a further issue which could be investigated in future research on England and Wales.

Nuance in the relationship between caring and employment is also shown in Chapter 4 which looked at the interaction between care and ethnicity, stratified by gender, on the probability of employment. Here my findings show that ethnicity continues to affect employment, as shown in previous research on gender and provision of unpaid care, but manifest in different ways. Previous research found, using the UKHLS which has more aggregated ethnicity data, that Black carers had the highest odds of not being employed (Brimblecombe and Farias, 2022), while my research indicates that the lowest employment probabilities were for carers in the Arab, Pakistani, and Bangladeshi groups. Gender differences here reduce (and in some cases reverse) when key sociodemographic variables are controlled for. Using 13-category ethnicity data allowed me to see smaller ethnicity breakdowns than Brimblecombe and Farias (2022) had access to in the UKHLS. My research supports earlier research using Census 2001 and an 11-category ethnicity breakdown, which showed lower employment rates in Bangladeshi and Pakistani groups, particularly for women in these groups (Yeandle and Buckner, 2007). My research builds on this finding by disaggregating by care intensity, using contemporary data and a more disaggregated ethnicity breakdown. The lower probabilities of employment among Pakistani and Bangladeshi carers could be because some South Asian groups are more likely to provide co-resident care (Norman and Purdam, 2010) which is often provided at a higher intensity than care given to someone in a separate household (Colombo et al., 2011). Similarly, Yeandle and Buckner (2007) found, using data from Census 2001, that people of working age in Indian, Pakistani and Bangladeshi households were more likely to co-reside with someone with a limiting long-term illness (LLTI) which may further explain my finding.

5.2.2 Variations in Gender Differences in the Care-Employment Relationship

The three papers presented in this thesis are united under the theme of gender differences in the care-employment relationship. Chapter 2 suggests that women who become a co-resident carer in the last year or increase their care hours in the last year are more likely to reduce their income than men undergoing the same care pattern changes. In Chapter 3, it is found that there are greater disparities in the probability of employment for those in MGHs compared to non-MGHs for women than for men, with women providing high-intensity care (in particular) having a higher employment probability when living in an MGH compared to those in a non-MGH. This may indicate that MGHs have support networks that suit women's needs regarding a better division of domestic labour. This would mirror findings of research from the Czech Republic

(Souralová et al., 2022) suggesting that further research may be useful in finding if similar patterns may be found in the context of England and Wales.

The complexity of gender differences in the caring-employment relationship is further exemplified in Chapter 4. A notable finding is that after adjusting for various controls, women of most ethnicities have a higher probability of employment than men in the respective ethnicity. In other words, gender differences in employment for a given care category appear to be driven more by those controls than gender itself. This is not true of high-intensity carers in Pakistani and Bangladeshi groups, among whom men have a higher probability of employment. These findings contribute to the literature in indicating that gender differences in the caring-employment relationship intersect minority ethnic differences in interesting ways.

A further example from this chapter is the finding that, before controlling for any confounders, there are differences between Black groups and between men and women. For example, Black African men providing any intensity of care have comparatively high employment probabilities, at 60% for high-intensity carers, but this is lower for Black African women providing high-intensity care who have employment probabilities of 45%. Comparatively, Black Caribbean men and women providing high-intensity care both have employment probabilities of 47% suggesting smaller gender differences for high-intensity carers in this group. This highlights the importance of researching, where possible in terms of sample sizes, more granular minority ethnic group breakdowns. Comparatively, Brimblecombe and Farias' (2022) found (using data from the UKHLS which has more aggregated ethnicity breakdowns) that Black carers were the group most likely to be unemployed (when not looking at the intersection with gender and care intensity). My research builds on this by using data with more disaggregated ethnicity breakdowns and using two-way interaction effects stratified by gender, which mimics a three-way interaction effect.

5.2.3 Contribution Through Chosen Data

As indicated, I used two data sources in the thesis: the UKHLS in Chapter 2 and Census 2021 in Chapters 3 and 4. From both, I obtained contemporary data for England and Wales and built on prior research in the field by exploring caring and employment by various sociodemographic characteristics.

The UKHLS is a commonly used data set in this field because it offers a valuable source of longitudinal data with questions on caring. It has been used by other researchers (Carr et al., 2018; Brimblecombe and Farias, 2022) as was its predecessor the British Household Panel Survey (BHPS) (Carmichael et al., 2010; Carmichael and Ercolani, 2014). Using the UKHLS allowed me to contribute to the field using longitudinal data to explore the effects of changes in providing care on employment in the following year using contemporary data for England and Wales. An alternative longitudinal dataset with data on caring is the ELSA used by King and Pickard (2013); this provides

information on those over 50 only and does not include Wales so it would not have been appropriate for my analysis.

The partner organisation for my PhD studies was the Office for National Statistics (ONS); this gave me access to the full Census 2021 for England and Wales. The highest level of access researchers without such opportunities can get is a 10% random sample of the Census, via the accredited researcher scheme. Other researchers in the care field use the ONS Longitudinal Study (Young et al., 2006; Ramsay et al., 2013; Evandrou et al., 2015; Robards et al., 2015) based on a 1% sample of the Census (ONS., n.d.a). The unique access available to me offered an opportunity to contribute to the literature by studying minority ethnic groups using a 13-category variable, whilst maintaining an adequate sample size. Most other research uses aggregated ethnicity groupings which limit what can discerned about minority groups (for example Norman and Purdam (2013) and Victor et al (2019) use 6 categories).

5.2.4 Methodological Contribution

In Chapter 2, I made a unique methodological contribution to the literature via the use of REWB (Random Effects Within Between) models. REWB models separate within-effects from between-effects and are a more flexible form of random effects regression analysis (Bell and Jones, 2015). Unlike fixed effects models, random effects models have the advantage of being both flexible and able to measure time invariant variables such as ethnicity (Bell and Jones, 2015; Bell et al., 2019). An interesting finding that comes from the separation of these effects is that, on the within effects, women who became a co-resident carer in one year are statistically significantly more likely to have reduced income in the following year. However, on the between effects, women become a co-resident carer more often are less likely to have more episodes of net reduction in their labour income. Since between effects are non-causal, it is hard to disentangle whether this is due to more episodes of caring or to unmeasured characteristics associated with people who have more episodes of caring; it may indicate that those more often entering an episode of co-resident caring are already positioned in an occupation geared to balancing work and care. This would allow them to keep the same job and, therefore, income. Though a causal relationship cannot be identified from between effects, separating them from within effects contributes to the field by highlighting an interesting avenue for future research: that people with more frequent caring episodes may interact with the labour market differently to those with fewer, or just one episode of caring.

5.3 Study Limitations

All three papers presented in the thesis are limited by a difficulty in establishing causality. For Chapter 2, I used REWB models to examine the within and between effects in the relationship between caring changes and employment changes. The within effects can, to some extent, be interpreted causally if there are no unmeasured

time-variant variables. By controlling for ethnicity, I controlled for one key time-invariant confounder that may play a role in the relationship. As there may be others, caution is advised when looking at within effects, although these do largely indicate that the change in odds of experiencing a change in employment is associated with a change in caring pattern. Comparatively, between effects are more complicated and cannot be interpreted causally as they deal with group averages, such as on average, undergoing more episodes of becoming a carer. Inevitably, many unmeasurable factors may affect an individual who, on average, has more episodes of becoming a carer. This means that any observable pattern cannot necessarily be attributed to having more episodes of a change in caring (more instances of becoming a co- or extra-resident carer or increasing care hours) because the pattern may be attributable to an unmeasured characteristic. In Chapter 3 and 4, I cannot be sure if there are other confounding variables driving the patterns identified. Additionally, without qualitative research, it is hard to disentangle peoples' motives for being in or out of employment when caring.

Chapters 3 and 4 are also affected by the impossibility of disaggregating the analysis by co-resident caring and extra-resident caring. In these papers, I use hours of care to create a 'caring intensity' variable. However, whether individuals live with the person they care for is also a factor that may affect the relationship. Colombo et al (2011) suggest that co-resident caring is care of higher intensity with greater employment consequences than extra-resident care. Having data on the residence of the person cared for would create a more complete picture of caring intensity and its relationship to employment for people living in MGHs or people from different minority ethnic groups.

5.4 Policy Recommendations and Key Findings

Taking all three papers in the thesis together, my overarching policy recommendations are that policies implemented to support carers in employment need to be flexible to reflect complexity in the caring population. Understanding that male and female carers providing different intensities of care, from different minority ethnic backgrounds, and living in different household types interact with the labour market to varying degrees and in different ways is important in forming policy that can support carers in the labour market. For example, in Chapter 2, I show that co-resident caring and increasing care hours (indicators of high intensity caring) are associated with a higher likelihood of leaving the labour market or of having reduced labour income. Support policies for carers thus needs to take account not only of hours of care but also of whether the caring is co-resident or extra-resident. Furthermore, in Chapter 3, I demonstrate that household type plays a role in the gendered care-employment relationship; women providing high-intensity care who live in MGHs have higher employment probabilities than their counterparts in non-MGHs. This may suggest that the caring population has varying support networks that may facilitate employment or provide financial support,

depending on their living arrangements. Finally, in Chapter 4, I show that men and women in different minority ethnic groups have varying probabilities of employment across different intensities of caring, indicating that some minority ethnic groups have much lower employment probabilities than others. Previous research has indicated that carers from some minority ethnic groups struggle to access support services, attributed in some studies to language barriers and to a lack of awareness of available support (Ahmed and Rees Jones, 2008; Greenwood et al., 2015). My research indicates lower probabilities of employment for high-intensity carers, regardless of gender, in Arab, Pakistani and Bangladeshi groups, suggesting these groups (in particular) may struggle to access services. Improving the identification of carers in need of support would be important for improving policy to support carers both in and out of employment.

The key policy takeaway of my research is that existing employment and financial supports for carers need to be flexible in a way that allows them to be better tailored to different groups who may experience care-related financial disadvantage to greater extents. It is not that all carers should be employed but that different groups are differentially able to continue their employment while providing care. Those who wish to stay in employment should be better supported to do so. Comparatively, those who do not want to should be better financially renumerated for the care they do. My research does not explicitly show financial costs but the lower employment probabilities of carers from certain groups may be indicative of greater financial stress among these groups.

To minimise the financial disadvantage many carers experience, established support for carers such as Carer's Allowance and the relatively new legal entitlement to unpaid carer's leave should be extended, by increasing the value of Carer's Allowance and making paid leave available to carers. This would allow male and female carers, from a variety of minority ethnic groups, living in MGHs or non-MGHs, and providing varying degrees of care, more choice about leaving employment and would help them balance paid employment with caring responsibilities.

Carers NI (2024) recently found that many female carers see their paid employment as an important part of their identity which gives them a sense of purpose and do not want to leave their employment to better facilitate their caring responsibilities. Other studies have shown that many people balancing paid work and unpaid care report burnout from the stress of trying to do so (Age UK, 2016; Carers UK, 2025). This suggests that support needs to be provided to allow carers to stay in work if they want to, without experiencing burnout from balancing these two areas of their life but also to be able to leave employment to care with adequate financial aid if that is the right choice for the individual carer. Ensuring that carers can balance work and care, if this what they wish

to do, while also making sure that financial support for carers who are out of work is provided.

My research highlights the need for flexible policy solutions to account for the variation in carers' experiences of caring demonstrated in the thesis. There are already supports established for working carers (Hamblin et al., 2024; Carers UK, 2025) such as the right to take time off of work for dependant's emergencies (under the Employment Relations Act 1999), the right to request flexible working (under the Work and Families Act 2006), entitlement to 5 days of unpaid carers leave (under the Carers Leave Act 2023). Support for working carers is shown to be beneficial with carers saying their caring role was easier when flexible working arrangements were available to them and that their mental wellbeing improved when their organisation had support in place for working carers (Austin and Heyes, 2020).

The research shown in this thesis indicates that the supports in place should be adapted to better meet the needs of a diverse caring population as well as increasing the accessibility of these supports to groups who are not as frequently using the support available to them. For example, Chapter 2 showed that women who become co-resident carers or increase care hours in the last year have particularly higher odds of experiencing a reduction of income the following year. Policy wise, this indicates that women may need to be better targeted with financial support policies or financial support should be tiered to account for those providing more intensive care, which might aid in reducing gender inequality in care related employment outcomes. For example, currently Carer's Allowance is paid to individuals providing over 35 hours of care per week but this threshold should be tiered for hours of care provided and take into consideration factors such as whether the caring is co- or extra-residential which would account for some of the gender differences in employment outcomes for male and female carers. In Chapter 3, I showed that there may be a protective effect of living in an MGH for female high-intensity carers regarding the probability of employment. The direct policy implication of this finding does not equate to suggesting that all carers live in MGHs but it does point to supportive policies that could be introduced or, if existing, bolstered. For example, respite care already exists (which may mimic having someone else in the MGH carry out caring responsibility for the day) but this is hard to access so bolstering this already available support would be a valuable policy step. An extension of Carer's Allowance or an introduction of a separate financial support could allow carers to pay for domestic support (that which they might naturally have gotten from the greater division of domestic tasks in an MGH) which would further help them balance work and care if they wish to do so. In Chapter 4 I showed that high-intensity carers from Arab, Bangladeshi and Pakistani backgrounds have particularly low probabilities of employment. The direct policy implication stemming from this finding relates to the wider accessibility of existing policy supports such as targeted outreach for these groups and wider availability of translated information materials. Additionally,

building on research from (Ahmed and Rees Jones (2008, p73) which found that some groups do not get outside help with caring due to there being a lack of “culturally sensitive” care, policy changes could be introduced to improve the availability of care services that account for differences in cultural values. This may involve coproduction of care services with groups using the services with a particular focus on hearing the opinions and needs of minority ethnic groups.

5.5 Future Research Avenues

The use of REWB models in the first paper indicated some interesting points for future research by separating out the within from the between effects. My findings indicate that people who are more likely to experience more episodes of caring may interact with the labour market differently to people experiencing single episodes of care. Since between effects cannot be interpreted causally this finding is speculative, meaning more research is needed to explore what happens when someone has repeat episodes of becoming a carer or of increasing the hours of care they provide.

Additionally, building on the findings of Chapter 3 and 4 with qualitative research would help explore why the patterns found in my research occur. These chapters provide largely descriptive findings about differences in employment between carers living in MGHs compared to non-MGHs and for carers from different minority ethnic groups. Chapter 3 finds that high-intensity carers, especially, have higher probabilities of employment when living in MGHs, particularly among women. My findings in Chapter 3 may indicate that the structure of MGHs could aid a carer in being employed, but only further, likely qualitative research or mixed method studies in the context of England and Wales could establish whether this is the case. Using a mixed methods study design in the future could integrate the observation of patterns found using quantitative data analysis with the perspectives of carers to ground the findings in a more complete context (Hendren et al., 2022).

Future research that would be particularly useful regarding the formation of targeted employment supports would be causal research examining how the implementation of employment policies effects employee retention. For example, Austin and Heyes (2020) found that most carers found their caring role easier when they were able to work more flexibly through working from home or using flexible working hours. Future research could be both qualitative and quantitative, using data to examine employment rates after the implementation of policies and qualitative interviews to explore how carers feel the policies have aided them in making the decision to stay or leave employment or reduce their hours. For quantitative research, a differences-in-differences method, if possible to implement, would be interesting to assess changes in an employment outcome variable for carers receiving an employment support compared to carers not receiving such support. Qualitative research could take the form of focus groups with carers to examine how the employment supports have benefited groups of carers.

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Appendices

2.1: Nested Regression Table Showing the Odds of Women Becoming Unemployed/Economically Inactive after Increasing Care Hours in the Last Year

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI
Intercept	0.31 ***	0.30 – 0.32	0.28 ***	0.27 – 0.29	0.27 ***	0.26 – 0.28	0.29 ***	0.27 – 0.31	0.30 ***	0.28 – 0.32	0.26 ***	0.24 – 0.28
Increased Care Hours Within	1.33 ***	1.23 – 1.42	1.35 ***	1.25 – 1.45	1.33 ***	1.23 – 1.44	1.33 ***	1.23 – 1.44	1.34 ***	1.23 – 1.45	1.34 ***	1.23 – 1.45
Increased Care Hours Between	0.92	0.82 – 1.03	1.33 ***	1.19 – 1.49	1.28 ***	1.14 – 1.45	1.29 ***	1.14 – 1.45	1.29 ***	1.14 – 1.46	1.21 **	1.07 – 1.37
Age			0.70 ***	0.69 – 0.72	0.74 ***	0.72 – 0.75	0.74 ***	0.72 – 0.75	0.75 ***	0.73 – 0.77	0.73 ***	0.71 – 0.75
Ethnicity (Ref: White)												
Any Other Asian Background					1.14 *	1.00 – 1.30	1.11	0.97 – 1.26	1.09	0.96 – 1.24	1.11	0.97 – 1.26
Any Other Ethnic Group					1.20 *	1.04 – 1.39	1.16 *	1.00 – 1.35	1.15	1.00 – 1.34	1.14	0.98 – 1.33
Black, Black British, Caribbean or African					1.16 ***	1.07 – 1.25	1.11 *	1.02 – 1.20	1.10 *	1.01 – 1.20	1.09 *	1.00 – 1.19
Mixed/ Multiple Ethnic Groups					1.12	0.99 – 1.26	1.09	0.96 – 1.23	1.08	0.95 – 1.22	1.10	0.97 – 1.25
South Asian Background					1.21 ***	1.14 – 1.27	1.18 ***	1.11 – 1.25	1.16 ***	1.09 – 1.23	1.11 ***	1.04 – 1.18
Region (Ref: London)												
East Midlands							0.92 *	0.84 – 1.00	0.93	0.85 – 1.01	0.90 *	0.83 – 0.98
East of England							0.94	0.87 – 1.01	0.94	0.87 – 1.02	0.93	0.86 – 1.00
North East							0.86 **	0.78 – 0.96	0.87 *	0.78 – 0.97	0.84 **	0.76 – 0.94
North West							0.90 **	0.83 – 0.97	0.90 **	0.84 – 0.97	0.89 **	0.82 – 0.96
South East							0.94	0.88 – 1.01	0.95	0.88 – 1.02	0.94	0.88 – 1.01
South West							0.94	0.87 – 1.02	0.95	0.88 – 1.04	0.95	0.87 – 1.03
Wales							0.97	0.88 – 1.06	0.97	0.89 – 1.06	0.94	0.86 – 1.03
West Midlands							0.93 *	0.86 – 1.00	0.93	0.87 – 1.01	0.90 **	0.84 – 0.98
Yorkshire + Humber							0.92 *	0.86 – 1.00	0.94	0.87 – 1.01	0.90 *	0.84 – 0.98
Marital Status (Ref: Married/ In a Civil Partnership)												
Divorced/ Dissolved CP									0.81 ***	0.74 – 0.89	0.80 ***	0.73 – 0.87
Living as a Couple									0.90 ***	0.84 – 0.95	0.89 ***	0.84 – 0.94
Never Married									1.05	1.00 – 1.11	1.01	0.96 – 1.07
Separated (incl. from CP)									0.81 **	0.71 – 0.93	0.79 ***	0.69 – 0.90
Widowed/ Surviving CP									1.34 ***	1.15 – 1.57	1.25 **	1.07 – 1.47
Highest Qualification (Ref: Degree)												
A-Level etc											1.26 ***	1.20 – 1.33
GCSE etc											1.19 ***	1.13 – 1.26
No Qualification											1.60 ***	1.49 – 1.73
Other Higher											1.00	0.93 – 1.07
Other Qualification											1.28 ***	1.18 – 1.39

** p≤ 0.05, ** p ≤ 0.01, *** p ≤ 0.001*

2.2: Regression Table Showing the Odds of Women Becoming Unemployed/Economically Inactive after Becoming a Co-resident Carer in the Last Year

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI
Intercept	0.30 ***	0.29 – 0.32	0.28 ***	0.27 – 0.29	0.28 ***	0.26 – 0.29	0.30 ***	0.28 – 0.32	0.30 ***	0.28 – 0.33	0.27 ***	0.25 – 0.29
Became Co-resident Carer Within	1.47 ***	1.33 – 1.63	1.49 ***	1.35 – 1.66	1.47 ***	1.32 – 1.65	1.48 ***	1.32 – 1.65	1.48 ***	1.32 – 1.65	1.49 ***	1.33 – 1.66
Became Co-resident Carer Between	1.62 ***	1.37 – 1.91	1.88 ***	1.60 – 2.22	1.79 ***	1.50 – 2.15	1.79 ***	1.50 – 2.14	1.78 ***	1.48 – 2.13	1.58 ***	1.32 – 1.90
Age			0.70 ***	0.69 – 0.71	0.73 ***	0.72 – 0.75	0.73 ***	0.72 – 0.75	0.75 ***	0.73 – 0.76	0.73 ***	0.71 – 0.75
Ethnicity (Ref: White)												
Any Other Asian Background					1.10	0.96 – 1.26	1.06	0.93 – 1.22	1.04	0.91 – 1.20	1.05	0.92 – 1.21
Any Other Ethnic Group					1.13	0.97 – 1.32	1.09	0.93 – 1.27	1.08	0.92 – 1.26	1.07	0.91 – 1.25
Black, Black British, Caribbean or African					1.14 **	1.05 – 1.24	1.09	1.00 – 1.19	1.08	0.98 – 1.18	1.07	0.98 – 1.17
Mixed/ Multiple Ethnic Groups					1.11	0.98 – 1.26	1.08	0.95 – 1.23	1.06	0.93 – 1.21	1.09	0.95 – 1.24
South Asian Background					1.18 ***	1.12 – 1.25	1.16 ***	1.09 – 1.23	1.14 ***	1.07 – 1.21	1.09 **	1.02 – 1.16
Region (Ref: London)												
East Midlands							0.91 *	0.84 – 0.99	0.92	0.85 – 1.01	0.90 *	0.83 – 0.98
East of England							0.93	0.85 – 1.00	0.93	0.86 – 1.01	0.92	0.85 – 1.00
North East							0.84 **	0.75 – 0.94	0.85 **	0.76 – 0.95	0.83 ***	0.74 – 0.93
North West							0.88 **	0.82 – 0.95	0.89 **	0.82 – 0.96	0.88 **	0.81 – 0.95
South East							0.94	0.87 – 1.01	0.95	0.88 – 1.02	0.94	0.88 – 1.02
South West							0.93	0.85 – 1.02	0.94	0.86 – 1.03	0.94	0.86 – 1.03
Wales							0.97	0.88 – 1.07	0.98	0.89 – 1.07	0.95	0.87 – 1.05
West Midlands							0.91 *	0.84 – 0.99	0.92 *	0.85 – 0.99	0.90 **	0.83 – 0.97
Yorkshire + Humber							0.91 *	0.84 – 0.99	0.92 *	0.85 – 1.00	0.90 **	0.83 – 0.97
Marital Status (Ref: Married/ In a Civil Partnership)												
Divorced/ Dissolved CP									0.73 ***	0.66 – 0.81	0.72 ***	0.65 – 0.80
Living as a Couple									0.89 ***	0.84 – 0.95	0.88 ***	0.83 – 0.94
Never Married									1.08 *	1.02 – 1.14	1.04	0.98 – 1.10
Separated (incl. from CP)									0.84 *	0.73 – 0.97	0.82 **	0.71 – 0.94
Widowed/ Surviving CP									1.27 *	1.05 – 1.53	1.17	0.97 – 1.41
Highest Qualification (Ref: Degree)												
A-Level etc											1.21 ***	1.14 – 1.28
GCSE etc											1.15 ***	1.08 – 1.21
No Qualification											1.56 ***	1.44 – 1.68
Other Higher											0.96	0.90 – 1.03
Other Qualification											1.23 ***	1.13 – 1.34

** p≤ 0.05, ** p ≤ 0.01, *** p ≤ 0.001*

2.3: Nested Regression Table Showing the Odds of Women Becoming Unemployed/Economically Inactive after Becoming an Extra-resident Carer in the Last Year

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI
Intercept	0.31 ***	0.30 – 0.33	0.29 ***	0.27 – 0.30	0.28 ***	0.27 – 0.29	0.30 ***	0.28 – 0.32	0.30 ***	0.28 – 0.32	0.26 ***	0.24 – 0.28
Became Co-resident Carer Within	1.09 *	1.00 – 1.18	1.10 *	1.02 – 1.20	1.05	0.96 – 1.15	1.05	0.96 – 1.15	1.05	0.96 – 1.15	1.06	0.97 – 1.16
Became Co-resident Carer Between	0.62 ***	0.53 – 0.72	1.01	0.86 – 1.18	0.93	0.79 – 1.10	0.94	0.79 – 1.11	0.94	0.79 – 1.11	0.95	0.81 – 1.13
Age			0.71 ***	0.70 – 0.73	0.75 ***	0.73 – 0.76	0.75 ***	0.73 – 0.76	0.76 ***	0.74 – 0.78	0.74 ***	0.72 – 0.76
Ethnicity (Ref: White)												
Any Other Asian Background					1.13	0.98 – 1.29	1.09	0.95 – 1.25	1.08	0.94 – 1.24	1.10	0.96 – 1.27
Any Other Ethnic Group					1.21 *	1.04 – 1.41	1.18 *	1.01 – 1.37	1.17 *	1.00 – 1.37	1.16	0.99 – 1.36
Black, Black British, Caribbean or African					1.16 ***	1.07 – 1.26	1.11 *	1.02 – 1.22	1.11 *	1.01 – 1.21	1.10 *	1.01 – 1.20
Mixed/ Multiple Ethnic Groups					1.12	0.99 – 1.27	1.09	0.96 – 1.24	1.08	0.95 – 1.23	1.10	0.97 – 1.26
South Asian Background					1.19 ***	1.12 – 1.26	1.17 ***	1.10 – 1.24	1.15 ***	1.08 – 1.22	1.10 **	1.03 – 1.17
Region (Ref: London)												
East Midlands							0.92 *	0.84 – 1.00	0.93	0.85 – 1.01	0.90 *	0.83 – 0.98
East of England							0.94	0.86 – 1.02	0.95	0.87 – 1.03	0.93	0.86 – 1.01
North East							0.88 *	0.79 – 0.98	0.89 *	0.80 – 0.99	0.86 **	0.77 – 0.96
North West							0.90 **	0.84 – 0.98	0.91 *	0.84 – 0.98	0.90 **	0.83 – 0.97
South East							0.94	0.88 – 1.02	0.95	0.88 – 1.02	0.94	0.87 – 1.02
South West							0.95	0.87 – 1.03	0.96	0.88 – 1.05	0.96	0.88 – 1.04
Wales							0.97	0.88 – 1.06	0.98	0.89 – 1.07	0.95	0.86 – 1.04
West Midlands							0.93	0.86 – 1.01	0.94	0.87 – 1.02	0.91 *	0.84 – 0.99
Yorkshire + Humber							0.92 *	0.85 – 1.00	0.93	0.86 – 1.01	0.90 *	0.83 – 0.98
Marital Status (Ref: Married/ In a Civil Partnership)												
Divorced/ Dissolved CP									0.82 ***	0.75 – 0.89	0.80 ***	0.73 – 0.88
Living as a Couple									0.90 ***	0.85 – 0.96	0.89 ***	0.84 – 0.95
Never Married									1.06	1.00 – 1.12	1.02	0.96 – 1.08
Separated (incl. from CP)									0.82 **	0.71 – 0.94	0.79 ***	0.69 – 0.91
Widowed/ Surviving CP									1.33 ***	1.13 – 1.57	1.24 **	1.06 – 1.47
Highest Qualification (Ref: Degree)												
A-Level etc											1.27 ***	1.20 – 1.34
GCSE etc											1.19 ***	1.13 – 1.26
No Qualification											1.60 ***	1.48 – 1.73
Other Higher											1.00	0.94 – 1.07
Other Qualification											1.27 ***	1.17 – 1.38

** p≤ 0.05, ** p ≤ 0.01, *** p ≤ 0.001*

2.4: Nested Regression Table Showing the Odds of Men Becoming Unemployed/Economically Inactive after Increasing Care Hours in the Last Year

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI
Intercept	0.13 ***	0.13 – 0.14	0.13 ***	0.12 – 0.13	0.12 ***	0.11 – 0.13	0.12 ***	0.11 – 0.13	0.09 ***	0.08 – 0.10	0.07 ***	0.07 – 0.08
Increased Care Hours Within	1.29 ***	1.16 – 1.44	1.31 ***	1.17 – 1.46	1.26 ***	1.12 – 1.42	1.26 ***	1.12 – 1.42	1.24 ***	1.10 – 1.39	1.25 ***	1.11 – 1.41
Increased Care Hours Between	1.93 ***	1.63 – 2.29	2.58 ***	2.19 – 3.06	2.72 ***	2.27 – 3.27	2.68 ***	2.24 – 3.22	2.05 ***	1.72 – 2.45	1.87 ***	1.56 – 2.23
Age			0.74 ***	0.73 – 0.76	0.86 ***	0.83 – 0.88	0.86 ***	0.84 – 0.88	1.21 ***	1.17 – 1.25	1.20 ***	1.16 – 1.24
Ethnicity (Ref: White)												
Any Other Asian Background					1.21 *	1.01 – 1.46	1.23 *	1.01 – 1.48	1.21 *	1.01 – 1.45	1.28 **	1.07 – 1.54
Any Other Ethnic Group					1.23	0.99 – 1.53	1.24	0.99 – 1.54	1.29 *	1.04 – 1.59	1.29 *	1.04 – 1.60
Black, Black British, Caribbean or African					1.64 ***	1.47 – 1.84	1.66 ***	1.47 – 1.87	1.51 ***	1.35 – 1.70	1.52 ***	1.35 – 1.70
Mixed/ Multiple Ethnic Groups					1.40 ***	1.17 – 1.67	1.41 ***	1.17 – 1.69	1.22 *	1.03 – 1.45	1.23 *	1.03 – 1.46
South Asian Background					1.12 **	1.04 – 1.21	1.12 **	1.03 – 1.21	1.23 ***	1.13 – 1.33	1.22 ***	1.13 – 1.33
Region (Ref: London)												
East Midlands							1.05	0.93 – 1.17	1.08	0.97 – 1.21	1.02	0.92 – 1.14
East of England							0.89 *	0.80 – 1.00	0.94	0.84 – 1.05	0.91	0.82 – 1.02
North East							1.10	0.95 – 1.27	1.20 **	1.05 – 1.38	1.15 *	1.00 – 1.33
North West							1.00	0.90 – 1.11	1.07	0.97 – 1.18	1.03	0.93 – 1.14
South East							0.97	0.87 – 1.07	1.03	0.94 – 1.14	1.01	0.92 – 1.12
South West							0.98	0.87 – 1.11	1.03	0.92 – 1.15	0.99	0.89 – 1.11
Wales							1.10	0.96 – 1.25	1.15 *	1.02 – 1.31	1.09	0.96 – 1.23
West Midlands							1.05	0.94 – 1.16	1.08	0.98 – 1.19	1.03	0.93 – 1.14
Yorkshire + Humber							1.05	0.94 – 1.17	1.11 *	1.00 – 1.23	1.06	0.95 – 1.17
Marital Status (Ref: Married/ In a Civil Partnership)												
Divorced/ Dissolved CP									1.46 ***	1.26 – 1.70	1.42 ***	1.22 – 1.66
Living as a Couple									1.24 ***	1.14 – 1.34	1.20 ***	1.11 – 1.30
Never Married									3.51 ***	3.27 – 3.78	3.36 ***	3.12 – 3.62
Separated (incl. from CP)									1.38 *	1.08 – 1.77	1.35 *	1.06 – 1.73
Widowed/ Surviving CP									1.35	0.97 – 1.88	1.32	0.95 – 1.83
Highest Qualification (Ref: Degree)												
A-Level etc											1.54 ***	1.44 – 1.66
GCSE etc											1.32 ***	1.22 – 1.42
No Qualification											1.74 ***	1.57 – 1.93
Other Higher											1.18 ***	1.07 – 1.30
Other Qualification											1.42 ***	1.28 – 1.56

** p≤ 0.05, ** p ≤ 0.01, *** p ≤ 0.001*

2.5: Nested Regression Table Showing the Odds of Men Becoming Unemployed/Economically Inactive after Becoming a Co-resident Carer in the Last Year

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI
Intercept	0.13 ***	0.12 – 0.14	0.12 ***	0.12 – 0.13	0.12 ***	0.11 – 0.13	0.12 ***	0.11 – 0.13	0.09 ***	0.08 – 0.10	0.07 ***	0.07 – 0.08
Became Co-resident Carer Within	1.27 ***	1.10 – 1.47	1.28 ***	1.11 – 1.47	1.25 **	1.07 – 1.46	1.25 **	1.07 – 1.46	1.22 *	1.04 – 1.42	1.21 *	1.04 – 1.41
Became Co-resident Carer Between	2.63 ***	2.09 – 3.30	2.87 ***	2.29 – 3.58	3.12 ***	2.44 – 3.98	3.07 ***	2.41 – 3.92	1.84 ***	1.45 – 2.34	1.65 ***	1.30 – 2.11
Age			0.75 ***	0.73 – 0.77	0.86 ***	0.84 – 0.89	0.87 ***	0.84 – 0.89	1.28 ***	1.23 – 1.32	1.26 ***	1.22 – 1.31
Ethnicity (Ref: White)												
Any Other Asian Background					1.22 *	1.01 – 1.49	1.23 *	1.01 – 1.51	1.22 *	1.01 – 1.48	1.28 *	1.06 – 1.55
Any Other Ethnic Group					1.22	0.97 – 1.54	1.23	0.98 – 1.55	1.28 *	1.03 – 1.59	1.27 *	1.02 – 1.59
Black, Black British, Caribbean or African					1.69 ***	1.50 – 1.90	1.70 ***	1.50 – 1.93	1.52 ***	1.35 – 1.71	1.54 ***	1.37 – 1.74
Mixed/ Multiple Ethnic Groups					1.48 ***	1.22 – 1.79	1.49 ***	1.23 – 1.81	1.30 **	1.08 – 1.56	1.30 **	1.08 – 1.56
South Asian Background					1.12 **	1.03 – 1.21	1.12 *	1.02 – 1.22	1.20 ***	1.11 – 1.30	1.20 ***	1.10 – 1.31
Region (Ref: London)												
East Midlands							1.04	0.92 – 1.17	1.08	0.96 – 1.21	1.03	0.92 – 1.16
East of England							0.88 *	0.78 – 0.99	0.92	0.82 – 1.03	0.90	0.80 – 1.01
North East							1.07	0.92 – 1.25	1.18 *	1.02 – 1.37	1.15	0.99 – 1.33
North West							1.00	0.90 – 1.12	1.07	0.97 – 1.19	1.05	0.94 – 1.17
South East							0.97	0.87 – 1.08	1.04	0.94 – 1.16	1.03	0.93 – 1.14
South West							0.98	0.87 – 1.11	1.02	0.91 – 1.15	1.00	0.89 – 1.13
Wales							1.13	0.98 – 1.29	1.17 *	1.03 – 1.33	1.12	0.98 – 1.27
West Midlands							1.03	0.92 – 1.16	1.06	0.96 – 1.18	1.02	0.92 – 1.14
Yorkshire + Humber							1.03	0.92 – 1.16	1.09	0.98 – 1.21	1.04	0.94 – 1.16
Marital Status (Ref: Married/ In a Civil Partnership)												
Divorced/ Dissolved CP									1.61 ***	1.32 – 1.97	1.57 ***	1.28 – 1.92
Living as a Couple									1.27 ***	1.17 – 1.38	1.24 ***	1.14 – 1.35
Never Married									4.21 ***	3.88 – 4.56	3.99 ***	3.68 – 4.33
Separated (incl. from CP)									1.75 ***	1.28 – 2.38	1.69 ***	1.24 – 2.30
Widowed/ Surviving CP									1.43	0.95 – 2.14	1.37	0.91 – 2.06
Highest Qualification (Ref: Degree)												
A-Level etc											1.47 ***	1.37 – 1.59
GCSE etc											1.25 ***	1.15 – 1.35
No Qualification											1.67 ***	1.50 – 1.85
Other Higher											1.13 *	1.02 – 1.25
Other Qualification											1.41 ***	1.27 – 1.56

** p≤ 0.05, ** p ≤ 0.01, *** p ≤ 0.001*

2.6: Nested Regression Table Showing the Odds of Men Becoming Unemployed/Economically Inactive after Becoming an Extra-resident Carer in the Last Year

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI
Intercept	0.14 ***	0.13 – 0.15	0.13 ***	0.12 – 0.14	0.13 ***	0.12 – 0.14	0.12 ***	0.11 – 0.14	0.09 ***	0.08 – 0.10	0.07 ***	0.07 – 0.08
Became Extra-resident Carer Within	1.02	0.90 – 1.16	1.03	0.90 – 1.16	0.99	0.86 – 1.13	0.99	0.86 – 1.13	0.98	0.86 – 1.13	0.99	0.86 – 1.13
Became Extra-resident Carer Between	1.16	0.93 – 1.46	1.74 ***	1.39 – 2.17	1.75 ***	1.38 – 2.23	1.74 ***	1.37 – 2.21	1.74 ***	1.39 – 2.19	1.73 ***	1.38 – 2.18
Age			0.76 ***	0.74 – 0.78	0.88 ***	0.86 – 0.91	0.88 ***	0.86 – 0.91	1.23 ***	1.19 – 1.28	1.22 ***	1.18 – 1.26
Ethnicity (Ref: White)												
Any Other Asian Background					1.13	0.92 – 1.38	1.16	0.94 – 1.42	1.14	0.94 – 1.38	1.21	0.99 – 1.47
Any Other Ethnic Group					1.28 *	1.01 – 1.62	1.31 *	1.03 – 1.66	1.34 **	1.08 – 1.68	1.35 *	1.07 – 1.69
Black, Black British, Caribbean or African					1.63 ***	1.44 – 1.85	1.68 ***	1.47 – 1.91	1.52 ***	1.35 – 1.72	1.52 ***	1.35 – 1.73
Mixed/ Multiple Ethnic Groups					1.38 **	1.13 – 1.68	1.41 ***	1.15 – 1.71	1.20	0.99 – 1.44	1.22 *	1.01 – 1.46
South Asian Background					1.14 **	1.05 – 1.24	1.15 **	1.05 – 1.25	1.24 ***	1.14 – 1.35	1.24 ***	1.13 – 1.35
Region (Ref: London)												
East Midlands							1.09	0.96 – 1.23	1.11	0.99 – 1.25	1.05	0.93 – 1.18
East of England							0.91	0.81 – 1.03	0.96	0.86 – 1.08	0.93	0.83 – 1.05
North East							1.18 *	1.01 – 1.37	1.28 **	1.10 – 1.47	1.22 **	1.05 – 1.41
North West							1.04	0.93 – 1.16	1.10	0.99 – 1.23	1.06	0.95 – 1.18
South East							0.99	0.89 – 1.11	1.06	0.95 – 1.17	1.03	0.93 – 1.15
South West							1.02	0.90 – 1.16	1.06	0.94 – 1.19	1.02	0.91 – 1.15
Wales							1.12	0.97 – 1.28	1.16 *	1.02 – 1.32	1.09	0.95 – 1.24
West Midlands							1.09	0.97 – 1.22	1.11	1.00 – 1.23	1.05	0.94 – 1.17
Yorkshire + Humber							1.10	0.98 – 1.24	1.16 **	1.04 – 1.29	1.09	0.98 – 1.22
Marital Status (Ref: Married/ In a Civil Partnership)												
Divorced/ Dissolved CP									1.42 ***	1.21 – 1.66	1.38 ***	1.18 – 1.61
Living as a Couple									1.23 ***	1.13 – 1.34	1.19 ***	1.09 – 1.30
Never Married									3.62 ***	3.36 – 3.91	3.46 ***	3.20 – 3.74
Separated (incl. from CP)									1.40 **	1.09 – 1.79	1.36 *	1.06 – 1.75
Widowed/ Surviving CP									1.30	0.92 – 1.83	1.26	0.90 – 1.78
Highest Qualification (Ref: Degree)												
A-Level etc											1.56 ***	1.45 – 1.68
GCSE etc											1.32 ***	1.21 – 1.43
No Qualification											1.81 ***	1.63 – 2.02
Other Higher											1.19 ***	1.08 – 1.32
Other Qualification											1.40 ***	1.26 – 1.55

** p≤ 0.05, ** p ≤ 0.01, *** p ≤ 0.001*

2.7: Nested Regression Table Showing the Odds of Women Losing Income after Increasing Care Hours in the Last Year

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI
Intercept	1.10 ***	1.07 – 1.14	1.08 ***	1.05 – 1.12	1.15 ***	1.11 – 1.19	1.15 ***	1.10 – 1.21	1.20 ***	1.15 – 1.26	1.29 ***	1.22 – 1.35
Increased Care Hours Within	1.15 ***	1.10 – 1.21	1.15 ***	1.10 – 1.21	1.13 ***	1.08 – 1.19	1.14 ***	1.08 – 1.19	1.13 ***	1.08 – 1.19	1.13 ***	1.08 – 1.19
Increased Care Hours Between	0.56 ***	0.52 – 0.61	0.62 ***	0.57 – 0.67	0.64 ***	0.58 – 0.69	0.64 ***	0.59 – 0.70	0.65 ***	0.60 – 0.71	0.68 ***	0.62 – 0.74
Age			0.93 ***	0.91 – 0.94	0.92 ***	0.91 – 0.94	0.92 ***	0.91 – 0.93	0.91 ***	0.89 – 0.92	0.95 ***	0.93 – 0.96
Ethnicity (Ref: White)												
Any Other Asian Background					0.92	0.85 – 1.01	0.92	0.84 – 1.00	0.90 *	0.83 – 0.99	0.91 *	0.83 – 0.99
Any Other Ethnic Group					0.87 *	0.79 – 0.97	0.87 *	0.78 – 0.97	0.87 **	0.78 – 0.96	0.90 *	0.81 – 1.00
Black, Black British, Caribbean or African					0.90 ***	0.86 – 0.95	0.90 ***	0.85 – 0.95	0.92 **	0.87 – 0.98	0.93 *	0.88 – 0.99
Mixed/ Multiple Ethnic Groups					0.93	0.85 – 1.01	0.92	0.85 – 1.01	0.95	0.87 – 1.03	0.94	0.86 – 1.02
South Asian Background					0.64 ***	0.62 – 0.67	0.65 ***	0.62 – 0.67	0.64 ***	0.61 – 0.66	0.70 ***	0.67 – 0.73
Region (Ref: London)												
East Midlands							1.01	0.95 – 1.06	1.00	0.95 – 1.06	1.02	0.97 – 1.08
East of England							1.01	0.96 – 1.07	1.00	0.95 – 1.06	1.03	0.97 – 1.08
North East							0.92 *	0.86 – 0.99	0.91 *	0.85 – 0.98	0.94	0.87 – 1.00
North West							0.95	0.91 – 1.00	0.95 *	0.90 – 0.99	0.97	0.92 – 1.02
South East							1.07 **	1.02 – 1.13	1.06 *	1.02 – 1.12	1.07 **	1.02 – 1.12
South West							1.02	0.97 – 1.08	1.01	0.96 – 1.07	1.02	0.97 – 1.08
Wales							0.96	0.90 – 1.01	0.95	0.90 – 1.01	0.98	0.92 – 1.04
West Midlands							0.98	0.94 – 1.03	0.98	0.93 – 1.03	1.01	0.96 – 1.06
Yorkshire + Humber							0.95	0.91 – 1.01	0.95	0.90 – 1.00	0.99	0.94 – 1.04
Marital Status (Ref: Married/ In a Civil Partnership)												
Divorced/ Dissolved CP									0.91 ***	0.86 – 0.96	0.92 ***	0.87 – 0.96
Living as a Couple									0.97	0.93 – 1.00	0.99	0.95 – 1.02
Never Married									0.89 ***	0.86 – 0.93	0.91 ***	0.88 – 0.95
Separated (incl. from CP)									0.86 ***	0.79 – 0.93	0.88 **	0.81 – 0.95
Widowed/ Surviving CP									0.85 **	0.77 – 0.94	0.90 *	0.81 – 1.00
Highest Qualification (Ref: Degree)												
A-Level etc											1.05 **	1.01 – 1.09
GCSE etc											0.89 ***	0.86 – 0.92
No Qualification											0.56 ***	0.53 – 0.59
Other Higher											1.01	0.97 – 1.05
Other Qualification											0.83 ***	0.79 – 0.87

** p≤ 0.05, ** p ≤ 0.01, *** p ≤ 0.001*

2.8: Nested Regression Table Showing the Odds of Women Losing Income after Becoming a Co-resident Carer in the Last Year

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI
Intercept	1.09 ***	1.06 – 1.13	1.08 ***	1.04 – 1.11	1.14 ***	1.11 – 1.18	1.16 ***	1.11 – 1.22	1.22 ***	1.16 – 1.28	1.31 ***	1.24 – 1.38
Became Co-resident Carer Within	1.23 ***	1.14 – 1.32	1.23 ***	1.14 – 1.32	1.22 ***	1.13 – 1.32	1.22 ***	1.13 – 1.32	1.22 ***	1.13 – 1.32	1.22 ***	1.13 – 1.32
Became Co-resident Carer Between	0.39 ***	0.34 – 0.44	0.41 ***	0.35 – 0.46	0.44 ***	0.38 – 0.51	0.45 ***	0.39 – 0.52	0.47 ***	0.40 – 0.54	0.52 ***	0.45 – 0.60
Age			0.92 ***	0.91 – 0.93	0.91 ***	0.90 – 0.93	0.91 ***	0.90 – 0.93	0.90 ***	0.88 – 0.91	0.94 ***	0.92 – 0.95
Ethnicity (Ref: White)												
Any Other Asian Background					0.93	0.85 – 1.01	0.91 *	0.83 – 1.00	0.90 *	0.82 – 0.98	0.90 *	0.82 – 0.98
Any Other Ethnic Group					0.86 **	0.77 – 0.96	0.85 **	0.76 – 0.95	0.85 **	0.76 – 0.94	0.88 *	0.78 – 0.98
Black, Black British, Caribbean or African					0.90 ***	0.85 – 0.95	0.88 ***	0.83 – 0.94	0.91 **	0.86 – 0.97	0.92 **	0.86 – 0.97
Mixed/ Multiple Ethnic Groups					0.93	0.85 – 1.02	0.92	0.84 – 1.00	0.94	0.86 – 1.03	0.93	0.85 – 1.01
South Asian Background					0.64 ***	0.62 – 0.67	0.64 ***	0.62 – 0.67	0.63 ***	0.61 – 0.66	0.69 ***	0.66 – 0.72
Region (Ref: London)												
East Midlands							0.99	0.94 – 1.05	0.98	0.93 – 1.04	1.00	0.95 – 1.06
East of England							1.00	0.95 – 1.06	0.99	0.94 – 1.05	1.01	0.96 – 1.07
North East							0.91 **	0.85 – 0.98	0.90 **	0.84 – 0.97	0.92 *	0.86 – 0.99
North West							0.93 **	0.89 – 0.98	0.93 **	0.88 – 0.97	0.95 *	0.90 – 1.00
South East							1.07 *	1.01 – 1.12	1.06 *	1.01 – 1.11	1.06 *	1.01 – 1.11
South West							1.01	0.95 – 1.07	1.00	0.95 – 1.06	1.01	0.95 – 1.07
Wales							0.94 *	0.88 – 1.00	0.93 *	0.88 – 0.99	0.96	0.90 – 1.02
West Midlands							0.97	0.92 – 1.02	0.97	0.92 – 1.02	1.00	0.95 – 1.05
Yorkshire + Humber							0.93 *	0.88 – 0.98	0.93 **	0.88 – 0.98	0.97	0.92 – 1.02
Marital Status (Ref: Married/ In a Civil Partnership)												
Divorced/ Dissolved CP									0.86 ***	0.81 – 0.91	0.87 ***	0.82 – 0.92
Living as a Couple									0.96 *	0.92 – 0.99	0.98	0.94 – 1.02
Never Married									0.89 ***	0.86 – 0.93	0.92 ***	0.88 – 0.95
Separated (incl. from CP)									0.85 ***	0.78 – 0.93	0.88 **	0.81 – 0.96
Widowed/ Surviving CP									0.89	0.79 – 1.01	0.95	0.84 – 1.08
Highest Qualification (Ref: Degree)												
A-Level etc											1.03	0.99 – 1.07
GCSE etc											0.87 ***	0.84 – 0.90
No Qualification											0.56 ***	0.53 – 0.59
Other Higher											1.00	0.96 – 1.04
Other Qualification											0.82 ***	0.78 – 0.86

** p≤ 0.05, ** p ≤ 0.01, *** p ≤ 0.001*

2.9: Nested Regression Table Showing the Odds of Women Losing Income after Becoming an Extra-resident Carer in the Last Year

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI
Intercept	1.03	0.99 – 1.06	1.01	0.97 – 1.04	1.07 ***	1.03 – 1.11	1.07 **	1.02 – 1.12	1.12 ***	1.07 – 1.18	1.22 ***	1.16 – 1.29
Became Extra-resident Carer Within	1.00	0.95 – 1.05	1.00	0.95 – 1.05	0.99	0.94 – 1.04	0.99	0.94 – 1.04	0.99	0.94 – 1.04	0.99	0.94 – 1.04
Became Extra-resident Carer Between	1.09	0.98 – 1.21	1.25 ***	1.12 – 1.39	1.20 **	1.07 – 1.34	1.20 **	1.07 – 1.35	1.20 **	1.07 – 1.35	1.13 *	1.01 – 1.27
Age			0.92 ***	0.90 – 0.93	0.91 ***	0.90 – 0.93	0.91 ***	0.90 – 0.93	0.90 ***	0.88 – 0.91	0.94 ***	0.93 – 0.96
Ethnicity (Ref: White)												
Any Other Asian Background					0.96	0.87 – 1.05	0.95	0.86 – 1.04	0.93	0.85 – 1.03	0.93	0.85 – 1.02
Any Other Ethnic Group					0.89 *	0.80 – 0.99	0.89 *	0.80 – 0.99	0.89 *	0.79 – 0.99	0.92	0.82 – 1.03
Black, Black British, Caribbean or African					0.91 ***	0.86 – 0.96	0.90 ***	0.85 – 0.96	0.93 *	0.88 – 0.99	0.94 *	0.88 – 0.99
Mixed/ Multiple Ethnic Groups					0.93	0.85 – 1.02	0.93	0.85 – 1.01	0.95	0.87 – 1.04	0.94	0.86 – 1.03
South Asian Background					0.64 ***	0.61 – 0.66	0.64 ***	0.61 – 0.67	0.63 ***	0.60 – 0.66	0.69 ***	0.66 – 0.72
Region (Ref: London)												
East Midlands							1.01	0.96 – 1.07	1.00	0.95 – 1.06	1.02	0.97 – 1.08
East of England							1.02	0.97 – 1.07	1.01	0.96 – 1.07	1.03	0.98 – 1.09
North East							0.91 *	0.85 – 0.98	0.91 **	0.84 – 0.97	0.93 *	0.87 – 1.00
North West							0.95	0.91 – 1.00	0.95 *	0.90 – 1.00	0.97	0.92 – 1.02
South East							1.08 **	1.03 – 1.13	1.07 **	1.02 – 1.12	1.07 **	1.02 – 1.13
South West							1.03	0.97 – 1.09	1.02	0.96 – 1.08	1.03	0.97 – 1.09
Wales							0.96	0.90 – 1.02	0.95	0.90 – 1.01	0.98	0.93 – 1.05
West Midlands							0.98	0.93 – 1.04	0.98	0.93 – 1.03	1.01	0.96 – 1.07
Yorkshire + Humber							0.96	0.91 – 1.01	0.95	0.90 – 1.00	0.99	0.94 – 1.05
Marital Status (Ref: Married/ In a Civil Partnership)												
Divorced/ Dissolved CP									0.91 ***	0.87 – 0.96	0.92 **	0.87 – 0.97
Living as a Couple									0.97	0.93 – 1.00	0.99	0.95 – 1.02
Never Married									0.88 ***	0.85 – 0.92	0.90 ***	0.87 – 0.94
Separated (incl. from CP)									0.85 ***	0.78 – 0.92	0.88 **	0.81 – 0.95
Widowed/ Surviving CP									0.85 **	0.76 – 0.94	0.90 *	0.81 – 1.00
Highest Qualification (Ref: Degree)												
A-Level etc											1.03	1.00 – 1.07
GCSE etc											0.87 ***	0.84 – 0.90
No Qualification											0.55 ***	0.52 – 0.58
Other Higher											1.00	0.96 – 1.04
Other Qualification											0.82 ***	0.78 – 0.86

** p≤ 0.05, ** p ≤ 0.01, *** p ≤ 0.001*

2.10: Nested Regression Table Showing the Odds of Men Losing Income after Increasing Care Hours in the Last Year

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI
Intercept	0.54 ***	0.53 – 0.56	0.55 ***	0.53 – 0.57	0.54 ***	0.52 – 0.56	0.52 ***	0.50 – 0.55	0.54 ***	0.51 – 0.57	0.52 ***	0.49 – 0.55
Increased Care Hours Within	1.13 ***	1.06 – 1.20	1.13 ***	1.06 – 1.20	1.09 **	1.02 – 1.17	1.09 *	1.02 – 1.16	1.08 *	1.02 – 1.16	1.08 *	1.01 – 1.16
Increased Care Hours Between	0.61 ***	0.55 – 0.67	0.60 ***	0.54 – 0.66	0.62 ***	0.56 – 0.69	0.62 ***	0.56 – 0.69	0.64 ***	0.58 – 0.71	0.64 ***	0.57 – 0.71
Age			1.01 *	1.00 – 1.02	1.03 ***	1.01 – 1.04	1.03 ***	1.01 – 1.04	1.01	0.99 – 1.02	1.02 *	1.00 – 1.04
Ethnicity (Ref: White)												
Any Other Asian Background					1.12 *	1.02 – 1.23	1.14 **	1.04 – 1.26	1.14 **	1.04 – 1.25	1.16 **	1.06 – 1.28
Any Other Ethnic Group					0.93	0.83 – 1.05	0.94	0.84 – 1.06	0.94	0.83 – 1.05	0.97	0.86 – 1.09
Black, Black British, Caribbean or African					1.10 **	1.04 – 1.17	1.13 ***	1.06 – 1.20	1.13 ***	1.06 – 1.21	1.13 ***	1.06 – 1.21
Mixed/ Multiple Ethnic Groups					1.03	0.93 – 1.13	1.04	0.95 – 1.14	1.05	0.95 – 1.15	1.06	0.96 – 1.16
South Asian Background					0.99	0.96 – 1.03	1.01	0.97 – 1.05	1.00	0.96 – 1.04	1.03	0.99 – 1.07
Region (Ref: London)												
East Midlands							1.06 *	1.00 – 1.12	1.06 *	1.00 – 1.12	1.04	0.99 – 1.10
East of England							1.07 **	1.02 – 1.13	1.07 *	1.01 – 1.12	1.06 *	1.00 – 1.11
North East							0.99	0.93 – 1.06	0.99	0.92 – 1.06	0.98	0.91 – 1.05
North West							1.02	0.97 – 1.07	1.02	0.97 – 1.07	1.01	0.96 – 1.06
South East							1.09 ***	1.04 – 1.14	1.08 **	1.03 – 1.14	1.07 **	1.02 – 1.13
South West							1.06 *	1.00 – 1.12	1.06 *	1.00 – 1.12	1.05	0.99 – 1.10
Wales							1.04	0.98 – 1.11	1.04	0.98 – 1.10	1.03	0.97 – 1.09
West Midlands							1.01	0.96 – 1.07	1.01	0.96 – 1.07	1.00	0.95 – 1.06
Yorkshire + Humber							1.01	0.96 – 1.07	1.01	0.96 – 1.07	1.00	0.95 – 1.05
Marital Status (Ref: Married/ In a Civil Partnership)												
Divorced/ Dissolved CP									0.96	0.88 – 1.03	0.95	0.88 – 1.03
Living as a Couple									0.94 ***	0.90 – 0.97	0.94 ***	0.90 – 0.97
Never Married									0.91 ***	0.88 – 0.95	0.91 ***	0.88 – 0.95
Separated (incl. from CP)									1.05	0.94 – 1.19	1.05	0.93 – 1.18
Widowed/ Surviving CP									0.76 **	0.64 – 0.92	0.77 **	0.64 – 0.93
Highest Qualification (Ref: Degree)												
A-Level etc											1.14 ***	1.11 – 1.18
GCSE etc											1.13 ***	1.09 – 1.17
No Qualification											0.84 ***	0.79 – 0.89
Other Higher											1.09 ***	1.04 – 1.13
Other Qualification											1.02	0.97 – 1.07

** p≤ 0.05, ** p ≤ 0.01, *** p ≤ 0.001*

2.11: Nested Regression Table Showing the Odds of Men Losing Income after Becoming a Co-resident Carer in the Last Year

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI
Intercept	0.53 ***	0.51 – 0.55	0.53 ***	0.51 – 0.55	0.53 ***	0.51 – 0.55	0.51 ***	0.49 – 0.54	0.52 ***	0.50 – 0.55	0.51 ***	0.48 – 0.53
Became Co-resident Carer Within	1.06	0.97 – 1.15	1.06	0.97 – 1.15	1.02	0.94 – 1.12	1.02	0.94 – 1.12	1.02	0.93 – 1.12	1.01	0.92 – 1.11
Became Co-resident Carer Between	0.52 ***	0.45 – 0.60	0.52 ***	0.45 – 0.60	0.53 ***	0.46 – 0.62	0.54 ***	0.46 – 0.63	0.55 ***	0.47 – 0.65	0.56 ***	0.47 – 0.65
Age			1.01	0.99 – 1.02	1.02 **	1.01 – 1.03	1.02 **	1.01 – 1.03	1.01	0.99 – 1.02	1.02 *	1.00 – 1.04
Ethnicity (Ref: White)												
Any Other Asian Background					1.15 **	1.04 – 1.26	1.16 **	1.06 – 1.28	1.16 **	1.05 – 1.28	1.18 **	1.07 – 1.30
Any Other Ethnic Group					0.94	0.83 – 1.06	0.95	0.84 – 1.07	0.94	0.83 – 1.06	0.96	0.85 – 1.09
Black, Black British, Caribbean or African					1.11 **	1.04 – 1.18	1.13 ***	1.06 – 1.21	1.13 ***	1.06 – 1.21	1.14 ***	1.06 – 1.22
Mixed/ Multiple Ethnic Groups					1.06	0.96 – 1.17	1.07	0.97 – 1.19	1.08	0.98 – 1.19	1.09	0.98 – 1.21
South Asian Background					0.99	0.96 – 1.03	1.01	0.97 – 1.05	1.00	0.96 – 1.04	1.03	0.98 – 1.07
Region (Ref: London)												
East Midlands							1.05	1.00 – 1.11	1.05	1.00 – 1.12	1.04	0.99 – 1.11
East of England							1.07 *	1.01 – 1.13	1.07 *	1.01 – 1.13	1.06 *	1.00 – 1.12
North East							0.97	0.90 – 1.04	0.97	0.90 – 1.04	0.96	0.90 – 1.04
North West							1.01	0.96 – 1.07	1.02	0.96 – 1.07	1.01	0.96 – 1.06
South East							1.09 **	1.03 – 1.14	1.08 **	1.03 – 1.14	1.08 **	1.03 – 1.13
South West							1.05	0.99 – 1.11	1.05	0.99 – 1.11	1.04	0.98 – 1.10
Wales							1.03	0.96 – 1.10	1.03	0.97 – 1.10	1.02	0.96 – 1.09
West Midlands							1.00	0.94 – 1.05	1.00	0.95 – 1.05	0.99	0.94 – 1.05
Yorkshire + Humber							1.00	0.95 – 1.06	1.01	0.95 – 1.06	1.00	0.94 – 1.05
Marital Status (Ref: Married/ In a Civil Partnership)												
Divorced/ Dissolved CP									0.97	0.87 – 1.09	0.97	0.87 – 1.09
Living as a Couple									0.94 ***	0.90 – 0.97	0.94 **	0.90 – 0.97
Never Married									0.94 **	0.90 – 0.99	0.94 **	0.90 – 0.98
Separated (incl. from CP)									0.96	0.81 – 1.14	0.96	0.81 – 1.13
Widowed/ Surviving CP									0.71 **	0.56 – 0.89	0.72 **	0.57 – 0.92
Highest Qualification (Ref: Degree)												
A-Level etc											1.13 ***	1.09 – 1.17
GCSE etc											1.11 ***	1.07 – 1.15
No Qualification											0.86 ***	0.81 – 0.91
Other Higher											1.08 **	1.03 – 1.12
Other Qualification											1.03	0.98 – 1.08

** p≤ 0.05, ** p ≤ 0.01, *** p ≤ 0.001*

2.12: Nested Regression Table Showing the Odds of Men Losing Income after Becoming an Extra-resident Carer in the Last Year

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI
Intercept	0.54 ***	0.52 – 0.56	0.54 ***	0.52 – 0.56	0.53 ***	0.51 – 0.55	0.52 ***	0.49 – 0.55	0.54 ***	0.51 – 0.57	0.52 ***	0.49 – 0.55
Became Extra-resident Carer Within	0.97	0.91 – 1.04	0.97	0.91 – 1.04	0.96	0.89 – 1.03	0.96	0.89 – 1.02	0.96	0.89 – 1.02	0.96	0.89 – 1.02
Became Extra-resident Carer Between	1.07	0.95 – 1.21	1.07	0.94 – 1.20	1.07	0.94 – 1.22	1.06	0.93 – 1.21	1.07	0.94 – 1.22	1.03	0.90 – 1.17
Age			1.00	0.99 – 1.01	1.02 **	1.00 – 1.03	1.02 *	1.00 – 1.03	1.00	0.98 – 1.01	1.01	0.99 – 1.03
Ethnicity (Ref: White)												
Any Other Asian Background					1.11 *	1.01 – 1.23	1.13 *	1.02 – 1.25	1.12 *	1.01 – 1.24	1.14 *	1.03 – 1.26
Any Other Ethnic Group					0.93	0.82 – 1.06	0.94	0.83 – 1.07	0.94	0.82 – 1.06	0.96	0.84 – 1.09
Black, Black British, Caribbean or African					1.10 **	1.03 – 1.18	1.12 **	1.05 – 1.20	1.13 **	1.05 – 1.21	1.13 ***	1.05 – 1.21
Mixed/ Multiple Ethnic Groups					1.01	0.92 – 1.12	1.02	0.92 – 1.13	1.03	0.93 – 1.14	1.04	0.94 – 1.15
South Asian Background					0.99	0.95 – 1.03	1.01	0.96 – 1.05	0.99	0.95 – 1.03	1.02	0.97 – 1.06
Region (Ref: London)												
East Midlands							1.04	0.98 – 1.10	1.04	0.98 – 1.10	1.03	0.97 – 1.09
East of England							1.06 *	1.00 – 1.12	1.05	1.00 – 1.11	1.04	0.99 – 1.10
North East							0.98	0.91 – 1.06	0.98	0.91 – 1.06	0.97	0.91 – 1.05
North West							1.01	0.96 – 1.06	1.01	0.95 – 1.06	1.00	0.94 – 1.05
South East							1.08 **	1.02 – 1.13	1.07 **	1.02 – 1.13	1.06 *	1.01 – 1.12
South West							1.05	0.99 – 1.11	1.05	0.99 – 1.11	1.04	0.98 – 1.10
Wales							1.02	0.96 – 1.09	1.02	0.96 – 1.09	1.01	0.95 – 1.08
West Midlands							1.00	0.95 – 1.06	1.00	0.95 – 1.06	0.99	0.94 – 1.05
Yorkshire + Humber							1.00	0.94 – 1.05	1.00	0.94 – 1.05	0.99	0.93 – 1.04
Marital Status (Ref: Married/ In a Civil Partnership)												
Divorced/ Dissolved CP									0.96	0.89 – 1.04	0.96	0.89 – 1.04
Living as a Couple									0.93 ***	0.89 – 0.97	0.93 ***	0.89 – 0.97
Never Married									0.91 ***	0.87 – 0.95	0.91 ***	0.87 – 0.95
Separated (incl. from CP)									1.08	0.95 – 1.21	1.07	0.95 – 1.21
Widowed/ Surviving CP									0.77 **	0.64 – 0.92	0.78 **	0.65 – 0.94
Highest Qualification (Ref: Degree)												
A-Level etc											1.14 ***	1.10 – 1.18
GCSE etc											1.12 ***	1.07 – 1.16
No Qualification											0.84 ***	0.79 – 0.90
Other Higher											1.07 **	1.03 – 1.12
Other Qualification											1.01	0.96 – 1.06

** p≤ 0.05, ** p ≤ 0.01, *** p ≤ 0.001*

2.13: Nested Regression Table Showing the Odds of Women Reducing Paid Working Hours after Increasing Care Hours in the Last Year

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI
Intercept	0.73 ***	0.70 – 0.75	0.66 ***	0.64 – 0.69	0.69 ***	0.67 – 0.72	0.70 ***	0.67 – 0.74	0.70 ***	0.66 – 0.74	0.85 ***	0.80 – 0.90
Increased Care Hours Within	1.02	0.96 – 1.09	1.02	0.96 – 1.09	1.00	0.94 – 1.07	1.00	0.94 – 1.07	1.00	0.93 – 1.07	1.00	0.93 – 1.07
Increased Care Hours Between	0.42 ***	0.38 – 0.47	0.63 ***	0.57 – 0.70	0.66 ***	0.59 – 0.73	0.67 ***	0.60 – 0.74	0.66 ***	0.59 – 0.74	0.74 ***	0.66 – 0.83
Age			0.71 ***	0.70 – 0.72	0.71 ***	0.70 – 0.73	0.71 ***	0.70 – 0.72	0.72 ***	0.70 – 0.73	0.76 ***	0.74 – 0.77
Ethnicity (Ref: White)												
Any Other Asian Background					0.92	0.82 – 1.03	0.91	0.81 – 1.01	0.91	0.82 – 1.02	0.90	0.80 – 1.00
Any Other Ethnic Group					0.82 **	0.72 – 0.94	0.81 **	0.71 – 0.93	0.82 **	0.72 – 0.93	0.85 *	0.75 – 0.97
Black, Black British, Caribbean or African					1.02	0.96 – 1.09	1.01	0.94 – 1.08	1.01	0.94 – 1.09	1.02	0.95 – 1.10
Mixed/ Multiple Ethnic Groups					1.00	0.90 – 1.11	0.98	0.89 – 1.09	0.99	0.90 – 1.10	0.97	0.88 – 1.08
South Asian Background					0.68 ***	0.65 – 0.72	0.68 ***	0.64 – 0.72	0.69 ***	0.65 – 0.73	0.75 ***	0.71 – 0.80
Region (Ref: London)												
East Midlands							1.00	0.94 – 1.07	1.00	0.94 – 1.07	1.05	0.98 – 1.13
East of England							1.00	0.94 – 1.07	1.00	0.94 – 1.07	1.04	0.97 – 1.11
North East							0.88 **	0.80 – 0.96	0.87 **	0.80 – 0.96	0.92	0.84 – 1.01
North West							0.93 *	0.87 – 0.99	0.93 *	0.87 – 0.99	0.96	0.91 – 1.03
South East							1.04	0.98 – 1.11	1.04	0.98 – 1.11	1.06	0.99 – 1.12
South West							1.02	0.95 – 1.09	1.02	0.95 – 1.09	1.04	0.98 – 1.12
Wales							0.95	0.88 – 1.02	0.94	0.87 – 1.02	1.00	0.93 – 1.08
West Midlands							0.99	0.93 – 1.06	0.99	0.93 – 1.05	1.05	0.98 – 1.12
Yorkshire + Humber							0.95	0.89 – 1.01	0.94	0.88 – 1.01	1.01	0.95 – 1.08
Marital Status (Ref: Married/ In a Civil Partnership)												
Divorced/ Dissolved CP									1.01	0.94 – 1.08	1.03	0.96 – 1.10
Living as a Couple									1.07 **	1.02 – 1.12	1.10 ***	1.05 – 1.15
Never Married									1.01	0.96 – 1.06	1.07 **	1.02 – 1.12
Separated (incl. from CP)									0.96	0.86 – 1.06	1.01	0.91 – 1.12
Widowed/ Surviving CP									0.86 *	0.74 – 1.00	0.96	0.82 – 1.11
Highest Qualification (Ref: Degree)												
A-Level etc											0.85 ***	0.81 – 0.89
GCSE etc											0.73 ***	0.70 – 0.77
No Qualification											0.36 ***	0.34 – 0.39
Other Higher											0.87 ***	0.83 – 0.91
Other Qualification											0.70 ***	0.65 – 0.75

** p≤ 0.05, ** p ≤ 0.01, *** p ≤ 0.001*

2.14: Nested Regression Table Showing the Odds of Women Reducing Paid Working Hours after Becoming a Co- Residential Carer in the Last Year

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI
Intercept	0.70 ***	0.67 – 0.72	0.66 ***	0.63 – 0.68	0.68 ***	0.66 – 0.71	0.70 ***	0.66 – 0.74	0.69 ***	0.65 – 0.74	0.84 ***	0.79 – 0.90
Became Co-resident Carer Within	1.06	0.96 – 1.17	1.06	0.96 – 1.17	1.03	0.93 – 1.15	1.03	0.93 – 1.15	1.03	0.93 – 1.15	1.04	0.93 – 1.15
Became Co-resident Carer Between	0.32 ***	0.27 – 0.38	0.37 ***	0.32 – 0.44	0.43 ***	0.36 – 0.51	0.43 ***	0.36 – 0.52	0.43 ***	0.36 – 0.52	0.52 ***	0.43 – 0.63
Age			0.71 ***	0.70 – 0.72	0.71 ***	0.70 – 0.72	0.71 ***	0.70 – 0.72	0.71 ***	0.70 – 0.73	0.76 ***	0.74 – 0.77
Ethnicity (Ref: White)												
Any Other Asian Background					0.94	0.84 – 1.06	0.92	0.82 – 1.04	0.93	0.83 – 1.05	0.92	0.81 – 1.03
Any Other Ethnic Group					0.82 **	0.71 – 0.94	0.81 **	0.70 – 0.93	0.81 **	0.71 – 0.93	0.85 *	0.74 – 0.97
Black, Black British, Caribbean or African					1.04	0.97 – 1.11	1.02	0.95 – 1.10	1.02	0.95 – 1.10	1.03	0.96 – 1.11
Mixed/ Multiple Ethnic Groups					1.02	0.92 – 1.14	1.00	0.90 – 1.12	1.01	0.91 – 1.13	0.99	0.89 – 1.10
South Asian Background					0.69 ***	0.65 – 0.72	0.68 ***	0.65 – 0.72	0.69 ***	0.65 – 0.73	0.75 ***	0.71 – 0.80
Region (Ref: London)												
East Midlands							0.99	0.92 – 1.06	0.99	0.92 – 1.06	1.04	0.97 – 1.11
East of England							0.99	0.93 – 1.06	0.99	0.93 – 1.06	1.03	0.96 – 1.10
North East							0.86 **	0.79 – 0.94	0.86 **	0.79 – 0.94	0.91 *	0.83 – 0.99
North West							0.92 *	0.86 – 0.98	0.92 *	0.86 – 0.98	0.96	0.90 – 1.02
South East							1.04	0.98 – 1.11	1.04	0.98 – 1.11	1.05	0.99 – 1.12
South West							1.01	0.94 – 1.08	1.01	0.94 – 1.08	1.03	0.96 – 1.11
Wales							0.92 *	0.85 – 0.99	0.91 *	0.84 – 0.99	0.97	0.89 – 1.05
West Midlands							0.98	0.91 – 1.04	0.98	0.91 – 1.04	1.03	0.97 – 1.10
Yorkshire + Humber							0.94	0.88 – 1.01	0.94	0.87 – 1.00	1.01	0.94 – 1.08
Marital Status (Ref: Married/ In a Civil Partnership)												
Divorced/ Dissolved CP									1.01	0.94 – 1.09	1.04	0.97 – 1.12
Living as a Couple									1.07 **	1.02 – 1.12	1.10 ***	1.05 – 1.15
Never Married									1.01	0.96 – 1.06	1.08 **	1.03 – 1.13
Separated (incl. from CP)									0.97	0.87 – 1.09	1.04	0.93 – 1.16
Widowed/ Surviving CP									0.89	0.75 – 1.06	1.00	0.84 – 1.20
Highest Qualification (Ref: Degree)												
A-Level etc											0.85 ***	0.82 – 0.89
GCSE etc											0.73 ***	0.70 – 0.77
No Qualification											0.37 ***	0.34 – 0.40
Other Higher											0.88 ***	0.84 – 0.93
Other Qualification											0.69 ***	0.64 – 0.74

** p≤ 0.05, ** p ≤ 0.01, *** p ≤ 0.001*

2.15: Nested Regression Table Showing the Odds of Women Reducing Paid Working Hours after Becoming an Extra- Residential Carer in the Last Year

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI
Intercept	0.68 ***	0.66 – 0.71	0.62 ***	0.60 – 0.64	0.65 ***	0.63 – 0.68	0.67 ***	0.63 – 0.70	0.67 ***	0.63 – 0.71	0.82 ***	0.77 – 0.87
Became Extra-resident Carer Within	1.19 ***	1.12 – 1.27	1.20 ***	1.13 – 1.28	1.19 ***	1.12 – 1.28	1.20 ***	1.12 – 1.28	1.19 ***	1.11 – 1.27	1.18 ***	1.10 – 1.26
Became Extra-resident Carer Between	0.72 ***	0.64 – 0.83	1.22 **	1.08 – 1.39	1.16 *	1.01 – 1.33	1.16 *	1.01 – 1.34	1.16 *	1.01 – 1.33	1.13	0.99 – 1.30
Age			0.70 ***	0.69 – 0.71	0.71 ***	0.69 – 0.72	0.70 ***	0.69 – 0.72	0.71 ***	0.69 – 0.72	0.75 ***	0.73 – 0.76
Ethnicity (Ref: White)												
Any Other Asian Background					0.94	0.83 – 1.05	0.92	0.82 – 1.04	0.93	0.82 – 1.04	0.91	0.81 – 1.02
Any Other Ethnic Group					0.85 *	0.74 – 0.98	0.84 *	0.74 – 0.97	0.85 *	0.74 – 0.97	0.88	0.77 – 1.01
Black, Black British, Caribbean or African					1.02	0.96 – 1.09	1.01	0.94 – 1.08	1.01	0.94 – 1.09	1.02	0.95 – 1.10
Mixed/ Multiple Ethnic Groups					0.99	0.89 – 1.10	0.97	0.87 – 1.08	0.98	0.88 – 1.10	0.96	0.87 – 1.07
South Asian Background					0.69 ***	0.65 – 0.72	0.68 ***	0.65 – 0.72	0.69 ***	0.65 – 0.73	0.75 ***	0.71 – 0.80
Region (Ref: London)												
East Midlands							1.00	0.93 – 1.07	1.00	0.93 – 1.07	1.05	0.98 – 1.13
East of England							1.01	0.94 – 1.08	1.00	0.94 – 1.07	1.04	0.98 – 1.12
North East							0.87 **	0.79 – 0.95	0.86 **	0.79 – 0.95	0.91	0.83 – 1.00
North West							0.92 **	0.86 – 0.98	0.92 **	0.86 – 0.98	0.96	0.90 – 1.02
South East							1.04	0.98 – 1.11	1.04	0.98 – 1.10	1.05	0.99 – 1.12
South West							1.02	0.95 – 1.10	1.02	0.95 – 1.10	1.05	0.98 – 1.12
Wales							0.94	0.87 – 1.02	0.94	0.87 – 1.01	1.00	0.92 – 1.08
West Midlands							0.98	0.92 – 1.04	0.98	0.91 – 1.04	1.04	0.97 – 1.11
Yorkshire + Humber							0.95	0.89 – 1.02	0.95	0.88 – 1.01	1.01	0.95 – 1.09
Marital Status (Ref: Married/ In a Civil Partnership)												
Divorced/ Dissolved CP									1.01	0.94 – 1.08	1.03	0.96 – 1.10
Living as a Couple									1.05	1.00 – 1.10	1.08 **	1.03 – 1.13
Never Married									0.99	0.95 – 1.04	1.05 *	1.01 – 1.10
Separated (incl. from CP)									0.95	0.86 – 1.06	1.01	0.91 – 1.12
Widowed/ Surviving CP									0.87	0.74 – 1.01	0.96	0.82 – 1.12
Highest Qualification (Ref: Degree)												
A-Level etc											0.85 ***	0.81 – 0.88
GCSE etc											0.72 ***	0.69 – 0.76
No Qualification											0.37 ***	0.34 – 0.40
Other Higher											0.87 ***	0.83 – 0.91
Other Qualification											0.70 ***	0.66 – 0.75

** p≤ 0.05, ** p ≤ 0.01, *** p ≤ 0.001*

2.16: Nested Regression Table Showing the Odds of Men Reducing Paid Working Hours after Increasing Care Hours in the Last Year

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI
Intercept	0.44 ***	0.43 – 0.46	0.42 ***	0.40 – 0.44	0.40 ***	0.39 – 0.42	0.45 ***	0.42 – 0.47	0.44 ***	0.42 – 0.47	0.50 ***	0.46 – 0.53
Increased Care Hours Within	0.98	0.90 – 1.07	0.98	0.90 – 1.07	0.98	0.89 – 1.07	0.98	0.89 – 1.07	0.98	0.89 – 1.07	0.98	0.89 – 1.07
Increased Care Hours Between	0.57 ***	0.50 – 0.66	0.80 **	0.70 – 0.92	0.77 ***	0.66 – 0.89	0.78 ***	0.68 – 0.90	0.78 ***	0.68 – 0.90	0.84 *	0.73 – 0.97
Age			0.74 ***	0.72 – 0.75	0.75 ***	0.74 – 0.77	0.75 ***	0.74 – 0.77	0.76 ***	0.74 – 0.77	0.77 ***	0.75 – 0.79
Ethnicity (Ref: White)												
Any Other Asian Background					1.13 *	1.00 – 1.28	1.07	0.94 – 1.21	1.07	0.95 – 1.21	1.04	0.92 – 1.18
Any Other Ethnic Group					1.13	0.98 – 1.31	1.08	0.93 – 1.25	1.08	0.94 – 1.26	1.06	0.91 – 1.23
Black, Black British, Caribbean or African					1.27 ***	1.17 – 1.37	1.19 ***	1.09 – 1.29	1.19 ***	1.09 – 1.29	1.19 ***	1.09 – 1.29
Mixed/ Multiple Ethnic Groups					0.96	0.85 – 1.09	0.92	0.80 – 1.04	0.92	0.81 – 1.05	0.92	0.81 – 1.04
South Asian Background					1.16 ***	1.11 – 1.22	1.12 ***	1.06 – 1.18	1.12 ***	1.07 – 1.19	1.14 ***	1.08 – 1.20
Region (Ref: London)												
East Midlands							0.88 ***	0.82 – 0.95	0.88 ***	0.82 – 0.95	0.92 *	0.85 – 0.99
East of England							0.94	0.87 – 1.01	0.94	0.87 – 1.01	0.96	0.90 – 1.03
North East							0.82 ***	0.75 – 0.91	0.83 ***	0.75 – 0.91	0.85 **	0.77 – 0.94
North West							0.88 ***	0.82 – 0.94	0.88 ***	0.82 – 0.94	0.90 **	0.84 – 0.97
South East							0.94	0.88 – 1.00	0.94	0.88 – 1.00	0.96	0.90 – 1.02
South West							0.85 ***	0.79 – 0.92	0.85 ***	0.79 – 0.92	0.87 ***	0.81 – 0.94
Wales							0.87 ***	0.80 – 0.94	0.87 ***	0.79 – 0.94	0.91 *	0.83 – 0.99
West Midlands							0.91 **	0.85 – 0.97	0.91 **	0.84 – 0.97	0.94	0.88 – 1.01
Yorkshire + Humber							0.91 **	0.84 – 0.97	0.91 **	0.85 – 0.97	0.94	0.88 – 1.01
Marital Status (Ref: Married/ In a Civil Partnership)												
Divorced/ Dissolved CP									1.11	0.99 – 1.24	1.13 *	1.01 – 1.26
Living as a Couple									1.02	0.97 – 1.08	1.05	1.00 – 1.10
Never Married									1.01	0.96 – 1.07	1.05 *	1.00 – 1.11
Separated (incl. from CP)									1.00	0.84 – 1.18	1.02	0.86 – 1.20
Widowed/ Surviving CP									0.82	0.62 – 1.09	0.83	0.63 – 1.11
Highest Qualification (Ref: Degree)												
A-Level etc											0.81 ***	0.77 – 0.85
GCSE etc											0.86 ***	0.81 – 0.90
No Qualification											0.63 ***	0.58 – 0.68
Other Higher											0.91 **	0.85 – 0.96
Other Qualification											0.79 ***	0.73 – 0.85

** p≤ 0.05, ** p ≤ 0.01, *** p ≤ 0.001*

2.17: Nested Regression Table Showing the Odds of Men Reducing Paid Working Hours after Becoming a Co-resident Carer in the Last Year

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI
Intercept	0.43 ***	0.41 – 0.45	0.41 ***	0.40 – 0.43	0.40 ***	0.38 – 0.42	0.44 ***	0.42 – 0.47	0.44 ***	0.41 – 0.47	0.49 ***	0.46 – 0.52
Became Co-resident Carer Within	1.08	0.97 – 1.20	1.08	0.97 – 1.20	1.08	0.96 – 1.21	1.07	0.96 – 1.21	1.07	0.95 – 1.20	1.07	0.95 – 1.21
Became Co-resident Carer Between	0.72 ***	0.60 – 0.87	0.81 *	0.67 – 0.97	0.74 **	0.61 – 0.91	0.75 **	0.61 – 0.91	0.73 **	0.60 – 0.89	0.80 *	0.65 – 0.98
Age			0.73 ***	0.72 – 0.75	0.75 ***	0.74 – 0.77	0.75 ***	0.74 – 0.77	0.76 ***	0.74 – 0.77	0.77 ***	0.75 – 0.79
Ethnicity (Ref: White)												
Any Other Asian Background					1.14 *	1.00 – 1.29	1.07	0.94 – 1.22	1.08	0.95 – 1.23	1.05	0.92 – 1.20
Any Other Ethnic Group					1.11	0.96 – 1.30	1.06	0.91 – 1.24	1.07	0.91 – 1.24	1.04	0.89 – 1.21
Black, Black British, Caribbean or African					1.26 ***	1.16 – 1.38	1.18 ***	1.08 – 1.29	1.18 ***	1.08 – 1.29	1.17 ***	1.07 – 1.28
Mixed/ Multiple Ethnic Groups					0.97	0.85 – 1.11	0.92	0.80 – 1.06	0.93	0.81 – 1.07	0.93	0.81 – 1.07
South Asian Background					1.16 ***	1.11 – 1.22	1.12 ***	1.06 – 1.18	1.13 ***	1.07 – 1.19	1.14 ***	1.08 – 1.21
Region (Ref: London)												
East Midlands							0.87 ***	0.81 – 0.94	0.87 ***	0.81 – 0.94	0.91 *	0.84 – 0.98
East of England							0.95	0.88 – 1.02	0.95	0.88 – 1.02	0.97	0.91 – 1.05
North East							0.81 ***	0.73 – 0.90	0.81 ***	0.73 – 0.90	0.84 ***	0.76 – 0.93
North West							0.87 ***	0.82 – 0.94	0.88 ***	0.82 – 0.94	0.90 **	0.84 – 0.96
South East							0.93 *	0.87 – 1.00	0.93 *	0.87 – 1.00	0.95	0.89 – 1.02
South West							0.85 ***	0.79 – 0.92	0.85 ***	0.79 – 0.92	0.87 ***	0.81 – 0.95
Wales							0.85 ***	0.78 – 0.93	0.85 ***	0.78 – 0.93	0.90 *	0.82 – 0.98
West Midlands							0.92 *	0.85 – 0.98	0.92 *	0.85 – 0.98	0.95	0.88 – 1.02
Yorkshire + Humber							0.90 **	0.84 – 0.97	0.90 **	0.84 – 0.97	0.94	0.87 – 1.01
Marital Status (Ref: Married/ In a Civil Partnership)												
Divorced/ Dissolved CP									1.27 **	1.09 – 1.47	1.28 **	1.11 – 1.49
Living as a Couple									1.03	0.97 – 1.08	1.05 *	1.00 – 1.11
Never Married									1.03	0.97 – 1.09	1.08 **	1.02 – 1.15
Separated (incl. from CP)									1.01	0.80 – 1.28	1.04	0.83 – 1.32
Widowed/ Surviving CP									0.94	0.68 – 1.32	0.97	0.69 – 1.36
Highest Qualification (Ref: Degree)												
A-Level etc											0.80 ***	0.77 – 0.85
GCSE etc											0.86 ***	0.81 – 0.90
No Qualification											0.63 ***	0.58 – 0.68
Other Higher											0.92 **	0.86 – 0.97
Other Qualification											0.81 ***	0.75 – 0.87

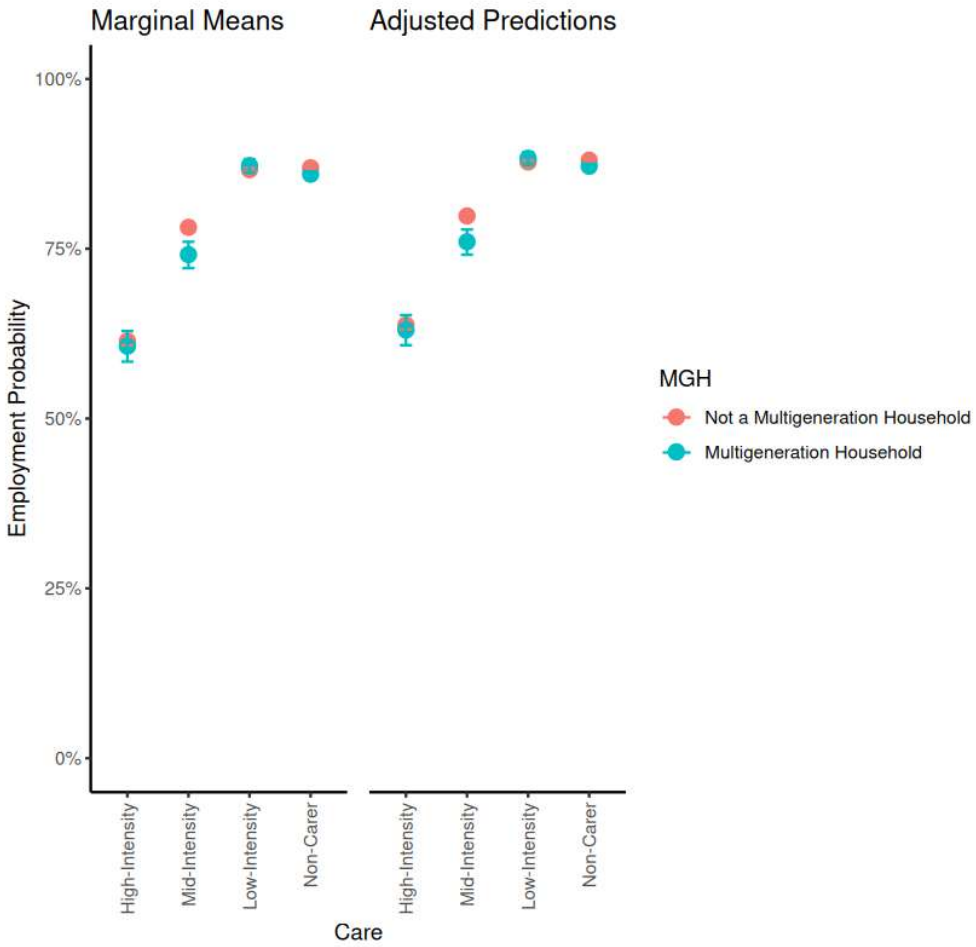
** p≤ 0.05, ** p ≤ 0.01, *** p ≤ 0.001*

2.18: Nested Regression Table Showing the Odds of Men Reducing Paid Working Hours after Becoming an Extra- Residential Carer in the Last Year

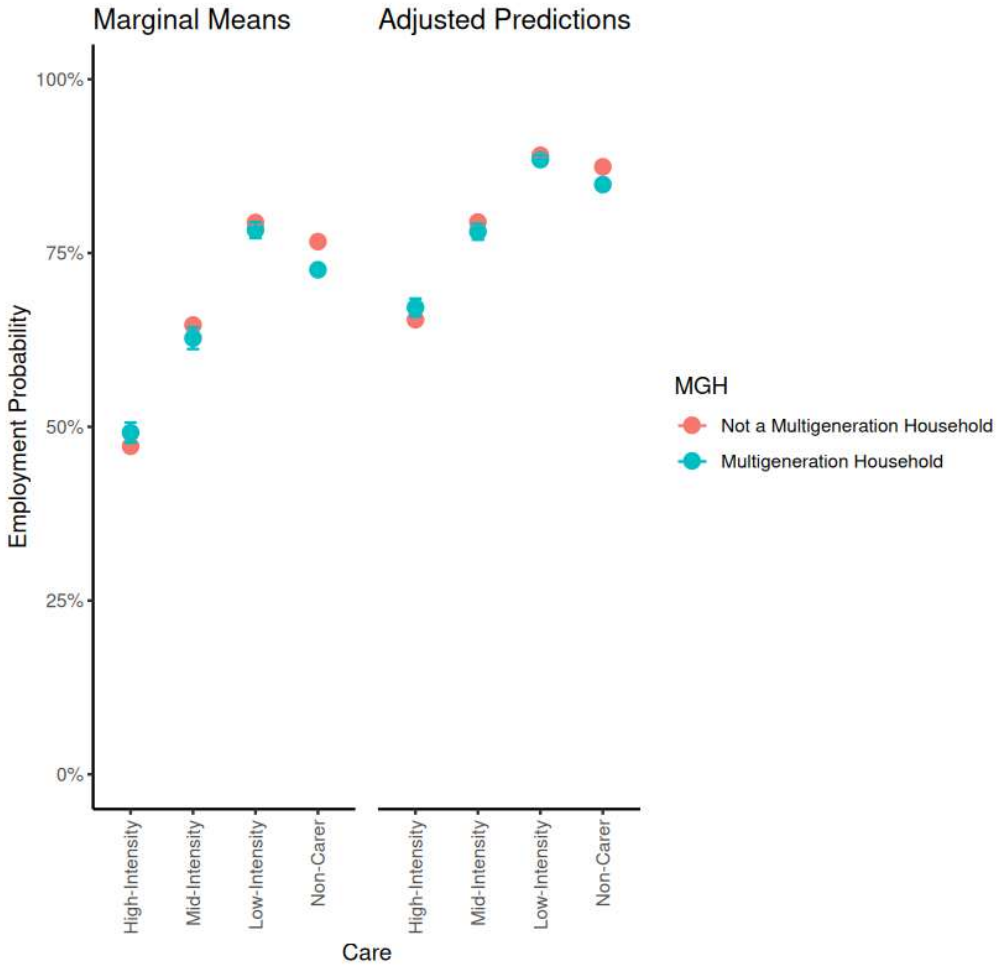
	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI	Odds Ratios	CI
Intercept	0.44 ***	0.42 – 0.46	0.41 ***	0.40 – 0.43	0.40 ***	0.38 – 0.41	0.44 ***	0.41 – 0.47	0.43 ***	0.41 – 0.46	0.49 ***	0.45 – 0.52
Became Extra-resident Carer Within	1.15 **	1.05 – 1.25	1.16 **	1.06 – 1.26	1.14 **	1.04 – 1.25	1.14 **	1.04 – 1.25	1.14 **	1.04 – 1.25	1.14 **	1.04 – 1.25
Became Extra-resident Carer Between	0.58 ***	0.49 – 0.69	0.98	0.83 – 1.15	1.01	0.84 – 1.20	1.02	0.86 – 1.22	1.02	0.86 – 1.22	1.05	0.87 – 1.25
Age			0.73 ***	0.71 – 0.74	0.74 ***	0.73 – 0.76	0.74 ***	0.73 – 0.76	0.75 ***	0.73 – 0.77	0.76 ***	0.74 – 0.78
Ethnicity (Ref: White)												
Any Other Asian Background					1.19 **	1.04 – 1.35	1.12	0.98 – 1.28	1.13	0.99 – 1.28	1.09	0.96 – 1.25
Any Other Ethnic Group					1.12	0.95 – 1.32	1.07	0.91 – 1.26	1.07	0.91 – 1.26	1.04	0.89 – 1.23
Black, Black British, Caribbean or African					1.27 ***	1.17 – 1.39	1.19 ***	1.09 – 1.31	1.19 ***	1.08 – 1.30	1.20 ***	1.09 – 1.31
Mixed/ Multiple Ethnic Groups					0.91	0.79 – 1.05	0.86 *	0.75 – 1.00	0.87	0.75 – 1.00	0.86 *	0.75 – 0.99
South Asian Background					1.15 ***	1.09 – 1.21	1.11 ***	1.04 – 1.17	1.11 ***	1.05 – 1.18	1.13 ***	1.06 – 1.20
Region (Ref: London)												
East Midlands							0.89 **	0.82 – 0.96	0.89 **	0.82 – 0.96	0.93	0.86 – 1.01
East of England							0.94	0.87 – 1.01	0.94	0.87 – 1.02	0.97	0.90 – 1.05
North East							0.79 ***	0.71 – 0.88	0.79 ***	0.71 – 0.88	0.82 ***	0.74 – 0.91
North West							0.88 ***	0.82 – 0.95	0.88 ***	0.82 – 0.95	0.91 *	0.85 – 0.98
South East							0.93 *	0.87 – 1.00	0.93	0.87 – 1.00	0.95	0.89 – 1.03
South West							0.85 ***	0.79 – 0.93	0.85 ***	0.79 – 0.93	0.88 **	0.81 – 0.96
Wales							0.87 **	0.79 – 0.95	0.87 **	0.79 – 0.95	0.92	0.84 – 1.01
West Midlands							0.91 *	0.84 – 0.98	0.91 *	0.84 – 0.98	0.95	0.88 – 1.02
Yorkshire + Humber							0.90 **	0.83 – 0.97	0.90 **	0.83 – 0.97	0.94	0.87 – 1.02
Marital Status (Ref: Married/ In a Civil Partnership)												
Divorced/ Dissolved CP									1.09	0.97 – 1.23	1.11	0.99 – 1.25
Living as a Couple									1.02	0.97 – 1.08	1.05	1.00 – 1.11
Never Married									1.03	0.98 – 1.09	1.08 **	1.02 – 1.14
Separated (incl. from CP)									1.05	0.89 – 1.25	1.08	0.91 – 1.28
Widowed/ Surviving CP									0.86	0.64 – 1.15	0.88	0.65 – 1.17
Highest Qualification (Ref: Degree)												
A-Level etc											0.80 ***	0.76 – 0.85
GCSE etc											0.85 ***	0.81 – 0.90
No Qualification											0.61 ***	0.56 – 0.67
Other Higher											0.87 ***	0.82 – 0.93
Other Qualification											0.79 ***	0.74 – 0.86

** p≤ 0.05, ** p ≤ 0.01, *** p ≤ 0.001*

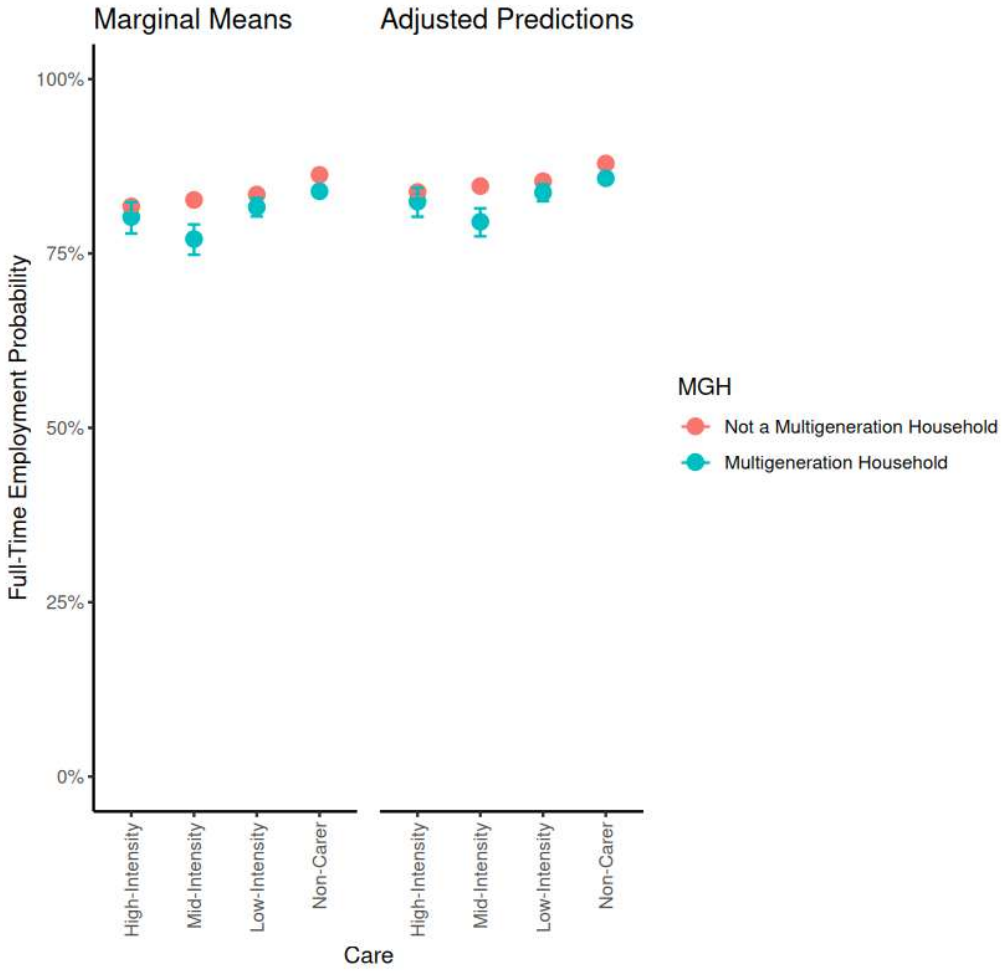
3.1: Male Employment Comparing Marginal Means to Adjusted Predicted Probabilities (Controlling for Age, Disability, Marital Status, and Highest Qualification)



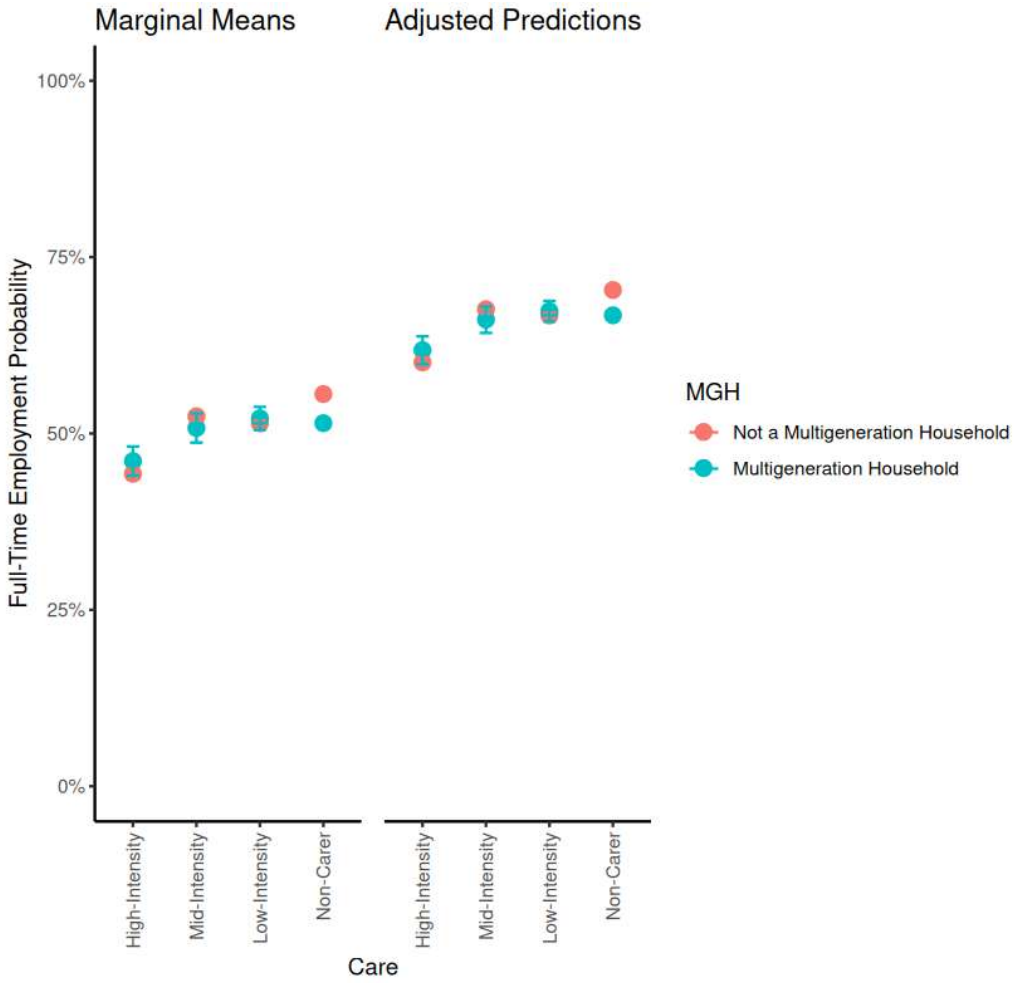
3.2: Female Employment Comparing Marginal Means to Adjusted Predicted Probabilities (Controlling for Age, Disability, Marital Status, and Highest Qualification)



3.3: Male Full-Time Employment Comparing Marginal Means to Adjusted Predicted Probabilities (Controlling for Age, Disability, Marital Status, and Highest Qualification)



3.4: Female Full-Time Employment Comparing Marginal Means to Adjusted Predicted Probabilities (Controlling for Age, Disability, Marital Status, and Highest Qualification)



3.5: Likelihood Ratio Test Scores for Employment Models

Model	Variable Added	Men: Deviance	Men: p-value	Women: Deviance	Women: p-value
2	Age	141,769	0.00	99,072	0.00
3	Region	7,656	0.00	5,369	0.00
4	Disability	199,832	0.00	153,647	0.00
5	Marital status	22,589	0.00	4,595	0.00
6	Dependent Children	3,510	0.00	41,608	0.00
7	Highest qualification	29,976	0.00	68,519	0.00
8	Ethnicity	17,670	0.00	24,515	0.00

3.6: Likelihood Ratio Test Scores for Full-Time Employment Models

Model	Variable Added	Men: Deviance	Men: p-value	Women: Deviance	Women: p-value
2	Age	38,240	0.00	35,340	0.00
3	Region	4,435	0.00	3,973	0.00
4	Disability	8,445	0.00	4,084	0.00
5	Marital status	396	0.00	8,658	0.00
6	Dependent Children	6,299	0.00	75,044	0.00
7	Highest qualification	9,293	0.00	30,859	0.00
8	Ethnicity	20,123	0.00	321	0.00

3.7: BIC Scores for All Models

Type of Age Transformation	Men: Employment	Women: Employment	Men: Full-Time	Women: Full-Time
No Spline	1,559,664	1,926,671	1,169,057	1,601,985
2 Degrees of Freedom	1,457,790	1,834,594	1,137,678	1,577,539
3 Degrees of Freedom	1,454,965	1,833,432	1,136,379	1,577,310
4 Degrees of Freedom	1,442,419	1,828,718	1,131,827	1,576,240
5 Degrees of Freedom	1,440,921	1,827,748	1,131,186	1,573,868
6 Degrees of Freedom	1,440,325	1,827,248	1,130,976	1,573,007
Quadratic Polynomial	1,452,069	1,831,113	1,135,861	1,576,587

3.8: Nested Regression Output for Male Employment Models

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7		Model 8	
Term	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Intercept	3.65***	3.63-3.66	0.66***	0.65-0.67	0.56***	0.56-0.57	0.59***	0.58-0.60	0.61***	0.60-0.62	0.56***	0.55-0.57	0.68***	0.66-0.69	1.01	0.99-1.03
Care Status (Ref: Non-Carer)																
High-Intensity Carer	0.26***	0.25-0.26	0.23***	0.23-0.24	0.23***	0.23-0.24	0.24***	0.23-0.24	0.23***	0.22-0.23	0.23***	0.23-0.24	0.24***	0.23-0.25	0.23***	0.23-0.24
Mid-Intensity Carer	0.52***	0.51-0.53	0.49***	0.48-0.51	0.50***	0.49-0.51	0.52***	0.51-0.54	0.52***	0.51-0.54	0.53***	0.51-0.54	0.55***	0.53-0.56	0.55***	0.54-0.57
Low-Intensity Carer	1.03***	1.01-1.05	1.08***	1.06-1.11	1.08***	1.06-1.10	1.09***	1.07-1.11	1.08***	1.05-1.10	1.08***	1.06-1.10	0.98*	0.96-1.00	0.97**	0.95-0.99
MGH (Ref: Non-MGH)																
Multigeneration Household	0.82***	0.81-0.84	0.89***	0.87-0.91	0.90***	0.88-0.92	0.90***	0.88-0.92	0.83***	0.81-0.85	0.79***	0.77-0.80	0.88***	0.85-0.90	0.93***	0.90-0.95
Interaction (Ref: Non-Carer x Non-MGH)																
High-Intensity Carer x MGH	1.32***	1.21-1.44	1.24***	1.13-1.36	1.24***	1.13-1.36	1.16**	1.05-1.28	4.99***	4.89-5.10	1.18**	1.07-1.30	1.07	0.97-1.19	1.10	0.99-1.21
Mid-Intensity Carer x MGH	1.15**	1.05-1.27	1.05	0.96-1.16	1.06	0.96-1.17	0.98	0.88-1.09	31.07***	29.92-32.26	0.96	0.86-1.06	0.88*	0.79-0.98	0.90	0.81-1.00
Low-Intensity Carer x MGH	1.29***	1.19-1.40	1.19***	1.09-1.29	1.19***	1.09-1.30	1.22***	1.11-1.33	4.50***	4.41-4.59	1.22***	1.11-1.34	1.17***	1.07-1.29	1.22***	1.11-1.34
Age																
Age Spline 1			7.40***	7.27-7.54	7.42***	7.28-7.56	9.03***	8.85-9.21	0.17***	0.17-0.17	5.03***	4.93-5.14	5.60***	5.48-5.72	5.27***	5.15-5.38
Age Spline 2			4.96***	4.87-5.04	4.94***	4.86-5.03	7.37***	7.24-7.52	1.55***	1.53-1.58	4.63***	4.54-4.73	5.49***	5.37-5.60	5.09***	4.98-5.20
Age Spline 3			38.16***	36.87-39.50	38.93***	37.61-40.30	66.90***	64.51-69.38	1.38***	1.36-1.41	35.96***	34.56-37.42	42.02***	40.34-43.78	35.57***	34.14-37.07
Age Spline 4			0.29***	0.28-0.29	0.28***	0.28-0.29	0.32***	0.32-0.33	1.05***	1.03-1.07	0.18***	0.18-0.18	0.21***	0.21-0.22	0.19***	0.18-0.19
Region (Ref: London)																
East of England					1.46***	1.44-1.48	1.58***	1.55-1.60	1.18***	1.16-1.20	1.54***	1.52-1.57	1.59***	1.57-1.62	1.25***	1.23-1.27
East Midlands					1.25***	1.23-1.27	1.40***	1.38-1.42	1.52***	1.50-1.54	1.38***	1.35-1.40	1.43***	1.41-1.46	1.13***	1.11-1.15
North East					0.89***	0.88-0.91	1.05***	1.03-1.07	1.54***	1.51-1.57	1.05***	1.03-1.07	1.07***	1.05-1.09	0.81***	0.79-0.82
North West					1.01	1.00-1.03	1.17***	1.15-1.19	1.20***	1.18-1.23	1.18***	1.16-1.19	1.21***	1.19-1.23	0.96***	0.94-0.97

South East	1.45***	1.43-1.47	1.54***	1.52-1.57	1.14***	1.12-1.16	1.51***	1.49-1.53	1.51***	1.49-1.54	1.19***	1.17-1.21
South West	1.39***	1.37-1.41	1.55***	1.52-1.58	1.19***	1.17-1.21	1.53***	1.51-1.56	1.54***	1.51-1.56	1.15***	1.13-1.18
West Midlands	1.05***	1.04-1.07	1.15***	1.13-1.17	0.04***	0.04-0.04	1.14***	1.12-1.16	1.20***	1.18-1.22	1.01	0.99-1.02
Yorkshire and the Humber	1.06***	1.05-1.08	1.20***	1.18-1.22	0.96***	0.95-0.98	1.19***	1.17-1.21	1.24***	1.22-1.27	0.98*	0.96-1.00
Wales	1.00	0.98-1.02	1.20***	1.18-1.23	0.32***	0.32-0.33	1.20***	1.17-1.22	1.24***	1.21-1.26	0.92***	0.90-0.94
Disability (Ref: No Disability, No Long-Term Conditions)												
Disability - Activity Reduced a Little			0.30***	0.30-0.31	2.34***	2.31-2.36	0.33***	0.32-0.33	0.33***	0.33-0.34	0.32***	0.31-0.32
Disability - Activity Reduced a Lot			0.04***	0.04-0.04	1.58***	1.55-1.60	0.04***	0.04-0.04	0.05***	0.05-0.05	0.05***	0.05-0.05
No Disability - Long-Term Condition, Activity Not Reduced			0.96***	0.94-0.97	1.14***	1.09-1.19	0.96***	0.95-0.98	0.90***	0.89-0.92	0.86***	0.85-0.88
Marital Status (Ref: Single)												
Married/in a Civil Partnership					1.16**	1.05-1.28	2.26***	2.23-2.28	2.10***	2.08-2.13	2.27***	2.24-2.30
Separated/Divorced/Legally Dissolved Civil Partnership					1.21***	1.10-1.32	1.56***	1.54-1.59	1.53***	1.50-1.55	1.59***	1.56-1.62
Widowed/Surviving Partner of Civil Partnership					0.95	0.86-1.06	1.12***	1.07-1.17	1.10***	1.05-1.15	1.15***	1.09-1.20
Dependent Children (Ref: No Dependent Children <18)												
1 dependent child < 18							1.27***	1.26-1.29	1.29***	1.27-1.31	1.33***	1.31-1.35
2 dependent children < 18							1.26***	1.25-1.28	1.27***	1.25-1.29	1.33***	1.31-1.36
3+ dependent children < 18							0.76***	0.75-0.77	0.83***	0.81-0.85	0.96***	0.94-0.98
Highest Qualification (Ref: Level 4+ Qualifications)												
Apprenticeship									1.04***	1.03-1.06	0.99	0.97-1.00
Level 1 Qualifications									0.62***	0.61-0.63	0.60***	0.59-0.61
Level 2 Qualifications									0.76***	0.75-0.78	0.73***	0.72-0.74
Level 3 Qualifications									0.91***	0.90-0.92	0.87***	0.86-0.88

No Qualifications	0.35***	0.35-0.36	0.36***	0.35-0.36
Other Qualifications	0.62***	0.60-0.63	0.63***	0.62-0.65
Ethnicity (Ref: White)				
Any Other Ethnic Group			0.38***	0.37-0.39
Black/African/Caribbean/Black British			0.44***	0.43-0.45
Mixed/ Multiple Ethnic Group			0.61***	0.59-0.63
Asian: Chinese or Other			0.43***	0.42-0.44
Asian: Bangladeshi, Indian, or Pakistani			0.52***	0.51-0.53

** $p \leq 0.05$, ** $p \leq 0.01$, *** $p \leq 0.001$*

3.9: Nested Regression Output for Female Employment Models

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7		Model 8	
Term	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Intercept	2.47***	2.47-2.48	0.83***	0.82-0.84	0.70***	0.69-0.71	0.75***	0.74-0.77	0.74***	0.73-0.75	0.93***	0.91-0.94	1.24***	1.22-1.26	1.83***	1.80-1.87
Care Status (Ref: Non-Carer)																
High-Intensity Carer	0.25***	0.25-0.26	0.23***	0.23-0.24	0.23***	0.23-0.24	0.25***	0.25-0.25	0.25***	0.24-0.25	0.28***	0.28-0.29	0.30***	0.30-0.31	0.29***	0.29-0.30
Mid-Intensity Carer	0.51***	0.50-0.52	0.50***	0.49-0.51	0.51***	0.50-0.52	0.53***	0.52-0.54	0.53***	0.52-0.54	0.55***	0.54-0.57	0.58***	0.57-0.59	0.59***	0.57-0.60
Low-Intensity Carer	1.24***	1.23-1.26	1.35***	1.33-1.37	1.34***	1.32-1.36	1.32***	1.30-1.34	1.33***	1.31-1.35	1.31***	1.29-1.33	1.16***	1.14-1.18	1.14***	1.12-1.15
MGH (Ref: Non-MGH)																
Multigeneration Household	0.64***	0.63-0.65	0.67***	0.66-0.68	0.68***	0.67-0.69	0.68***	0.67-0.70	0.69***	0.68-0.70	0.91***	0.89-0.93	1.05***	1.03-1.07	1.15***	1.13-1.17
Interaction (Ref: Non-Carer x Non-MGH)																
High-Intensity Carer x MGH	1.73***	1.63-1.83	1.68***	1.58-1.78	1.68***	1.58-1.78	1.51***	1.42-1.61	1.50***	1.41-1.60	1.23***	1.15-1.30	1.12***	1.05-1.20	1.12***	1.05-1.20
Mid-Intensity Carer x MGH	1.50***	1.41-1.60	1.37***	1.29-1.47	1.37***	1.28-1.47	1.27***	1.18-1.36	1.27***	1.18-1.36	1.13***	1.05-1.21	1.03	0.96-1.11	1.05	0.98-1.13
Low-Intensity Carer x MGH	1.39***	1.31-1.48	1.24***	1.16-1.33	1.24***	1.17-1.33	1.25***	1.17-1.34	1.25***	1.16-1.34	1.17***	1.09-1.25	1.10**	1.03-1.19	1.14***	1.06-1.23
Age																
Age Spline 1			2.80***	2.75-2.84	2.79***	2.75-2.84	2.99***	2.94-3.04	3.55***	3.48-3.62	5.64***	5.53-5.75	5.67***	5.55-5.79	5.25***	5.14-5.36
Age Spline 2			3.64***	3.58-3.69	3.62***	3.56-3.67	4.87***	4.78-4.95	5.45***	5.35-5.55	3.63***	3.57-3.70	4.51***	4.42-4.59	3.97***	3.90-4.05
Age Spline 3			8.79***	8.51-9.08	8.86***	8.57-9.15	11.55***	11.17-11.94	14.89***	14.37-15.43	9.46***	9.11-9.81	12.04***	11.59-12.51	9.15***	8.81-9.51
Age Spline 4			0.23***	0.23-0.23	0.22***	0.22-0.23	0.24***	0.24-0.25	0.28***	0.28-0.29	0.21***	0.20-0.21	0.27***	0.27-0.28	0.23***	0.23-0.24
Region (Ref: London)																
East of England					1.32***	1.30-1.34	1.37***	1.35-1.39	1.39***	1.37-1.41	1.41***	1.39-1.43	1.48***	1.46-1.50	1.18***	1.16-1.20
East Midlands					1.26***	1.24-1.28	1.35***	1.33-1.37	1.37***	1.34-1.39	1.38***	1.36-1.40	1.48***	1.45-1.50	1.20***	1.18-1.22
North East					1.07***	1.05-1.09	1.20***	1.18-1.23	1.21***	1.19-1.23	1.22***	1.20-1.24	1.29***	1.26-1.31	0.99	0.97-1.01
North West					1.12***	1.11-1.14	1.25***	1.23-1.27	1.26***	1.24-1.27	1.29***	1.28-1.31	1.35***	1.34-1.37	1.10***	1.08-1.11

South East	1.37***	1.35-1.38	1.41***	1.39-1.42	1.42***	1.41-1.44	1.44***	1.42-1.46	1.44***	1.42-1.46	1.16***	1.14-1.17
South West	1.40***	1.39-1.42	1.51***	1.49-1.53	1.52***	1.50-1.55	1.53***	1.51-1.55	1.53***	1.50-1.55	1.17***	1.15-1.19
West Midlands	1.04***	1.02-1.05	1.10***	1.08-1.11	1.11***	1.10-1.13	1.15***	1.14-1.17	1.24***	1.22-1.25	1.07***	1.05-1.08
Yorkshire and the Humber	1.11***	1.09-1.12	1.19***	1.18-1.21	1.20***	1.19-1.22	1.23***	1.22-1.25	1.33***	1.31-1.35	1.08***	1.06-1.10
Wales	1.12***	1.10-1.13	1.29***	1.27-1.31	1.29***	1.27-1.32	1.32***	1.29-1.34	1.36***	1.34-1.39	1.04***	1.02-1.05
Disability (Ref: No Disability, No Long-Term Conditions)												
Disability - Activity Reduced a Little			0.50***	0.50-0.51	0.49***	0.48-0.49	0.47***	0.46-0.47	0.47***	0.46-0.47	0.45***	0.44-0.45
Disability - Activity Reduced a Lot			0.08***	0.08-0.08	0.07***	0.07-0.07	0.07***	0.07-0.07	0.08***	0.07-0.08	0.07***	0.07-0.07
No Disability - Long-Term Condition, Activity Not Reduced			1.17***	1.16-1.19	1.16***	1.15-1.18	1.12***	1.10-1.13	1.02**	1.01-1.03	0.96***	0.95-0.98
Marital Status (Ref: Single)												
Married/in a Civil Partnership					0.79***	0.78-0.80	0.95***	0.94-0.96	0.90***	0.89-0.91	1.02**	1.01-1.03
Separated/Divorced/Legally Dissolved Civil Partnership					1.07***	1.05-1.08	1.23***	1.21-1.25	1.23***	1.21-1.24	1.32***	1.30-1.34
Widowed/Surviving Partner of Civil Partnership					0.69***	0.67-0.71	0.81***	0.79-0.83	0.87***	0.84-0.89	0.98	0.96-1.01
Dependent Children (Ref: No Dependent Children <18)												
1 dependent child < 18							0.71***	0.70-0.71	0.73***	0.73-0.74	0.75***	0.74-0.75
2 dependent children < 18							0.54***	0.53-0.54	0.55***	0.55-0.56	0.56***	0.56-0.57
3+ dependent children < 18							0.24***	0.23-0.24	0.28***	0.27-0.28	0.30***	0.29-0.30
Highest Qualification (Ref: Level 4+ Qualifications)												
Apprenticeship									0.70***	0.69-0.72	0.66***	0.65-0.68
Level 1 Qualifications									0.43***	0.43-0.44	0.42***	0.42-0.43
Level 2 Qualifications									0.63***	0.62-0.64	0.59***	0.58-0.60
Level 3 Qualifications									0.79***	0.79-0.80	0.76***	0.75-0.76

No Qualifications	0.23***	0.23-0.24	0.24***	0.24-0.24
Other Qualifications	0.40***	0.39-0.41	0.43***	0.42-0.44
Ethnicity (Ref: White)				
Any Other Ethnic Group			0.38***	0.37-0.39
Black/African/Caribbean/Black British			0.64***	0.63-0.65
Mixed/ Multiple Ethnic Group			0.71***	0.69-0.73
Asian: Chinese or Other			0.46***	0.45-0.46
Asian: Bangladeshi, Indian, or Pakistani			0.41***	0.41-0.42

** p≤ 0.05, ** p ≤ 0.01, *** p ≤ 0.001*

3.10: Nested Regression Output for Male Full-Time Employment Models

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7		Model 8	
Term	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Intercept	5.31***	5.28-5.33	1.22***	1.20-1.25	0.86***	0.84-0.88	0.87***	0.86-0.89	0.88***	0.86-0.90	0.96***	0.94-0.98	1.11***	1.08-1.13	1.64***	1.60-1.68
Care Status (Ref: Non-Carer)																
High-Intensity Carer	0.68***	0.65-0.70	0.66***	0.64-0.69	0.65***	0.63-0.68	0.70***	0.68-0.73	0.70***	0.67-0.73	0.72***	0.70-0.75	0.73***	0.70-0.76	0.71***	0.69-0.74
Mid-Intensity Carer	0.69***	0.67-0.72	0.71***	0.68-0.73	0.70***	0.68-0.73	0.74***	0.72-0.77	0.74***	0.72-0.77	0.75***	0.72-0.78	0.77***	0.74-0.79	0.80***	0.77-0.83
Low-Intensity Carer	0.79***	0.77-0.81	0.81***	0.79-0.83	0.80***	0.79-0.82	0.84***	0.82-0.86	0.84***	0.82-0.86	0.83***	0.81-0.85	0.79***	0.77-0.81	0.78***	0.76-0.80
MGH (Ref: Non-MGH)																
Multigeneration Household	0.74***	0.73-0.76	0.78***	0.76-0.80	0.80***	0.78-0.82	0.79***	0.77-0.81	0.79***	0.77-0.81	0.86***	0.84-0.88	0.92***	0.90-0.95	1.05***	1.02-1.08
Interaction (Ref: Non-Carer x Non-MGH)																
High-Intensity Carer x MGH	1.22**	1.06-1.41	1.18*	1.02-1.37	1.20*	1.03-1.38	1.17*	1.01-1.36	1.17*	1.01-1.36	1.13	0.97-1.31	1.06	0.91-1.23	1.12	0.96-1.30
Mid-Intensity Carer x MGH	1.00	0.89-1.14	0.92	0.81-1.05	0.93	0.82-1.06	0.91	0.80-1.04	0.91	0.80-1.04	0.90	0.79-1.02	0.84**	0.74-0.96	0.89	0.78-1.02
Low-Intensity Carer x MGH	1.17***	1.07-1.28	1.11*	1.01-1.22	1.13*	1.03-1.23	1.12*	1.02-1.23	1.12*	1.02-1.23	1.10*	1.00-1.21	1.05	0.96-1.16	1.12*	1.02-1.24
Age																
Age Spline 1			3.88***	3.79-3.96	4.02***	3.93-4.11	4.07***	3.98-4.16	3.71***	3.62-3.81	4.16***	4.06-4.27	4.28***	4.17-4.39	4.07***	3.97-4.18
Age Spline 2			3.79***	3.70-3.87	3.80***	3.71-3.88	3.93***	3.84-4.01	3.62***	3.53-3.71	3.30***	3.22-3.39	3.57***	3.48-3.66	3.25***	3.17-3.33
Age Spline 3			23.46***	22.38-24.60	25.40***	24.22-26.64	27.23***	25.96-28.57	24.11***	22.94-25.35	18.93***	17.99-19.93	20.04***	19.02-21.10	17.33***	16.44-18.26
Age Spline 4			0.41***	0.40-0.42	0.40***	0.39-0.40	0.42***	0.41-0.43	0.38***	0.37-0.39	0.35***	0.34-0.36	0.39***	0.38-0.40	0.34***	0.33-0.35
Region (Ref: London)																
East of England					1.60***	1.57-1.63	1.62***	1.59-1.65	1.61***	1.58-1.64	1.61***	1.58-1.64	1.67***	1.63-1.70	1.29***	1.27-1.32
East Midlands					1.59***	1.56-1.62	1.62***	1.59-1.65	1.61***	1.58-1.65	1.62***	1.58-1.65	1.68***	1.64-1.71	1.33***	1.30-1.36
North East					1.46***	1.42-1.50	1.49***	1.45-1.53	1.49***	1.45-1.53	1.48***	1.44-1.52	1.50***	1.47-1.54	1.12***	1.09-1.14
North West					1.33***	1.30-1.35	1.35***	1.33-1.38	1.35***	1.33-1.37	1.36***	1.33-1.38	1.39***	1.37-1.41	1.10***	1.08-1.12

South East	1.54***	1.51-1.56	1.55***	1.53-1.58	1.55***	1.52-1.57	1.55***	1.52-1.57	1.56***	1.54-1.59	1.22***	1.20-1.24
South West	1.47***	1.44-1.49	1.49***	1.47-1.52	1.49***	1.46-1.52	1.48***	1.46-1.51	1.50***	1.47-1.53	1.10***	1.08-1.12
West Midlands	1.43***	1.40-1.45	1.45***	1.42-1.47	1.44***	1.42-1.47	1.46***	1.43-1.48	1.52***	1.49-1.55	1.29***	1.27-1.32
Yorkshire and the Humber	1.38***	1.36-1.41	1.41***	1.38-1.44	1.41***	1.38-1.43	1.41***	1.38-1.44	1.46***	1.43-1.49	1.15***	1.13-1.18
Wales	1.51***	1.48-1.55	1.55***	1.52-1.59	1.55***	1.51-1.59	1.55***	1.51-1.59	1.59***	1.55-1.63	1.16***	1.13-1.19
Disability (Ref: No Disability, No Long-Term Conditions)												
Disability - Activity Reduced a Little			0.58***	0.57-0.59	0.58***	0.57-0.59	0.57***	0.56-0.58	0.57***	0.56-0.58	0.54***	0.54-0.55
Disability - Activity Reduced a Lot			0.31***	0.30-0.32	0.31***	0.30-0.32	0.31***	0.30-0.32	0.31***	0.30-0.32	0.30***	0.29-0.31
No Disability - Long-Term Condition, Activity Not Reduced			1.03***	1.01-1.05	1.03***	1.01-1.05	1.02*	1.00-1.04	0.98*	0.96-1.00	0.93***	0.91-0.95
Marital Status (Ref: Single)												
Married/in a Civil Partnership					1.10***	1.09-1.12	1.22***	1.21-1.24	1.18***	1.17-1.20	1.34***	1.32-1.36
Separated/Divorced/Legally Dissolved Civil Partnership					1.18***	1.15-1.20	1.21***	1.19-1.23	1.21***	1.19-1.23	1.28***	1.26-1.31
Widowed/Surviving Partner of Civil Partnership					0.89***	0.84-0.94	0.95	0.90-1.01	0.96	0.90-1.01	1.02	0.96-1.09
Dependent Children (Ref: No Dependent Children <18)												
1 dependent child < 18							0.94***	0.92-0.95	0.94***	0.93-0.95	0.97***	0.96-0.99
2 dependent children < 18							0.87***	0.86-0.88	0.87***	0.85-0.88	0.90***	0.89-0.92
3+ dependent children < 18							0.45***	0.44-0.46	0.47***	0.46-0.48	0.55***	0.54-0.56
Highest Qualification (Ref: Level 4+ Qualifications)												
Apprenticeship									1.04***	1.02-1.06	0.95***	0.93-0.97
Level 1 Qualifications									0.67***	0.66-0.68	0.65***	0.64-0.66
Level 2 Qualifications									0.78***	0.77-0.79	0.73***	0.72-0.74
Level 3 Qualifications									0.91***	0.90-0.93	0.85***	0.84-0.86

No Qualifications	0.51***	0.50-0.51	0.52***	0.51-0.53
Other Qualifications	0.61***	0.59-0.63	0.63***	0.62-0.65
Ethnicity (Ref: White)				
Any Other Ethnic Group			0.36***	0.35-0.37
Black/African/Caribbean/Black British			0.51***	0.50-0.52
Mixed/ Multiple Ethnic Group			0.62***	0.60-0.64
Asian: Chinese or Other			0.38***	0.37-0.39
Asian: Bangladeshi, Indian, or Pakistani			0.37***	0.36-0.38

** $p \leq 0.05$, ** $p \leq 0.01$, *** $p \leq 0.001$*

3.11: Nested Regression Output for Female Full-Time Employment Models

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7		Model 8	
Term	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Intercept	1.49***	1.49-1.50	0.69***	0.67-0.70	0.89***	0.87-0.91	0.90***	0.88-0.92	0.87***	0.85-0.89	1.32***	1.29-1.35	2.04***	1.99-2.08	2.03***	1.98-2.08
Care Status (Ref: Non-Carer)																
High-Intensity Carer	0.53***	0.52-0.55	0.58***	0.57-0.60	0.59***	0.57-0.60	0.61***	0.60-0.63	0.62***	0.60-0.63	0.71***	0.69-0.73	0.73***	0.71-0.75	0.73***	0.71-0.75
Mid-Intensity Carer	0.76***	0.74-0.78	0.82***	0.80-0.84	0.82***	0.80-0.84	0.85***	0.83-0.87	0.85***	0.83-0.87	0.86***	0.83-0.88	0.89***	0.87-0.91	0.89***	0.87-0.91
Low-Intensity Carer	0.78***	0.77-0.79	0.87***	0.86-0.88	0.88***	0.86-0.89	0.89***	0.88-0.91	0.89***	0.88-0.91	0.87***	0.85-0.88	0.83***	0.81-0.84	0.83***	0.82-0.84
MGH (Ref: Non-MGH)																
Multigeneration Household	0.77***	0.75-0.78	0.76***	0.75-0.78	0.75***	0.73-0.77	0.75***	0.73-0.77	0.76***	0.74-0.77	1.22***	1.19-1.25	1.34***	1.31-1.37	1.34***	1.31-1.37
Interaction (Ref: Non-Carer x Non-MGH)																
High-Intensity Carer x MGH	1.43***	1.31-1.56	1.41***	1.29-1.54	1.40***	1.28-1.53	1.37***	1.26-1.50	1.35***	1.24-1.48	1.00	0.91-1.09	0.94	0.85-1.03	0.94	0.85-1.03
Mid-Intensity Carer x MGH	1.25***	1.15-1.36	1.22***	1.12-1.34	1.22***	1.12-1.33	1.20***	1.10-1.31	1.20***	1.10-1.31	1.03	0.94-1.13	0.95	0.87-1.05	0.95	0.87-1.05
Low-Intensity Carer x MGH	1.37***	1.28-1.46	1.28***	1.20-1.38	1.27***	1.19-1.37	1.27***	1.19-1.36	1.28***	1.19-1.37	1.14***	1.07-1.23	1.09*	1.01-1.17	1.09*	1.01-1.17
Age																
Age Spline 1			1.19***	1.17-1.22	1.16***	1.14-1.19	1.16***	1.13-1.18	1.56***	1.53-1.60	2.50***	2.44-2.56	2.13***	2.08-2.19	2.13***	2.08-2.18
Age Spline 2			2.74***	2.66-2.81	2.68***	2.61-2.76	2.69***	2.62-2.76	3.55***	3.45-3.65	4.44***	4.31-4.58	3.68***	3.57-3.79	3.67***	3.56-3.78
Age Spline 3			1.14***	1.12-1.17	1.15***	1.13-1.17	1.15***	1.13-1.18	1.53***	1.50-1.57	0.88***	0.86-0.90	0.97**	0.94-0.99	0.96***	0.94-0.98
Age Spline 4			6.96***	6.64-7.30	6.66***	6.35-6.98	6.70***	6.39-7.03	10.01***	9.54-10.51	3.83***	3.64-4.03	3.03***	2.88-3.19	3.01***	2.85-3.17
Region (Ref: London)			0.28***	0.27-0.28	0.28***	0.28-0.29	0.29***	0.28-0.29	0.37***	0.36-0.38	0.22***	0.22-0.23	0.26***	0.26-0.27	0.26***	0.26-0.27
East of England																
East Midlands					0.75***	0.74-0.76	0.75***	0.74-0.76	0.77***	0.76-0.79	0.81***	0.80-0.82	0.89***	0.88-0.91	0.89***	0.88-0.91
North East					0.76***	0.74-0.77	0.76***	0.75-0.77	0.78***	0.77-0.79	0.81***	0.80-0.83	0.91***	0.89-0.92	0.91***	0.90-0.93
North West					0.76***	0.74-0.77	0.76***	0.75-0.78	0.78***	0.76-0.79	0.81***	0.79-0.82	0.89***	0.87-0.91	0.89***	0.87-0.91

South East	0.82***	0.80-0.83	0.82***	0.81-0.83	0.83***	0.82-0.84	0.88***	0.87-0.90	0.96***	0.95-0.97	0.96***	0.95-0.98
South West	0.79***	0.78-0.80	0.79***	0.78-0.80	0.81***	0.80-0.82	0.85***	0.84-0.86	0.90***	0.89-0.92	0.91***	0.89-0.92
West Midlands	0.66***	0.65-0.67	0.66***	0.65-0.67	0.68***	0.67-0.69	0.69***	0.68-0.71	0.74***	0.73-0.76	0.75***	0.74-0.76
Yorkshire and the Humber	0.77***	0.76-0.78	0.78***	0.76-0.79	0.79***	0.78-0.81	0.84***	0.83-0.85	0.92***	0.91-0.94	0.93***	0.91-0.94
Wales	0.72***	0.71-0.73	0.72***	0.71-0.74	0.74***	0.73-0.75	0.77***	0.76-0.78	0.85***	0.84-0.86	0.85***	0.84-0.87
Disability (Ref: No Disability, No Long-Term Conditions)	0.77***	0.76-0.79	0.78***	0.77-0.79	0.79***	0.78-0.81	0.84***	0.82-0.85	0.90***	0.88-0.92	0.90***	0.89-0.92
Disability - Activity Reduced a Little												
Disability - Activity Reduced a Lot			0.79***	0.78-0.80	0.76***	0.75-0.77	0.70***	0.69-0.71	0.69***	0.68-0.70	0.69***	0.69-0.70
No Disability - Long-Term Condition, Activity Not Reduced			0.52***	0.50-0.53	0.50***	0.48-0.51	0.44***	0.43-0.46	0.45***	0.43-0.46	0.45***	0.44-0.46
Marital Status (Ref: Single)			1.10***	1.08-1.11	1.08***	1.07-1.10	1.03***	1.02-1.04	0.98**	0.97-0.99	0.98**	0.97-1.00
Married/in a Civil Partnership												
Separated/Divorced/Legally Dissolved Civil Partnership					0.66***	0.66-0.67	0.91***	0.90-0.92	0.86***	0.86-0.87	0.87***	0.86-0.88
Widowed/Surviving Partner of Civil Partnership					0.89***	0.88-0.91	1.13***	1.11-1.14	1.13***	1.12-1.15	1.14***	1.12-1.15
Dependent Children (Ref: No Dependent Children <18)					0.70***	0.68-0.72	0.89***	0.86-0.92	0.91***	0.89-0.94	0.92***	0.89-0.95
1 dependent child < 18												
2 dependent children < 18							0.40***	0.40-0.40	0.40***	0.40-0.41	0.40***	0.40-0.41
3+ dependent children < 18							0.26***	0.26-0.26	0.26***	0.25-0.26	0.25***	0.25-0.26
Highest Qualification (Ref: Level 4+ Qualifications)							0.18***	0.17-0.18	0.18***	0.18-0.19	0.18***	0.18-0.19
Apprenticeship												
Level 1 Qualifications									0.54***	0.53-0.56	0.54***	0.53-0.56
Level 2 Qualifications									0.44***	0.43-0.44	0.44***	0.43-0.44
Level 3 Qualifications									0.52***	0.51-0.52	0.52***	0.51-0.52
No Qualifications									0.62***	0.61-0.62	0.62***	0.61-0.62

Other Qualifications	0.39***	0.38-0.39	0.39***	0.38-0.39
Ethnicity (Ref: White)	0.53***	0.52-0.55	0.53***	0.52-0.55
Any Other Ethnic Group				
Black/African/Caribbean/Black British			0.82***	0.79-0.84
Mixed/ Multiple Ethnic Group			1.11***	1.08-1.13
Asian: Chinese or Other			0.94***	0.92-0.97
Asian: Bangladeshi, Indian, or Pakistani			1.04**	1.01-1.06

** $p \leq 0.05$, ** $p \leq 0.01$, *** $p \leq 0.001$*

3.12: Predicted Probabilities of Employment for Men and Women

Model	Multigenerational Household	Care Intensity	Men		Women	
			Prob. Employment	95% CI	Prob. Employment	95% CI
Model 1	Not a Multigenerational Household	High-intensity	48.36%	47.81%-48.90%	38.46%	38.06%-38.87%
Model 1	Not a Multigenerational Household	Mid-intensity	65.51%	64.98%-66.05%	55.68%	55.23%-56.12%
Model 1	Not a Multigenerational Household	Low-intensity	79.03%	78.73%-79.32%	75.47%	75.22%-75.72%
Model 1	Not a Multigenerational Household	Non-carer	78.48%	78.42%-78.55%	71.22%	71.15%-71.29%
Model 1	Multigenerational Household	High-intensity	50.35%	48.29%-52.41%	40.85%	39.60%-42.12%
Model 1	Multigenerational Household	Mid-intensity	64.31%	62.27%-66.30%	54.65%	53.16%-56.12%
Model 1	Multigenerational Household	Low-intensity	80.00%	78.72%-81.22%	73.25%	72.04%-74.42%
Model 1	Multigenerational Household	Non-carer	75.00%	74.63%-75.36%	61.27%	60.89%-61.66%
Model 2	Not a Multigenerational Household	High-intensity	58.55%	57.96%-59.13%	42.35%	41.90%-42.80%
Model 2	Not a Multigenerational Household	Mid-intensity	75.17%	74.68%-75.65%	61.34%	60.87%-61.81%
Model 2	Not a Multigenerational Household	Low-intensity	86.93%	86.69%-87.15%	80.95%	80.71%-81.20%
Model 2	Not a Multigenerational Household	Non-carer	85.98%	85.86%-86.09%	75.92%	75.78%-76.05%
Model 2	Multigenerational Household	High-intensity	60.99%	58.92%-63.03%	45.22%	43.89%-46.55%
Model 2	Multigenerational Household	Mid-intensity	73.97%	72.14%-75.71%	59.37%	57.87%-60.84%
Model 2	Multigenerational Household	Low-intensity	87.55%	86.63%-88.42%	77.98%	76.89%-79.04%
Model 2	Multigenerational Household	Non-carer	84.52%	84.22%-84.81%	67.88%	67.49%-68.28%
Model 3	Not a Multigenerational Household	High-intensity	55.11%	54.48%-55.74%	38.44%	37.98%-38.92%
Model 3	Not a Multigenerational Household	Mid-intensity	72.62%	72.07%-73.16%	57.63%	57.11%-58.14%
Model 3	Not a Multigenerational Household	Low-intensity	85.14%	84.86%-85.42%	78.28%	77.98%-78.58%
Model 3	Not a Multigenerational Household	Non-carer	84.12%	83.95%-84.28%	72.87%	72.67%-73.08%
Model 3	Multigenerational Household	High-intensity	57.85%	55.71%-59.95%	41.70%	40.38%-43.02%
Model 3	Multigenerational Household	Mid-intensity	71.65%	69.72%-73.51%	56.00%	54.46%-57.52%
Model 3	Multigenerational Household	Low-intensity	86.03%	85.01%-86.99%	75.36%	74.17%-76.52%
Model 3	Multigenerational Household	Non-carer	82.70%	82.35%-83.03%	64.68%	64.24%-65.12%
Model 4	Not a Multigenerational Household	High-intensity	62.80%	62.15%-63.44%	44.63%	44.11%-45.15%
Model 4	Not a Multigenerational Household	Mid-intensity	78.76%	78.26%-79.26%	63.20%	62.69%-63.72%
Model 4	Not a Multigenerational Household	Low-intensity	88.50%	88.26%-88.74%	80.93%	80.64%-81.21%
Model 4	Not a Multigenerational Household	Non-carer	87.60%	87.45%-87.75%	76.34%	76.14%-76.53%
Model 4	Multigenerational Household	High-intensity	63.76%	61.59%-65.88%	45.43%	44.04%-46.82%
Model 4	Multigenerational Household	Mid-intensity	76.55%	74.71%-78.29%	59.80%	58.24%-61.34%

Model 4	Multigenerational Household	Low-intensity	89.39%	88.53%-90.19%	78.40%	77.26%-79.50%
Model 4	Multigenerational Household	Non-carer	86.41%	86.10%-86.71%	68.79%	68.35%-69.22%
Model 5	Not a Multigenerational Household	High-intensity	50.02%	49.30%-50.74%	47.94%	47.39%-48.48%
Model 5	Not a Multigenerational Household	Mid-intensity	69.59%	68.94%-70.23%	66.14%	65.61%-66.65%
Model 5	Not a Multigenerational Household	Low-intensity	82.46%	82.10%-82.81%	83.04%	82.76%-83.31%
Model 5	Not a Multigenerational Household	Non-carer	81.38%	81.15%-81.60%	78.69%	78.48%-78.91%
Model 5	Multigenerational Household	High-intensity	49.27%	46.93%-51.62%	48.83%	47.41%-50.25%
Model 5	Multigenerational Household	Mid-intensity	64.50%	62.16%-66.76%	63.11%	61.59%-64.61%
Model 5	Multigenerational Household	Low-intensity	82.54%	81.23%-83.78%	80.82%	79.76%-81.83%
Model 5	Multigenerational Household	Non-carer	78.47%	78.01%-78.92%	71.83%	71.39%-72.27%
Model 6	Not a Multigenerational Household	High-intensity	49.10%	48.37%-49.83%	62.06%	61.51%-62.61%
Model 6	Not a Multigenerational Household	Mid-intensity	68.77%	68.10%-69.42%	76.23%	75.79%-76.67%
Model 6	Not a Multigenerational Household	Low-intensity	81.84%	81.46%-82.21%	88.38%	88.16%-88.59%
Model 6	Not a Multigenerational Household	Non-carer	80.64%	80.40%-80.88%	85.26%	85.08%-85.44%
Model 6	Multigenerational Household	High-intensity	47.18%	44.84%-49.53%	64.53%	63.18%-65.86%
Model 6	Multigenerational Household	Mid-intensity	62.38%	59.98%-64.72%	76.65%	75.43%-77.83%
Model 6	Multigenerational Household	Low-intensity	81.24%	79.85%-82.55%	88.94%	88.25%-89.60%
Model 6	Multigenerational Household	Non-carer	76.61%	76.10%-77.11%	84.01%	83.68%-84.33%
Model 7	Not a Multigenerational Household	High-intensity	57.12%	56.38%-57.86%	70.79%	70.29%-71.28%
Model 7	Not a Multigenerational Household	Mid-intensity	75.13%	74.53%-75.72%	82.29%	81.92%-82.65%
Model 7	Not a Multigenerational Household	Low-intensity	84.41%	84.07%-84.74%	90.32%	90.13%-90.50%
Model 7	Not a Multigenerational Household	Non-carer	84.69%	84.48%-84.91%	88.93%	88.78%-89.07%
Model 7	Multigenerational Household	High-intensity	55.58%	53.20%-57.93%	74.04%	72.87%-75.18%
Model 7	Multigenerational Household	Mid-intensity	69.97%	67.77%-72.08%	83.44%	82.47%-84.37%
Model 7	Multigenerational Household	Low-intensity	84.72%	83.52%-85.85%	91.51%	90.95%-92.04%
Model 7	Multigenerational Household	Non-carer	82.88%	82.46%-83.30%	89.38%	89.14%-89.62%
Model 8	Not a Multigenerational Household	High-intensity	64.22%	63.51%-64.92%	76.05%	75.60%-76.50%
Model 8	Not a Multigenerational Household	Mid-intensity	81.08%	80.58%-81.57%	86.38%	86.07%-86.68%
Model 8	Not a Multigenerational Household	Low-intensity	88.20%	87.92%-88.47%	92.47%	92.32%-92.63%
Model 8	Not a Multigenerational Household	Non-carer	88.55%	88.37%-88.73%	91.54%	91.41%-91.66%
Model 8	Multigenerational Household	High-intensity	64.57%	62.34%-66.74%	80.42%	79.44%-81.37%
Model 8	Multigenerational Household	Mid-intensity	78.19%	76.39%-79.88%	88.50%	87.77%-89.19%

Model 8	Multigenerational Household	Low-intensity	89.41%	88.52%-90.23%	94.16%	93.75%-94.53%
Model 8	Multigenerational Household	Non-carer	87.75%	87.42%-88.07%	92.56%	92.38%-92.74%

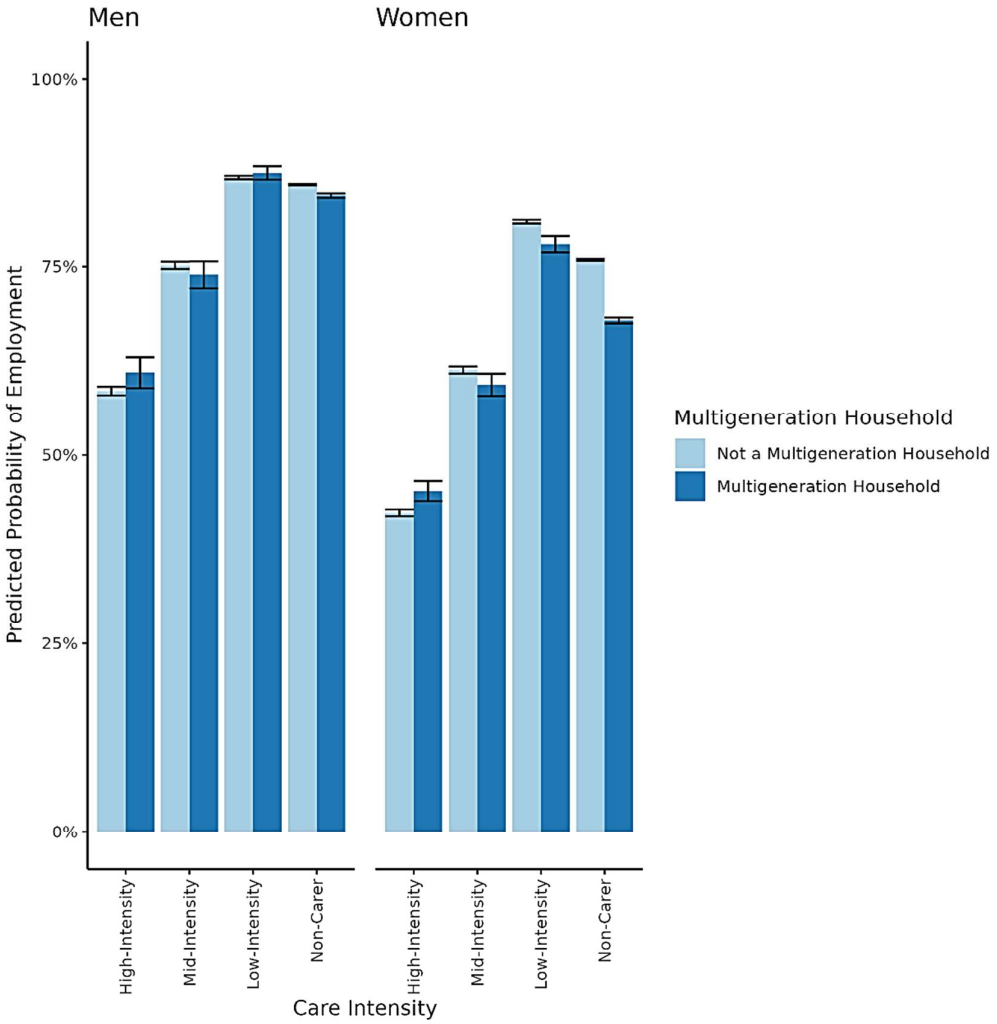
3.13: Predicted Probabilities of Full-Time Employment for Men and Women

			Men		Women	
Model	**Multigenerational Household**	**Care Intensity**	**Prob. Employment**	**95% CI**	**Prob. Employment**	**95% CI**
Model 1	Not a Multigenerational Household	High-intensity	78.21%	77.56%-78.85%	44.29%	43.63%-44.95%
Model 1	Not a Multigenerational Household	Mid-intensity	78.60%	78.02%-79.16%	53.20%	52.61%-53.80%
Model 1	Not a Multigenerational Household	Low-intensity	80.72%	80.41%-81.04%	53.87%	53.53%-54.21%
Model 1	Not a Multigenerational Household	Non-carer	84.14%	84.08%-84.21%	59.87%	59.78%-59.96%
Model 1	Multigenerational Household	High-intensity	76.54%	73.99%-78.91%	46.67%	44.68%-48.68%
Model 1	Multigenerational Household	Mid-intensity	73.30%	70.91%-75.55%	52.23%	50.22%-54.23%
Model 1	Multigenerational Household	Low-intensity	78.41%	76.95%-79.81%	55.12%	53.55%-56.67%
Model 1	Multigenerational Household	Non-carer	79.79%	79.39%-80.18%	53.41%	52.91%-53.91%
Model 2	Not a Multigenerational Household	High-intensity	80.79%	80.17%-81.40%	42.34%	41.67%-43.02%
Model 2	Not a Multigenerational Household	Mid-intensity	81.73%	81.19%-82.26%	50.85%	50.22%-51.48%
Model 2	Not a Multigenerational Household	Low-intensity	83.71%	83.39%-84.02%	52.28%	51.90%-52.67%
Model 2	Not a Multigenerational Household	Non-carer	86.38%	86.26%-86.50%	55.72%	55.55%-55.90%
Model 2	Multigenerational Household	High-intensity	79.48%	77.11%-81.67%	44.16%	42.16%-46.18%
Model 2	Multigenerational Household	Mid-intensity	76.26%	74.00%-78.39%	49.15%	47.12%-51.20%
Model 2	Multigenerational Household	Low-intensity	81.68%	80.34%-82.94%	51.81%	50.21%-53.41%
Model 2	Multigenerational Household	Non-carer	83.19%	82.81%-83.56%	49.01%	48.48%-49.55%
Model 3	Not a Multigenerational Household	High-intensity	75.21%	74.44%-75.97%	48.30%	47.57%-49.02%
Model 3	Not a Multigenerational Household	Mid-intensity	76.54%	78.42%-79.26%	56.72%	56.06%-57.37%
Model 3	Not a Multigenerational Household	Low-intensity	78.84%	75.86%-77.20%	58.25%	57.82%-58.68%
Model 3	Not a Multigenerational Household	Non-carer	82.25%	82.04%-82.46%	61.40%	61.13%-61.66%
Model 3	Multigenerational Household	High-intensity	74.28%	71.50%-76.87%	49.47%	47.42%-51.53%
Model 3	Multigenerational Household	Mid-intensity	70.69%	75.36%-78.46%	54.53%	52.49%-56.56%
Model 3	Multigenerational Household	Low-intensity	76.94%	68.10%-73.15%	57.17%	55.58%-58.74%
Model 3	Multigenerational Household	Non-carer	78.67%	78.20%-79.14%	54.41%	53.84%-54.97%
Model 4	Not a Multigenerational Household	High-intensity	77.13%	76.39%-77.85%	49.76%	49.03%-50.49%
Model 4	Not a Multigenerational Household	Mid-intensity	78.07%	77.43%-78.71%	57.92%	57.27%-58.58%
Model 4	Not a Multigenerational Household	Low-intensity	80.13%	79.73%-80.53%	59.07%	58.63%-59.50%
Model 4	Not a Multigenerational Household	Non-carer	82.76%	82.55%-82.96%	61.79%	61.53%-62.06%
Model 4	Multigenerational Household	High-intensity	75.84%	73.15%-78.34%	50.48%	48.42%-52.53%
Model 4	Multigenerational Household	Mid-intensity	72.08%	69.55%-74.48%	55.39%	53.34%-57.42%

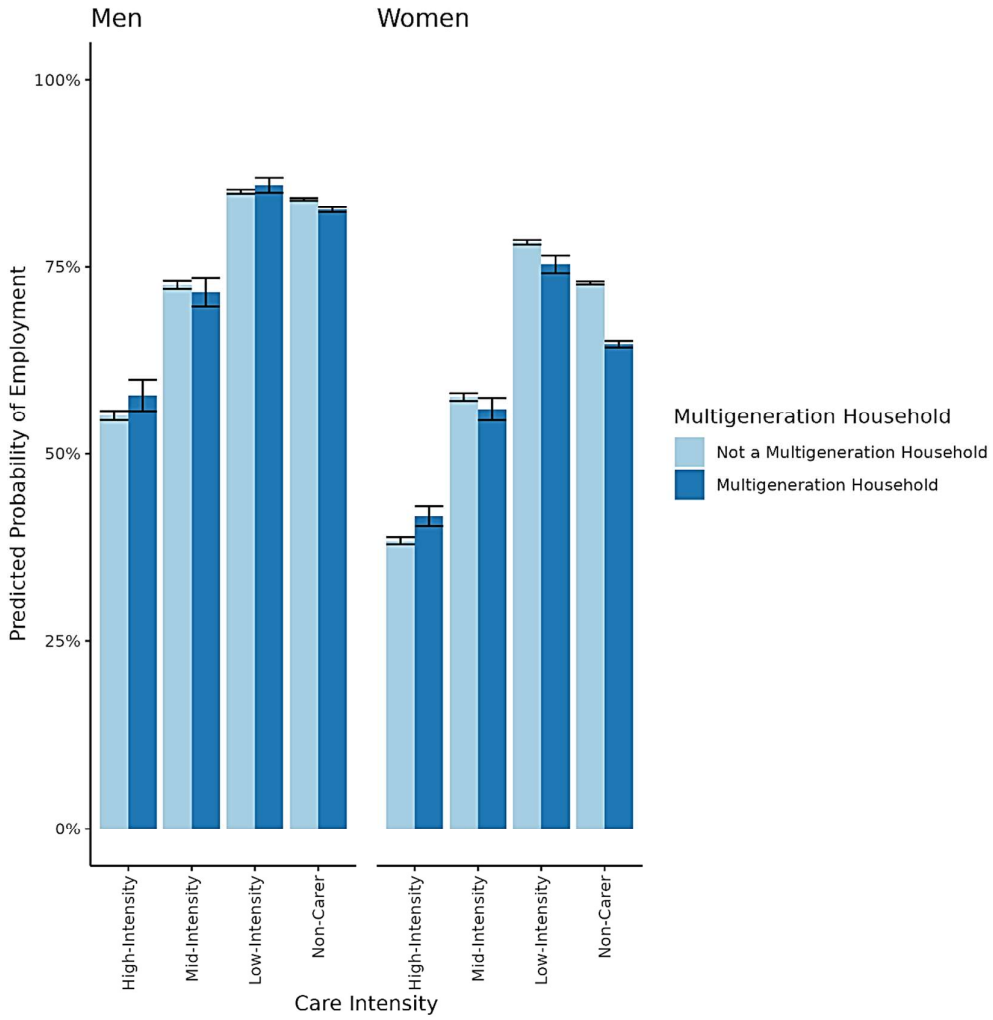
Model 4	Multigenerational Household	Low-intensity	78.26%	76.73%-79.72%	57.86%	56.27%-59.43%
Model 4	Multigenerational Household	Non-carer	79.20%	78.73%-79.67%	54.80%	54.23%-55.36%
Model 5	Not a Multigenerational Household	High-intensity	75.83%	75.05%-76.60%	56.00%	55.26%-56.74%
Model 5	Not a Multigenerational Household	Mid-intensity	79.02%	78.57%-79.45%	63.63%	62.99%-64.26%
Model 5	Not a Multigenerational Household	Low-intensity	76.86%	76.17%-77.53%	64.90%	64.47%-65.33%
Model 5	Not a Multigenerational Household	Non-carer	81.72%	81.47%-81.97%	67.40%	67.12%-67.68%
Model 5	Multigenerational Household	High-intensity	74.38%	71.58%-77.00%	56.58%	54.53%-58.60%
Model 5	Multigenerational Household	Mid-intensity	76.93%	75.32%-78.47%	61.38%	59.40%-63.32%
Model 5	Multigenerational Household	Low-intensity	70.47%	67.85%-72.96%	64.07%	62.55%-65.56%
Model 5	Multigenerational Household	Non-carer	77.90%	77.38%-78.41%	60.98%	60.41%-61.55%
Model 6	Not a Multigenerational Household	High-intensity	78.61%	77.88%-79.32%	75.45%	74.86%-76.03%
Model 6	Not a Multigenerational Household	Mid-intensity	79.20%	78.55%-79.83%	78.84%	78.35%-79.32%
Model 6	Not a Multigenerational Household	Low-intensity	80.84%	80.42%-81.26%	79.06%	78.72%-79.40%
Model 6	Not a Multigenerational Household	Non-carer	83.53%	83.29%-83.77%	81.31%	81.09%-81.54%
Model 6	Multigenerational Household	High-intensity	78.08%	75.54%-80.43%	78.91%	77.44%-80.30%
Model 6	Multigenerational Household	Mid-intensity	74.61%	72.19%-76.88%	82.41%	81.12%-83.62%
Model 6	Multigenerational Household	Low-intensity	79.97%	78.50%-81.36%	84.05%	83.11%-84.94%
Model 6	Multigenerational Household	Non-carer	81.36%	80.87%-81.83%	84.14%	83.78%-84.49%
Model 7	Not a Multigenerational Household	High-intensity	81.28%	80.62%-81.93%	80.44%	79.93%-80.94%
Model 7	Not a Multigenerational Household	Mid-intensity	82.07%	81.48%-82.64%	83.38%	82.97%-83.79%
Model 7	Not a Multigenerational Household	Low-intensity	82.49%	82.09%-82.88%	82.36%	82.05%-82.66%
Model 7	Not a Multigenerational Household	Non-carer	85.67%	85.44%-85.89%	84.94%	84.75%-85.14%
Model 7	Multigenerational Household	High-intensity	80.96%	78.64%-83.08%	83.78%	82.56%-84.92%
Model 7	Multigenerational Household	Mid-intensity	78.03%	75.81%-80.09%	86.52%	85.47%-87.51%
Model 7	Multigenerational Household	Low-intensity	82.09%	80.73%-83.37%	87.19%	86.39%-87.94%
Model 7	Multigenerational Household	Non-carer	84.65%	84.22%-85.06%	88.32%	88.04%-88.60%
Model 8	Not a Multigenerational Household	High-intensity	85.75%	85.20%-86.28%	80.38%	79.86%-80.88%
Model 8	Not a Multigenerational Household	Mid-intensity	87.08%	86.62%-87.52%	83.31%	82.88%-83.72%
Model 8	Not a Multigenerational Household	Low-intensity	86.81%	86.48%-87.13%	82.31%	82.00%-82.62%
Model 8	Not a Multigenerational Household	Non-carer	89.40%	89.22%-89.59%	84.89%	84.68%-85.09%
Model 8	Multigenerational Household	High-intensity	87.61%	85.94%-89.11%	83.75%	82.53%-84.90%
Model 8	Multigenerational Household	Mid-intensity	86.31%	84.75%-87.74%	86.49%	85.44%-87.48%

Model 8	Multigenerational Household	Low-intensity	88.61%	87.66%-89.50%	87.16%	86.37%-87.92%
Model 8	Multigenerational Household	Non-carer	89.87%	89.56%-90.17%	88.30%	88.01%-88.59%

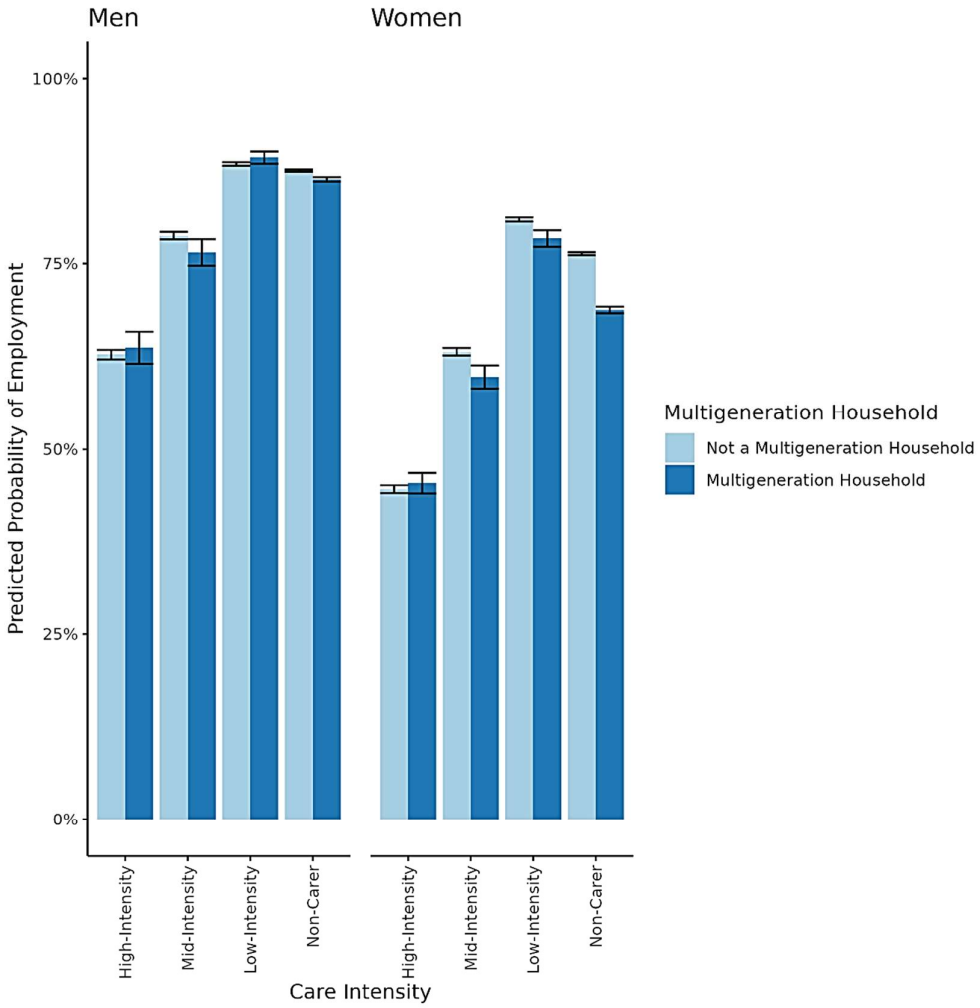
3.14: Predicted Probabilities of Employment for Men and Women by Care and MGH (Model 2: Controls for Age)



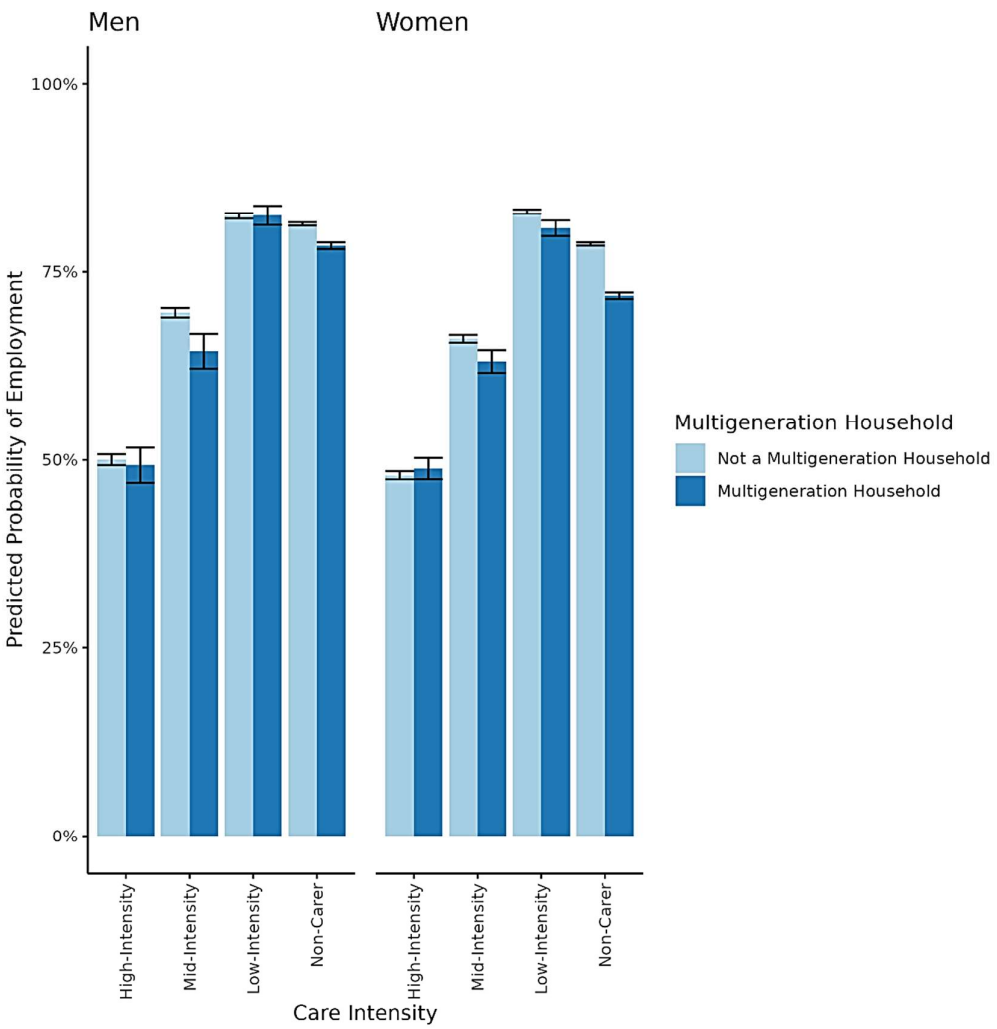
3.15: Predicted Probabilities of Employment for Men and Women by Care and MGH (Model 3: Controls for Age and Region)



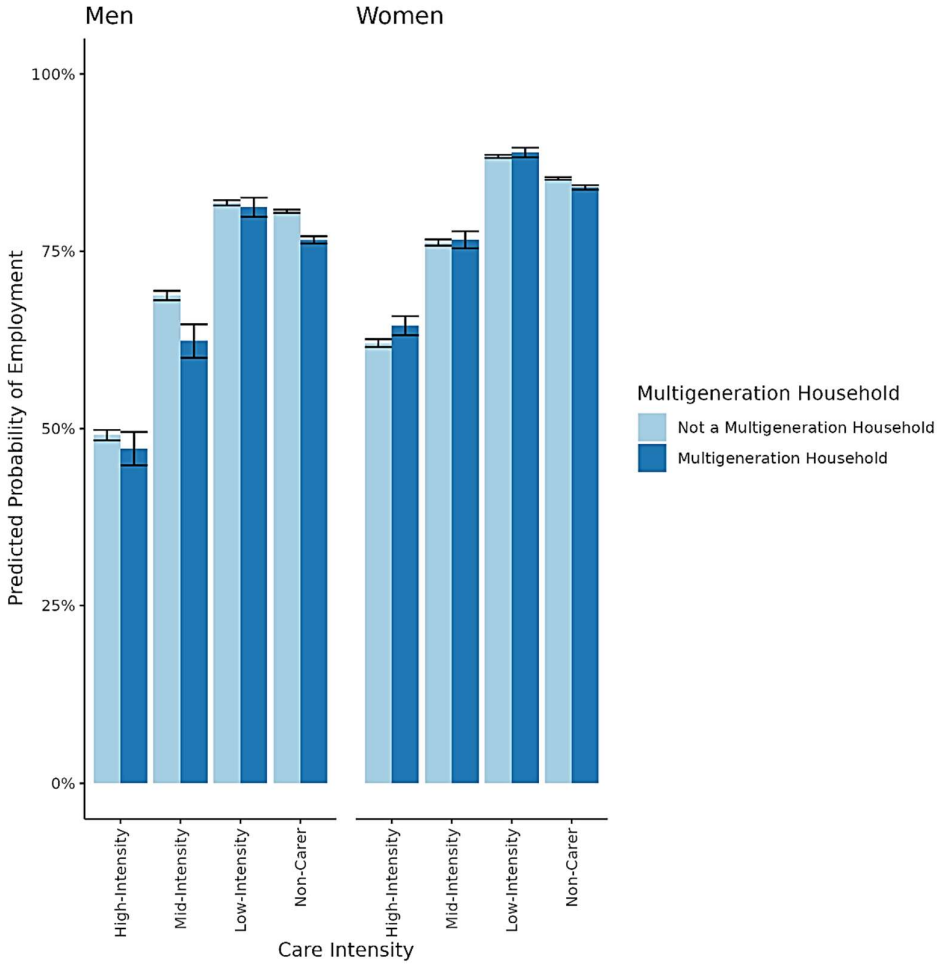
3.16: Predicted Probabilities of Employment for Men and Women by Care and MGH (Model 4: Controls for Age, Region, and Disability)



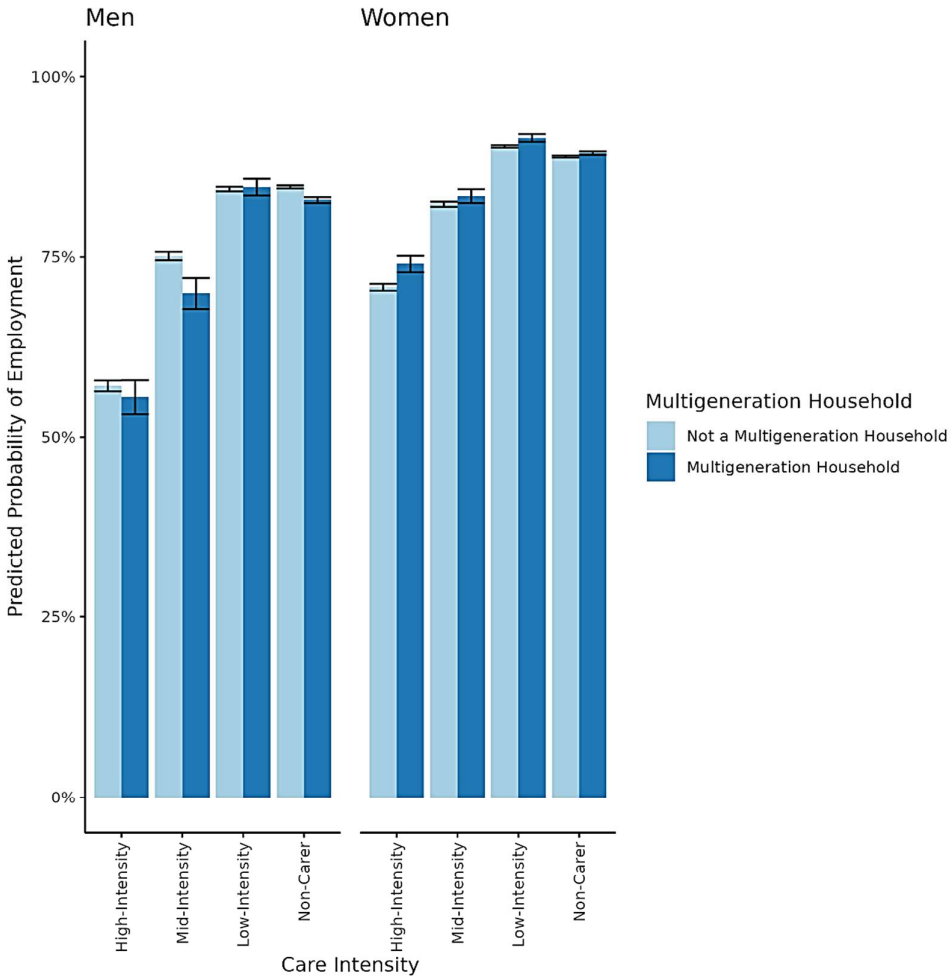
3.17: Predicted Probabilities of Employment for Men and Women by Care and MGH (Model 5: Controls for Age, Region, Disability, and Marital Status)



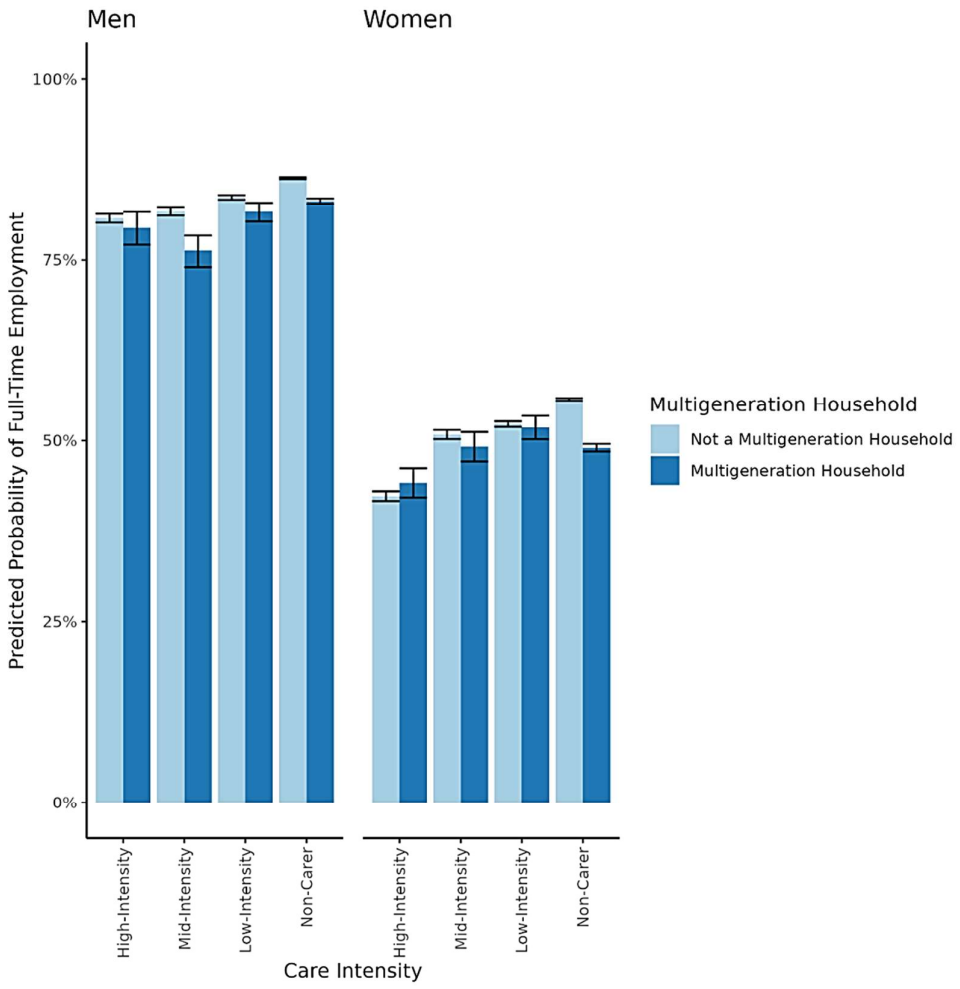
3.18: Predicted Probabilities of Employment for Men and Women by Care and MGH (Model 6: Controls for Age, Region, Disability, Marital Status, and Number of Dependent Children)



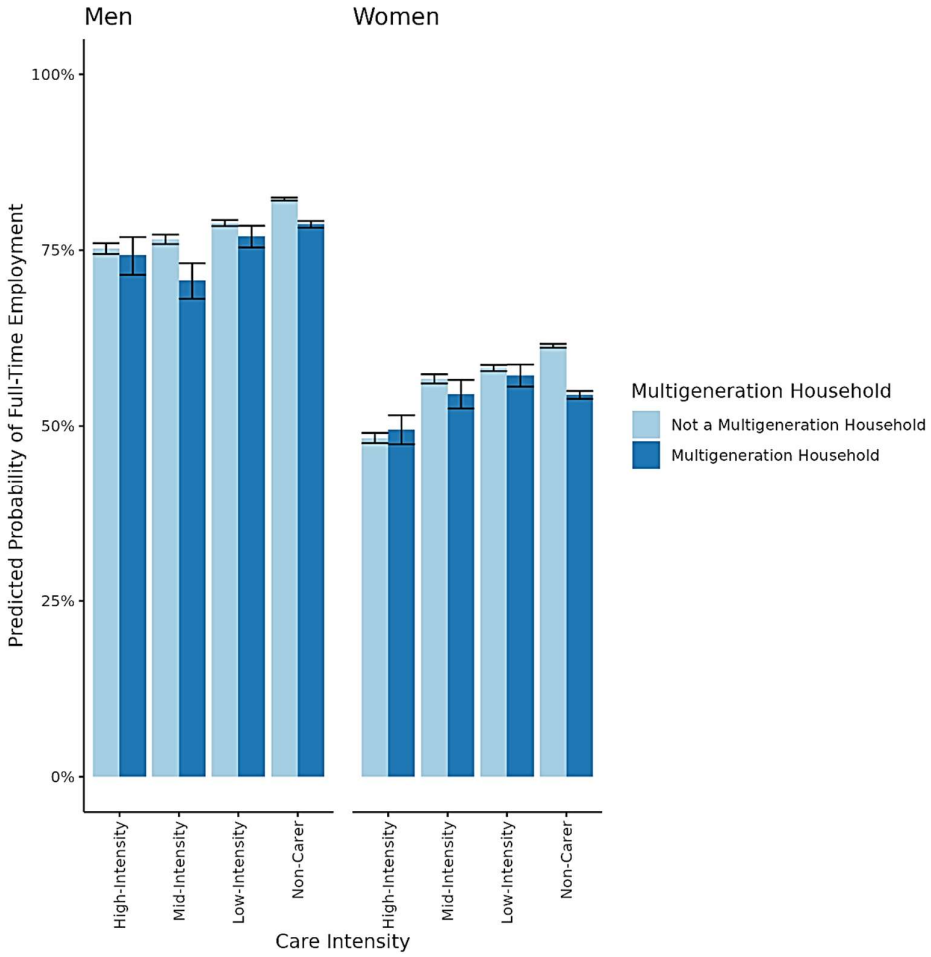
3.19: Predicted Probabilities of Employment for Men and Women by Care and MGH (Model 7: Controls for Age, Region, Disability, Marital Status, Number of Dependent Children, and Highest Qualification)



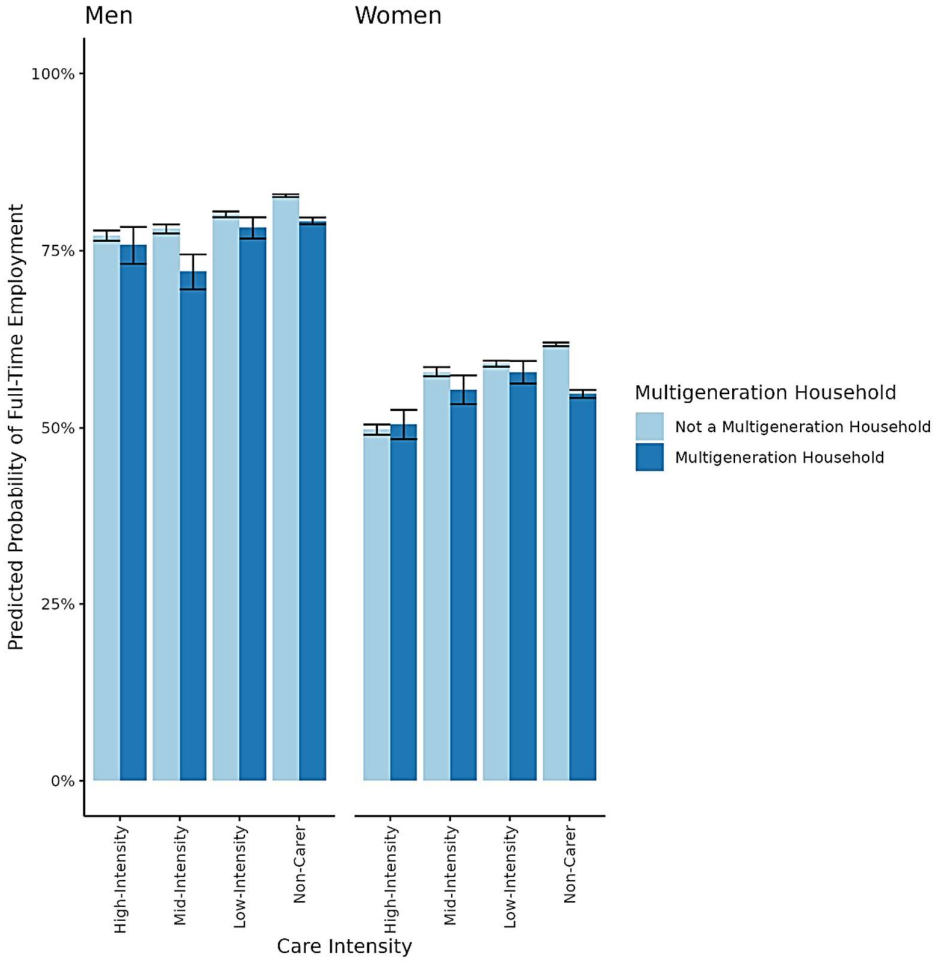
3.20: Predicted Probabilities of Full-Time Employment for Men and Women by Care and MGH (Model 2: Controls for Age)



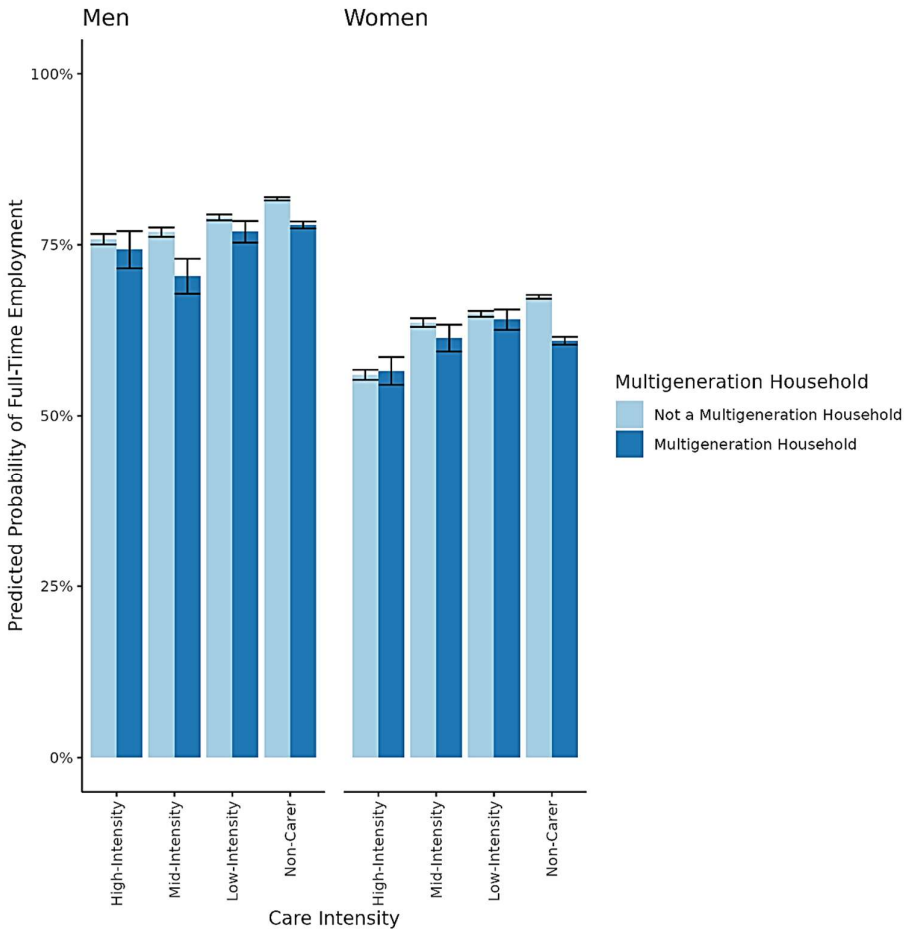
3.21: Predicted Probabilities of Full-Time Employment for Men and Women by Care and MGH (Model 3: Controls for Age and Region)



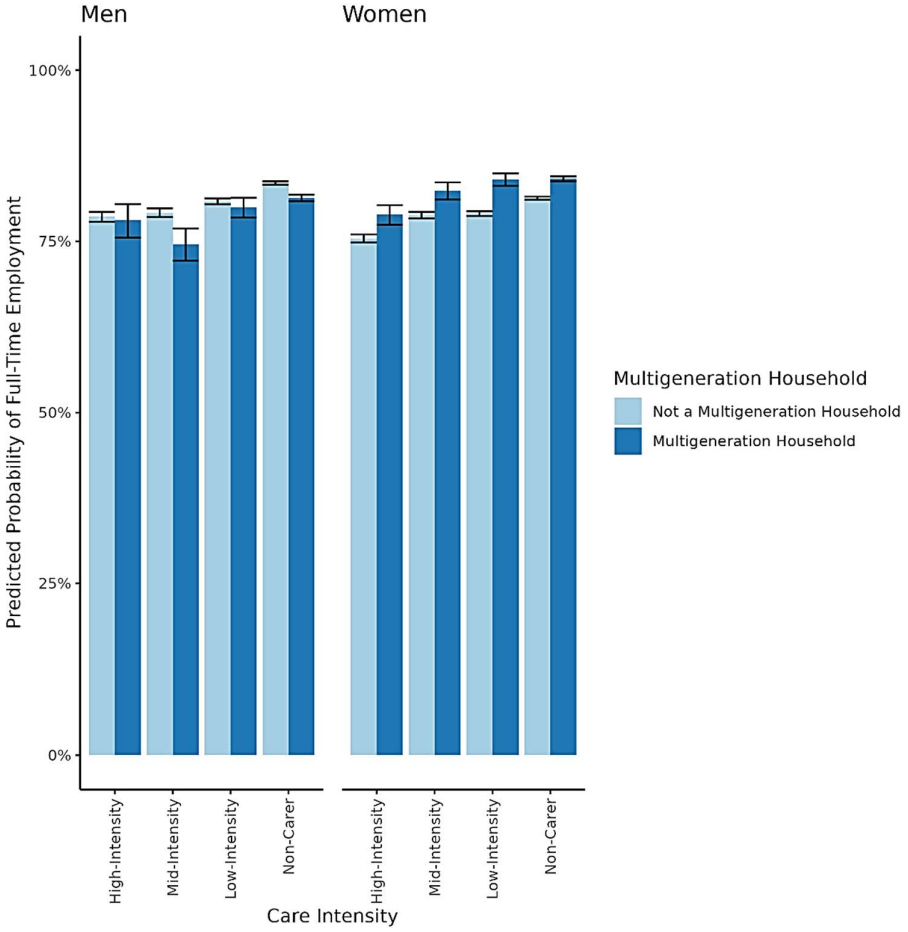
3.22: Predicted Probabilities of Full-Time Employment for Men and Women by Care and MGH (Model 4: Controls for Age, Region, and Disability)



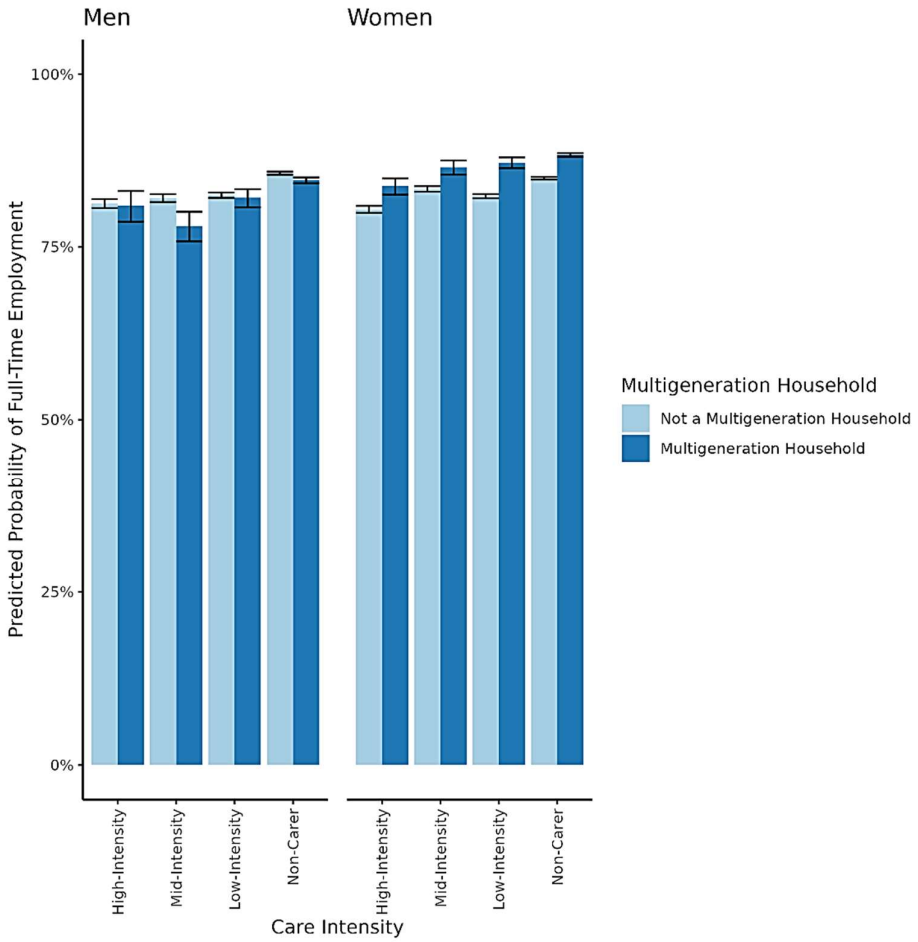
3.23: Predicted Probabilities of Full-Time Employment for Men and Women by Care and MGH (Model 5: Controls for Age, Region, Disability, and Marital Status)



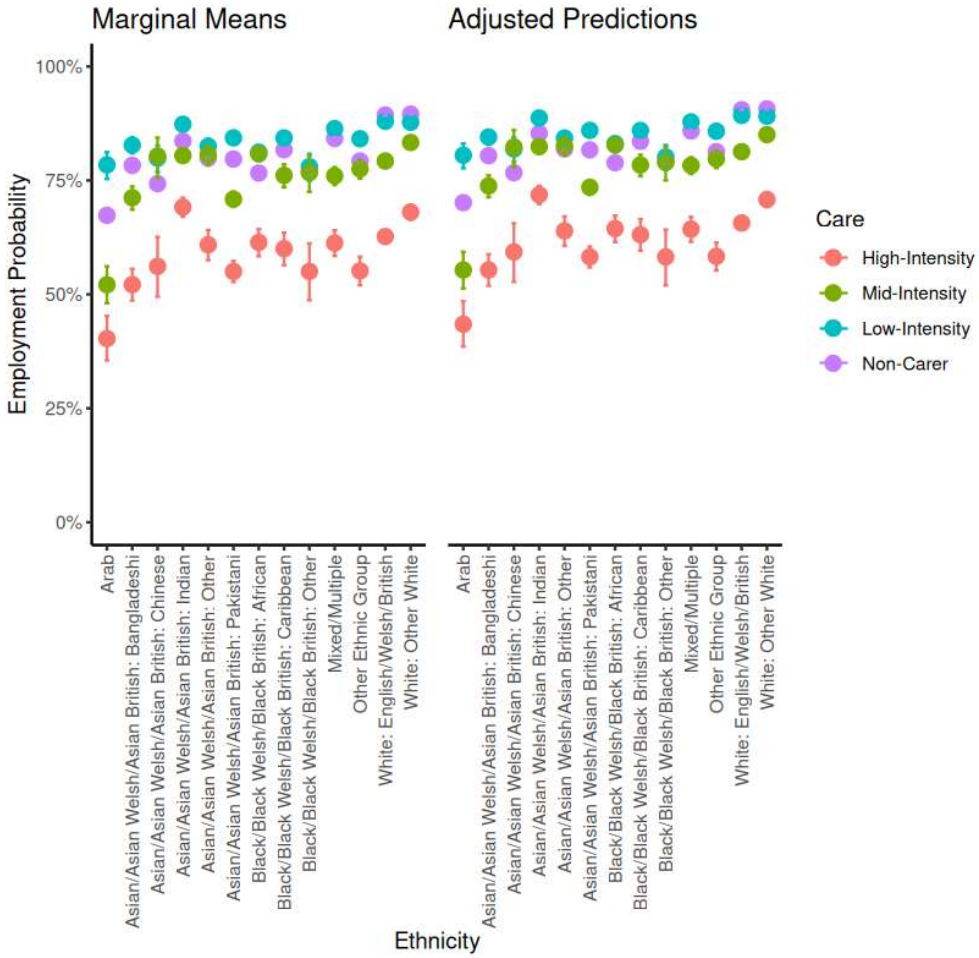
3.24: Predicted Probabilities of Full-Time Employment for Men and Women by Care and MGH (Model 6: Controls for Age, Region, Disability, Marital Status, and Number of Dependent Children)



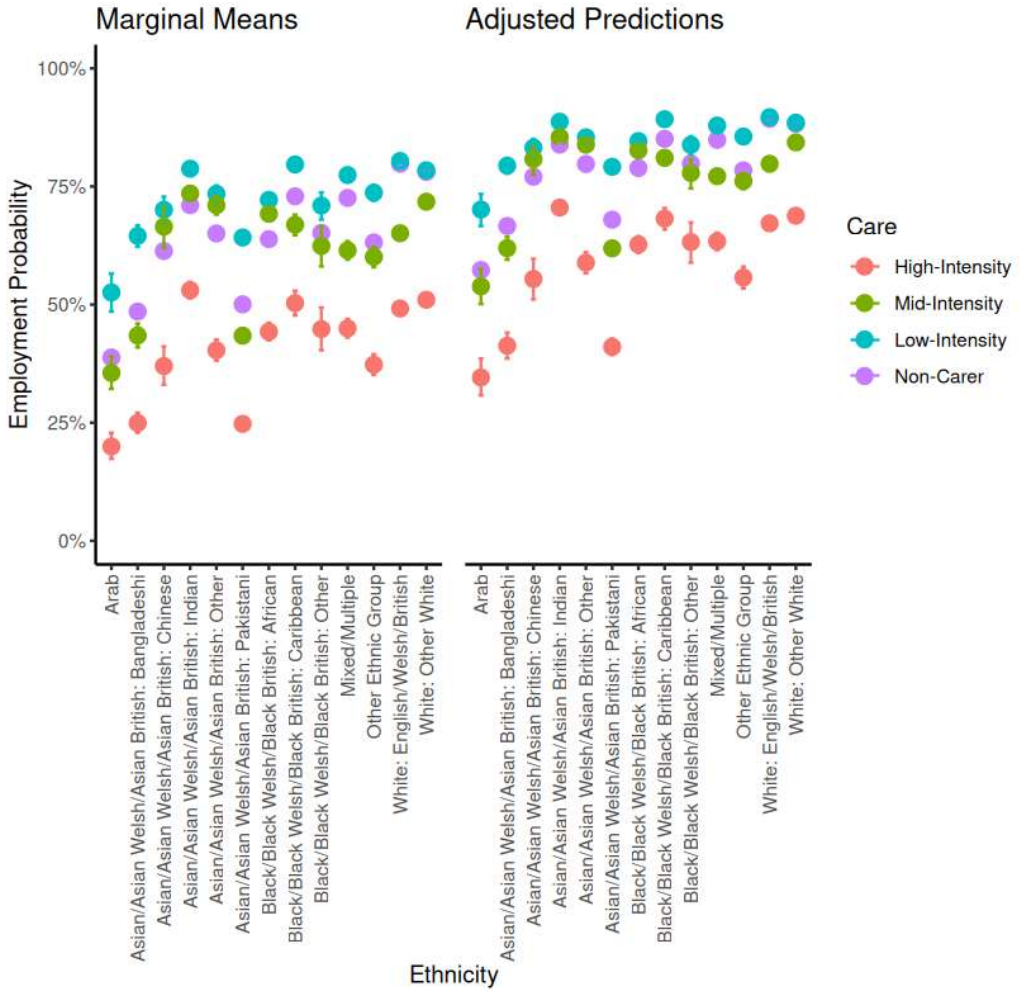
3.25: Predicted Probabilities of Full-Time Employment for Men and Women by Care and MGH (Model 7: Controls for Age, Region, Disability, Marital Status, Number of Dependent Children, and Highest Qualification)



4.1: Comparing Marginal Means to Adjusted Predictions: Men (Controlling for Age, Disability, Marital Status, and Highest Qualification)



4.2: Comparing Marginal Means to Adjusted Predictions: Women (Controlling for Age, Disability, Marital Status, and Highest Qualification)



4.3: Likelihood Ratio Test Scores

Model	Variable Added	Men: Deviance	Men: p-value	Women: Deviance	Women: p-value
2	Age	1,412,112	0.00	1,112,739	0.00
3	Region	57,929	0.00	25,864	0.00
4	Disability	2,032,077	0.00	1,617,387	0.00
5	Marital status	275,635	0.00	20,683	0.00
6	Dependent Children	34,953	0.00	315,565	0.00
7	Highest qualification	269,251	0.00	610,233	0.00
8	Multigenerational Living	404	0.00	1,924	0.00

4.4: BIC Scores for Determining Number of Splines

Type of Age Transformation	Men: Employment	Women: Employment
No Spline	15,519,818	19,133,835
2 Degrees of Freedom	14,520,069	18,224,535
3 Degrees of Freedom	14,492,064	18,212,362
4 Degrees of Freedom	14,364,252	18,153,449
5 Degrees of Freedom	14,350,536	18,144,821
6 Degrees of Freedom	14,345,893	18,140,097
Quadratic Polynomial	14,468,405	18,184,968

4.5: Predicted Probabilities of Men's Employment

Care Intensity	Ethnicity	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7		Model 8	
		Prob. (%)	95% CI (%)	Prob. (%)	95% CI (%)	Prob. (%)	95% CI (%)	Prob. (%)	95% CI (%)	Prob. (%)	95% CI (%)	Prob. (%)	95% CI (%)	Prob. (%)	95% CI (%)	Prob. (%)	95% CI (%)
High-intensity	Arab	36.65	34.53-38.82	44.88	42.54-47.24	44.91	42.56-47.27	51.31	48.82-53.79	33.89	31.67-36.19	32.08	29.92-34.32	39.23	36.82-41.68	39.20	36.80-41.66
High-intensity	Asian/Asian Welsh/Asian British: Bangladeshi	46.77	45.21-48.34	54.69	53.08-56.29	54.50	52.88-56.10	61.24	59.59-62.86	41.93	40.24-43.64	39.68	38.03-41.37	50.33	48.56-52.10	50.52	48.75-52.29
High-intensity	Asian/Asian Welsh/Asian British: Chinese	51.10	48.13-54.07	63.62	60.67-66.46	63.26	60.30-66.13	66.93	63.96-69.78	53.14	49.80-56.45	50.97	47.61-54.31	56.18	52.80-59.50	56.22	52.85-59.55
High-intensity	Asian/Asian Welsh/Asian British: Indian	62.92	61.91-63.91	73.64	72.75-74.50	73.20	72.31-74.08	78.45	77.62-79.25	65.94	64.83-67.03	63.90	62.76-65.03	69.04	67.97-70.10	69.32	68.26-70.37
High-intensity	Asian/Asian Welsh/Asian British: Other	55.37	53.84-56.89	64.35	62.87-65.81	63.76	62.27-65.23	70.53	69.09-71.94	54.21	52.47-55.93	51.60	49.84-53.34	59.56	57.84-61.25	59.67	57.96-61.37
High-intensity	Asian/Asian Welsh/Asian British: Pakistani	51.53	50.48-52.58	59.33	58.28-60.37	59.77	58.72-60.81	65.42	64.37-66.45	47.26	46.10-48.42	45.46	44.31-46.63	53.87	52.69-55.04	54.13	52.95-55.30
High-intensity	Black/Black Welsh/Black British: African	59.94	58.56-61.29	67.19	65.88-68.47	66.74	65.43-68.04	71.07	69.78-72.33	57.57	56.03-59.10	55.72	54.17-57.26	60.27	58.74-61.77	60.27	58.74-61.77
High-intensity	Black/Black Welsh/Black British: Caribbean	46.71	45.06-48.38	58.76	57.08-60.43	58.31	56.61-59.98	64.76	63.08-66.41	56.00	54.17-57.83	53.73	51.88-55.58	60.10	58.29-61.89	60.18	58.37-61.97
High-intensity	Black/Black Welsh/Black British: Other	40.32	37.62-43.08	52.24	49.30-55.16	51.79	48.85-54.72	58.96	55.93-61.93	50.32	47.17-53.47	48.74	45.60-51.90	55.34	52.17-58.47	55.45	52.28-58.58
High-intensity	Mixed/Multiple	46.04	44.75-47.33	55.78	54.44-57.10	55.00	53.66-56.33	65.78	64.45-67.09	55.09	53.61-56.56	52.86	51.38-54.35	59.91	58.46-61.35	59.97	58.52-61.41
High-intensity	Other Ethnic Group	46.17	44.77-47.56	55.80	54.36-57.24	55.29	53.85-56.73	62.80	61.34-64.23	46.94	45.37-48.51	44.88	43.32-46.44	54.28	52.70-55.85	54.35	52.77-55.92
High-intensity	White: English/Welsh/British	47.24	47.06-47.43	59.54	59.34-59.73	59.34	59.13-59.56	69.34	69.13-69.54	57.35	57.11-57.59	55.25	55.01-55.50	62.64	62.40-62.88	62.65	62.41-62.89
High-intensity	White: Other White	57.58	56.80-58.37	67.00	66.25-67.74	66.11	65.34-66.86	74.43	73.73-75.13	62.52	61.64-63.40	60.21	59.31-61.11	67.06	66.21-67.90	67.09	66.25-67.93
Mid-intensity	Arab	45.68	43.88-47.49	53.77	51.89-55.63	53.75	51.87-55.62	60.73	58.82-62.60	43.85	41.87-45.84	42.41	40.46-44.39	51.45	49.41-53.49	51.44	49.40-53.47
Mid-intensity	Asian/Asian Welsh/Asian British: Bangladeshi	64.94	63.66-66.19	72.00	70.82-73.15	71.93	70.74-73.08	77.91	76.84-78.95	63.43	61.97-64.86	61.20	59.71-62.66	69.45	68.11-70.76	69.59	68.25-70.89
Mid-intensity	Asian/Asian Welsh/Asian British: Chinese	73.44	70.89-75.85	80.27	78.10-82.27	80.03	77.84-82.05	84.27	82.33-86.03	76.09	73.44-78.54	74.63	71.89-77.19	80.45	78.14-82.57	80.47	78.16-82.59
Mid-intensity	Asian/Asian Welsh/Asian British: Indian	74.77	73.99-75.54	82.88	82.26-83.48	82.58	81.95-83.20	86.35	85.80-86.88	77.47	76.65-78.27	76.00	75.14-76.84	80.09	79.34-80.83	80.24	79.49-80.97
Mid-intensity	Asian/Asian Welsh/Asian British: Other	74.55	73.37-75.70	81.39	80.40-82.34	80.90	79.89-81.88	85.41	84.53-86.25	75.54	74.23-76.80	73.94	72.58-75.26	79.85	78.70-80.95	79.89	78.75-80.99
Mid-intensity	Asian/Asian Welsh/Asian British: Pakistani	64.14	63.33-64.95	72.12	71.38-72.86	72.56	71.81-73.29	78.27	77.59-78.94	63.89	62.96-64.82	62.14	61.19-63.08	69.67	68.80-70.52	69.84	68.98-70.69
Mid-intensity	Black/Black Welsh/Black British: African	76.98	76.14-77.80	83.08	82.39-83.75	82.73	82.02-83.41	85.62	84.97-86.24	77.58	76.67-78.47	76.20	75.25-77.12	80.07	79.22-80.88	80.05	79.21-80.87
Mid-intensity	Black/Black Welsh/Black British: Caribbean	61.67	60.21-63.11	73.42	72.15-74.65	73.10	71.82-74.34	79.22	78.06-80.33	72.66	71.26-74.01	70.91	69.46-72.31	76.07	74.78-77.32	76.10	74.81-77.35
Mid-intensity	Black/Black Welsh/Black British: Other	63.07	60.72-65.35	74.18	72.14-76.12	73.87	71.81-75.83	79.47	77.61-81.22	73.48	71.25-75.61	71.91	69.59-74.11	76.59	74.51-78.54	76.64	74.57-78.59

Mid-intensity	Mixed/Multiple	59.77	58.63-60.89	71.10	70.07-72.11	70.59	69.55-71.61	78.67	77.76-79.55	71.10	69.99-72.19	69.33	68.17-70.45	74.83	73.80-75.83	74.85	73.82-75.85
Mid-intensity	Other Ethnic Group	67.84	66.69-68.97	75.85	74.84-76.83	75.58	74.57-76.57	81.90	81.01-82.76	71.28	70.05-72.48	69.53	68.25-70.78	76.88	75.80-77.93	76.95	75.87-78.00
Mid-intensity	White: English/Welsh/British	63.71	63.51-63.90	75.56	75.39-75.73	75.49	75.31-75.67	83.00	82.85-83.15	75.53	75.33-75.73	74.06	73.85-74.27	79.30	79.11-79.48	79.30	79.11-79.48
Mid-intensity	White: Other White	73.88	73.22-74.53	81.12	80.57-81.65	80.47	79.90-81.02	85.99	85.52-86.45	78.93	78.27-79.57	77.47	76.78-78.15	82.76	82.19-83.31	82.77	82.20-83.32
Low-intensity	Arab	69.89	68.27-71.46	79.59	78.26-80.85	79.37	78.03-80.65	84.75	83.61-85.83	75.27	73.62-76.85	73.71	71.99-75.35	77.53	75.97-79.01	77.52	75.96-79.00
Low-intensity	Asian/Asian Welsh/Asian British: Bangladeshi	78.00	77.06-78.91	83.21	82.41-83.98	83.12	82.32-83.89	87.92	87.26-88.54	78.91	77.88-79.90	77.19	76.10-78.24	81.51	80.57-82.42	81.65	80.71-82.54
Low-intensity	Asian/Asian Welsh/Asian British: Chinese	75.94	74.40-77.41	83.20	81.97-84.36	82.80	81.54-83.99	85.96	84.83-87.01	78.52	76.95-80.01	77.42	75.79-78.96	80.13	78.64-81.55	80.16	78.67-81.58
Low-intensity	Asian/Asian Welsh/Asian British: Indian	84.22	83.79-84.65	89.77	89.45-90.07	89.53	89.21-89.84	92.08	91.82-92.34	86.37	85.94-86.79	85.37	84.91-85.81	87.17	86.76-87.57	87.27	86.86-87.67
Low-intensity	Asian/Asian Welsh/Asian British: Other	76.33	75.38-77.25	84.03	83.29-84.74	83.63	82.88-84.36	87.97	87.34-88.57	80.08	79.12-81.01	78.64	77.63-79.61	81.75	80.84-82.62	81.81	80.91-82.68
Low-intensity	Asian/Asian Welsh/Asian British: Pakistani	78.98	78.38-79.56	85.67	85.20-86.12	85.78	85.31-86.23	89.63	89.25-89.99	81.70	81.08-82.30	80.44	79.79-81.07	83.52	82.95-84.07	83.65	83.09-84.21
Low-intensity	Black/Black Welsh/Black British: African	74.85	74.01-75.68	82.49	81.81-83.15	82.17	81.47-82.84	86.56	85.97-87.13	79.51	78.68-80.31	78.25	77.39-79.09	80.65	79.85-81.43	80.65	79.85-81.43
Low-intensity	Black/Black Welsh/Black British: Caribbean	73.36	72.46-74.24	83.14	82.46-83.80	82.90	82.21-83.57	87.41	86.84-87.96	82.83	82.09-83.55	81.56	80.77-82.32	84.42	83.72-85.08	84.43	83.74-85.10
Low-intensity	Black/Black Welsh/Black British: Other	64.99	63.23-66.72	76.37	74.89-77.79	76.04	74.54-77.47	81.41	80.08-82.67	75.64	74.03-77.19	74.15	72.47-75.76	77.73	76.20-79.20	77.77	76.24-79.23
Low-intensity	Mixed/Multiple	74.88	74.21-75.54	84.03	83.52-84.53	83.59	83.07-84.10	89.40	89.01-89.78	84.68	84.14-85.19	83.67	83.10-84.21	85.93	85.42-86.41	85.94	85.44-86.43
Low-intensity	Other Ethnic Group	76.84	76.01-77.64	84.59	83.95-85.20	84.28	83.63-84.90	89.20	88.69-89.69	82.40	81.63-83.15	81.14	80.32-81.92	83.93	83.21-84.63	83.99	83.27-84.68
Low-intensity	White: English/Welsh/British	79.55	79.45-79.65	88.45	88.38-88.52	88.21	88.13-88.29	91.79	91.73-91.85	87.34	87.24-87.43	86.50	86.40-86.60	88.30	88.21-88.40	88.30	88.21-88.39
Low-intensity	White: Other White	80.94	80.52-81.36	87.72	87.41-88.02	87.24	86.92-87.56	91.58	91.34-91.82	87.14	86.79-87.49	86.28	85.90-86.64	87.91	87.57-88.23	87.91	87.57-88.24
Non-carer	Arab	58.90	58.60-59.21	69.34	69.06-69.63	69.33	69.04-69.62	75.00	74.73-75.28	60.85	60.49-61.21	59.07	58.70-59.43	66.18	65.83-66.52	66.11	65.77-66.46
Non-carer	Asian/Asian Welsh/Asian British: Bangladeshi	68.85	68.64-69.06	78.60	78.42-78.78	78.52	78.34-78.71	83.26	83.10-83.42	71.30	71.05-71.55	68.98	68.72-69.24	76.25	76.03-76.48	76.27	76.04-76.50
Non-carer	Asian/Asian Welsh/Asian British: Chinese	69.43	69.17-69.69	78.60	78.38-78.81	78.21	77.98-78.43	80.23	80.01-80.44	69.51	69.21-69.81	67.92	67.61-68.23	73.29	73.01-73.57	73.26	72.98-73.54
Non-carer	Asian/Asian Welsh/Asian British: Indian	80.24	80.14-80.35	86.74	86.65-86.82	86.39	86.30-86.48	88.72	88.64-88.80	80.28	80.15-80.42	78.74	78.59-78.88	82.53	82.40-82.66	82.56	82.43-82.69
Non-carer	Asian/Asian Welsh/Asian British: Other	73.48	73.32-73.65	81.57	81.43-81.71	81.02	80.88-81.17	84.35	84.22-84.48	73.99	73.79-74.19	72.18	71.97-72.39	78.40	78.22-78.58	78.39	78.21-78.57
Non-carer	Asian/Asian Welsh/Asian British: Pakistani	71.18	71.05-71.32	80.51	80.40-80.63	80.74	80.61-80.86	84.90	84.79-85.01	73.60	73.43-73.78	71.84	71.65-72.02	78.13	77.97-78.30	78.20	78.03-78.36
Non-carer	Black/Black Welsh/Black British: African	69.68	69.54-69.81	79.44	79.31-79.56	79.07	78.94-79.20	81.94	81.82-82.06	72.52	72.36-72.69	70.86	70.68-71.04	75.32	75.16-75.48	75.28	75.11-75.44

Non-carer	Black/Black Welsh/Black British: Caribbean	68.24	68.03-68.46	79.36	79.18-79.54	78.97	78.78-79.15	83.86	83.70-84.02	78.33	78.12-78.53	76.75	76.53-76.96	81.42	81.23-81.61	81.41	81.22-81.60
Non-carer	Black/Black Welsh/Black British: Other	60.82	60.44-61.20	74.26	73.93-74.59	73.81	73.47-74.14	79.56	79.26-79.86	72.68	72.31-73.04	70.90	70.51-71.28	76.01	75.66-76.35	75.99	75.64-76.33
Non-carer	Mixed/Multiple	70.70	70.55-70.85	81.61	81.49-81.73	81.06	80.93-81.19	86.49	86.38-86.60	80.45	80.30-80.60	79.12	78.96-79.28	82.92	82.78-83.06	82.90	82.76-83.04
Non-carer	Other Ethnic Group	70.76	70.59-70.92	78.96	78.82-79.11	78.56	78.41-78.71	82.66	82.53-82.80	72.52	72.32-72.72	70.74	70.53-70.95	78.14	77.97-78.32	78.13	77.96-78.31
Non-carer	White: English/Welsh/British	79.31	79.28-79.33	87.74	87.70-87.77	87.48	87.43-87.53	91.50	91.46-91.54	87.23	87.18-87.29	86.30	86.23-86.36	89.07	89.01-89.13	89.06	89.00-89.11
Non-carer	White: Other White	85.08	85.02-85.14	89.46	89.41-89.51	89.02	88.97-89.08	91.26	91.22-91.31	86.42	86.34-86.49	85.40	85.31-85.48	88.87	88.80-88.94	88.86	88.79-88.92

4.6: Predicted Probabilities for Women's Employment

Care Intensity	Ethnicity	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7		Model 8	
		Prob. (%)	95 CI (%)	Prob. (%)	95 CI (%)	Prob. (%)	95 CI (%)	Prob. (%)	95 CI (%)	Prob. (%)	95 CI (%)	Prob. (%)	95 CI (%)	Prob. (%)	95 CI (%)	Prob. (%)	95 CI (%)
High-intensity	Arab	17.75	16.58-18.99	20.00	18.70-21.36	20.19	18.88-21.56	22.77	21.33-24.28	22.97	21.51-24.49	34.76	32.85-36.71	45.10	42.95-47.26	45.03	42.89-47.20
High-intensity	Asian/Asian Welsh/Asian British: Bangladeshi	18.42	17.63-19.24	20.51	19.64-21.41	20.62	19.75-21.53	23.73	22.74-24.74	24.16	23.16-25.18	35.41	34.14-36.70	50.66	49.22-52.09	50.25	48.81-51.68
High-intensity	Asian/Asian Welsh/Asian British: Chinese	36.21	34.36-38.09	43.54	41.51-45.59	43.35	41.32-45.40	46.01	43.92-48.12	46.31	44.21-48.42	55.52	53.40-57.62	62.21	60.11-64.26	62.11	60.01-64.17
High-intensity	Asian/Asian Welsh/Asian British: Indian	47.32	46.53-48.11	55.92	55.11-56.73	55.97	55.16-56.78	60.17	59.35-60.98	60.63	59.82-61.44	69.60	68.86-70.32	76.32	75.67-76.96	75.95	75.29-76.59
High-intensity	Asian/Asian Welsh/Asian British: Other	35.94	34.96-36.93	40.96	39.90-42.02	40.85	39.80-41.91	44.32	43.22-45.43	44.81	43.71-45.92	55.11	53.99-56.24	65.43	64.37-66.48	65.35	64.28-66.40
High-intensity	Asian/Asian Welsh/Asian British: Pakistani	20.00	19.47-20.55	22.31	21.73-22.90	22.78	22.19-23.38	25.25	24.60-25.90	25.55	24.90-26.21	37.36	36.54-38.18	50.36	49.46-51.26	49.91	49.02-50.81
High-intensity	Black/Black Welsh/Black British: African	44.99	44.13-45.86	49.45	48.56-50.34	49.32	48.43-50.21	52.61	51.70-53.52	52.10	51.19-53.02	67.23	66.40-68.04	73.93	73.18-74.66	73.95	73.20-74.68
High-intensity	Black/Black Welsh/Black British: Caribbean	47.40	46.21-48.58	55.40	54.19-56.61	55.44	54.22-56.64	63.81	62.61-65.00	63.43	62.22-64.63	74.52	73.51-75.50	78.41	77.50-79.30	78.29	77.38-79.18
High-intensity	Black/Black Welsh/Black British: Other	42.78	40.72-44.86	49.98	47.81-52.14	50.03	47.86-52.20	56.34	54.10-58.55	55.92	53.68-58.14	67.82	65.79-69.79	73.61	71.76-75.38	73.53	71.68-75.30
High-intensity	Mixed/Multiple	39.29	38.43-40.16	43.95	43.05-44.87	43.80	42.89-44.71	54.61	53.63-55.58	54.39	53.42-55.36	66.95	66.06-67.82	73.11	72.31-73.90	73.09	72.28-73.88
High-intensity	Other Ethnic Group	31.35	30.42-32.29	36.27	35.26-37.30	36.22	35.20-37.25	41.12	40.02-42.23	41.26	40.16-42.38	53.12	51.96-54.27	64.34	63.24-65.43	64.22	63.12-65.30
High-intensity	White: English/Welsh/British	38.83	38.69-38.96	46.41	46.26-46.57	46.55	46.38-46.72	56.10	55.92-56.28	55.98	55.79-56.17	67.69	67.52-67.86	75.37	75.22-75.52	75.40	75.25-75.55
High-intensity	White: Other White	46.46	45.91-47.01	52.43	51.87-53.00	51.93	51.36-52.50	58.61	58.03-59.18	58.43	57.85-59.01	68.98	68.45-69.49	75.74	75.28-76.19	75.70	75.24-76.15
Mid-intensity	Arab	32.77	31.24-34.33	36.27	34.64-37.93	36.56	34.93-38.23	40.47	38.73-42.23	40.49	38.75-42.25	54.22	52.38-56.06	63.96	62.18-65.70	63.94	62.16-65.68
Mid-intensity	Asian/Asian Welsh/Asian British: Bangladeshi	36.20	35.11-37.31	38.96	37.81-40.11	39.16	38.01-40.32	44.36	43.13-45.59	44.75	43.52-45.99	57.71	56.46-58.94	69.98	68.87-71.06	69.66	68.55-70.75
Mid-intensity	Asian/Asian Welsh/Asian British: Chinese	63.60	61.49-65.66	70.70	68.73-72.59	70.38	68.40-72.29	73.60	71.68-75.44	73.85	71.94-75.68	79.84	78.22-81.37	84.53	83.16-85.80	84.54	83.17-85.81
Mid-intensity	Asian/Asian Welsh/Asian British: Indian	69.44	68.74-70.13	75.66	75.03-76.27	75.67	75.04-76.29	78.98	78.39-79.56	79.34	78.76-79.92	84.92	84.45-85.37	88.58	88.20-88.94	88.40	88.02-88.77
Mid-intensity	Asian/Asian Welsh/Asian British: Other	66.91	65.95-67.87	71.54	70.63-72.44	71.25	70.33-72.16	74.55	73.66-75.41	74.90	74.02-75.76	81.66	80.95-82.36	87.17	86.62-87.69	87.13	86.59-87.66
Mid-intensity	Asian/Asian Welsh/Asian British: Pakistani	36.88	36.23-37.54	40.89	40.19-41.59	41.57	40.86-42.27	45.55	44.81-46.28	45.79	45.05-46.53	58.95	58.21-59.68	69.79	69.12-70.44	69.40	68.73-70.06
Mid-intensity	Black/Black Welsh/Black British: African	70.01	69.34-70.67	74.23	73.60-74.84	74.13	73.51-74.75	77.02	76.43-77.61	76.80	76.20-77.39	85.43	85.00-85.85	88.36	88.00-88.71	88.39	88.03-88.74
Mid-intensity	Black/Black Welsh/Black British: Caribbean	63.59	62.55-64.62	71.96	71.02-72.89	71.98	71.04-72.91	77.86	77.00-78.70	77.59	76.72-78.43	84.44	83.78-85.09	87.12	86.54-87.67	87.10	86.53-87.66
Mid-intensity	Black/Black Welsh/Black British: Other	61.32	59.34-63.26	68.99	67.14-70.78	68.97	67.12-70.76	74.31	72.56-75.97	74.08	72.32-75.76	82.56	81.22-83.83	85.14	83.94-86.26	85.16	83.97-86.28

Mid-intensity	Mixed/Multiple	55.62	54.70-56.54	61.86	60.95-62.75	61.78	60.87-62.68	70.35	69.50-71.19	70.15	69.30-70.99	78.63	77.93-79.31	83.16	82.57-83.74	83.15	82.56-83.73
Mid-intensity	Other Ethnic Group	53.38	52.35-54.40	59.94	58.92-60.95	59.78	58.76-60.80	65.12	64.11-66.11	65.22	64.21-66.21	74.43	73.56-75.27	81.74	81.04-82.41	81.66	80.96-82.33
Mid-intensity	White: English/Welsh/British	54.29	54.13-54.45	64.13	63.97-64.29	64.38	64.21-64.56	72.21	72.05-72.37	72.11	71.95-72.28	79.77	79.64-79.91	84.84	84.72-84.95	84.87	84.76-84.98
Mid-intensity	White: Other White	67.03	66.48-67.58	72.78	72.27-73.29	72.43	71.91-72.94	77.54	77.06-78.01	77.41	76.93-77.89	83.51	83.12-83.89	87.87	87.57-88.17	87.86	87.56-88.16
Low-intensity	Arab	50.57	48.72-52.43	56.03	54.15-57.90	56.07	54.18-57.94	62.15	60.27-63.99	62.17	60.29-64.02	72.51	70.87-74.09	77.26	75.78-78.68	77.31	75.83-78.73
Low-intensity	Asian/Asian Welsh/Asian British: Bangladeshi	58.68	57.58-59.78	63.14	62.05-64.21	63.22	62.14-64.30	69.46	68.42-70.49	69.73	68.69-70.75	79.28	78.45-80.08	84.86	84.19-85.50	84.69	84.02-85.34
Low-intensity	Asian/Asian Welsh/Asian British: Chinese	70.24	68.91-71.54	76.53	75.34-77.68	76.38	75.19-77.54	79.30	78.17-80.38	79.54	78.42-80.62	84.17	83.24-85.05	86.42	85.59-87.22	86.44	85.60-87.23
Low-intensity	Asian/Asian Welsh/Asian British: Indian	78.18	77.70-78.66	82.97	82.55-83.38	82.93	82.51-83.34	85.68	85.31-86.05	85.89	85.51-86.25	89.71	89.42-89.99	91.25	91.00-91.50	91.16	90.91-91.41
Low-intensity	Asian/Asian Welsh/Asian British: Other	70.55	69.66-71.42	75.94	75.13-76.72	75.72	74.91-76.52	79.62	78.88-80.35	79.83	79.09-80.56	85.23	84.64-85.80	88.51	88.02-88.98	88.47	87.98-88.94
Low-intensity	Asian/Asian Welsh/Asian British: Pakistani	60.19	59.51-60.87	65.24	64.57-65.90	65.70	65.03-66.36	70.33	69.69-70.96	70.51	69.87-71.14	80.03	79.52-80.52	84.53	84.10-84.94	84.33	83.90-84.74
Low-intensity	Black/Black Welsh/Black British: African	72.31	71.59-73.02	77.28	76.63-77.91	77.18	76.53-77.82	80.80	80.20-81.38	80.61	80.01-81.20	87.44	87.01-87.86	89.60	89.23-89.96	89.63	89.25-89.99
Low-intensity	Black/Black Welsh/Black British: Caribbean	77.28	76.62-77.93	84.14	83.62-84.65	84.16	83.64-84.67	88.32	87.90-88.74	88.21	87.78-88.63	92.07	91.76-92.37	93.03	92.76-93.30	93.04	92.77-93.31
Low-intensity	Black/Black Welsh/Black British: Other	69.96	68.59-71.28	76.85	75.66-78.00	76.86	75.67-78.01	82.22	81.18-83.22	82.03	80.98-83.04	87.43	86.63-88.19	88.86	88.13-89.54	88.86	88.13-89.54
Low-intensity	Mixed/Multiple	73.86	73.30-74.42	79.84	79.36-80.32	79.68	79.19-80.16	85.66	85.27-86.05	85.61	85.21-85.99	89.73	89.42-90.02	91.07	90.80-91.33	91.09	90.82-91.35
Low-intensity	Other Ethnic Group	70.90	70.09-71.69	77.05	76.33-77.75	76.85	76.13-77.55	81.42	80.77-82.05	81.48	80.83-82.10	86.67	86.17-87.16	89.09	88.67-89.51	89.04	88.61-89.46
Low-intensity	White: English/Welsh/British	75.89	75.80-75.98	83.90	83.83-83.98	83.90	83.81-83.98	87.13	87.06-87.21	87.17	87.10-87.25	90.74	90.68-90.80	92.19	92.13-92.24	92.22	92.17-92.28
Low-intensity	White: Other White	76.63	76.25-77.01	82.63	82.31-82.94	82.35	82.03-82.67	86.54	86.27-86.81	86.55	86.28-86.82	90.27	90.06-90.47	91.37	91.18-91.56	91.39	91.20-91.57
Non-carer	Arab	36.20	35.88-36.52	41.49	41.14-41.84	41.64	41.29-41.99	45.87	45.51-46.24	45.99	45.62-46.36	58.36	57.99-58.73	65.59	65.23-65.95	65.77	65.41-66.13
Non-carer	Asian/Asian Welsh/Asian British: Bangladeshi	40.33	40.10-40.56	45.83	45.58-46.08	45.95	45.70-46.20	50.57	50.31-50.83	51.00	50.74-51.27	64.18	63.92-64.44	74.34	74.12-74.56	74.36	74.14-74.58
Non-carer	Asian/Asian Welsh/Asian British: Chinese	62.52	62.28-62.76	68.32	68.09-68.55	68.13	67.90-68.37	69.72	69.49-69.95	69.94	69.70-70.17	75.62	75.40-75.83	80.26	80.07-80.45	80.34	80.16-80.53
Non-carer	Asian/Asian Welsh/Asian British: Indian	69.30	69.18-69.42	74.82	74.70-74.93	74.70	74.58-74.82	77.36	77.24-77.47	77.70	77.57-77.82	83.23	83.13-83.34	86.75	86.66-86.83	86.74	86.65-86.83
Non-carer	Asian/Asian Welsh/Asian British: Other	62.24	62.07-62.40	67.50	67.33-67.66	67.14	66.97-67.31	69.77	69.60-69.94	70.07	69.90-70.24	77.35	77.20-77.50	83.40	83.28-83.53	83.46	83.34-83.58
Non-carer	Asian/Asian Welsh/Asian British: Pakistani	42.75	42.60-42.90	48.86	48.70-49.03	49.40	49.22-49.58	53.79	53.60-53.97	54.06	53.87-54.25	67.17	66.99-67.35	75.42	75.26-75.58	75.36	75.20-75.52
Non-carer	Black/Black Welsh/Black British: African	63.49	63.35-63.62	69.26	69.13-69.40	69.16	69.02-69.30	72.14	72.00-72.27	71.96	71.81-72.10	81.44	81.32-81.55	85.18	85.08-85.28	85.28	85.18-85.37

Non-carer	Black/Black Welsh/Black British: Caribbean	68.94	68.74-69.14	76.91	76.73-77.08	76.87	76.69-77.05	81.92	81.76-82.08	81.73	81.57-81.90	87.41	87.28-87.53	89.80	89.70-89.91	89.84	89.74-89.94
Non-carer	Black/Black Welsh/Black British: Other	61.24	60.86-61.61	69.74	69.39-70.09	69.67	69.32-70.02	75.35	75.02-75.67	75.14	74.81-75.47	82.66	82.40-82.92	85.74	85.51-85.96	85.80	85.57-86.02
Non-carer	Mixed/Multiple	67.69	67.54-67.84	74.56	74.42-74.70	74.36	74.21-74.50	79.88	79.75-80.01	79.81	79.67-79.94	85.24	85.13-85.34	88.26	88.17-88.35	88.31	88.22-88.40
Non-carer	Other Ethnic Group	57.60	57.42-57.78	63.35	63.17-63.54	63.15	62.96-63.34	67.25	67.06-67.43	67.33	67.14-67.52	75.66	75.49-75.83	82.93	82.80-83.06	82.98	82.85-83.11
Non-carer	White: English/Welsh/British	73.20	73.17-73.22	80.56	80.52-80.61	80.54	80.48-80.60	85.09	85.03-85.14	85.06	85.00-85.12	89.26	89.21-89.31	91.82	91.78-91.86	91.87	91.83-91.90
Non-carer	White: Other White	76.53	76.46-76.59	80.43	80.36-80.50	80.12	80.05-80.20	82.68	82.61-82.75	82.65	82.58-82.73	86.90	86.84-86.97	90.46	90.41-90.51	90.50	90.45-90.55

4.7: Male Employment Nested Regression Output

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7		Model 8	
Term	**OR**	**95% CI**	**OR**	**95% CI**	**OR**	**95% CI**	**OR**	**95% CI**	**OR**	**95% CI**	**OR**	**95% CI**	**OR**	**95% CI**	**OR**	**95% CI**
(Intercept)	3.83***	3.83-3.84	0.66***	0.66-0.67	0.65***	0.64-0.65	0.75***	0.74-0.75	0.80***	0.80-0.81	0.70***	0.70-0.71	0.87***	0.86-0.87	0.87***	0.86-0.87
Care (Ref: Non-Carer)																
High-Intensity	0.23***	0.23-0.24	0.21***	0.20-0.21	0.21***	0.21-0.21	0.21***	0.21-0.21	0.20***	0.20-0.20	0.20***	0.19-0.20	0.21***	0.20-0.21	0.21***	0.20-0.21
Mid-Intensity	0.46***	0.45-0.46	0.43***	0.43-0.44	0.44***	0.44-0.44	0.45***	0.45-0.46	0.45***	0.45-0.46	0.45***	0.45-0.46	0.47***	0.47-0.47	0.47***	0.47-0.48
Low-Intensity	1.02***	1.01-1.02	1.07***	1.06-1.08	1.07***	1.06-1.08	1.04***	1.03-1.05	1.01**	1.00-1.02	1.02***	1.01-1.02	0.93***	0.92-0.93	0.93***	0.92-0.93
Ethnicity (Ref: White: English/ Welsh/ British)																
Arab	0.37***	0.37-0.38	0.32***	0.31-0.32	0.32***	0.32-0.33	0.28***	0.27-0.28	0.23***	0.22-0.23	0.23***	0.23-0.23	0.24***	0.24-0.24	0.24***	0.24-0.24
Asian/Asian Welsh/Asian British: Bangladeshi	0.58***	0.57-0.58	0.51***	0.51-0.52	0.52***	0.52-0.53	0.46***	0.46-0.47	0.36***	0.36-0.37	0.35***	0.35-0.36	0.39***	0.39-0.40	0.39***	0.39-0.40
Asian/Asian Welsh/Asian British: Chinese	0.59***	0.59-0.60	0.51***	0.51-0.52	0.51***	0.51-0.52	0.38***	0.37-0.38	0.33***	0.33-0.34	0.34***	0.33-0.34	0.34***	0.33-0.34	0.34***	0.33-0.34
Asian/Asian Welsh/Asian British: Indian	1.06***	1.05-1.07	0.91***	0.91-0.92	0.91***	0.90-0.92	0.73***	0.73-0.74	0.60***	0.59-0.60	0.59***	0.58-0.59	0.58***	0.58-0.58	0.58***	0.58-0.59
Asian/Asian Welsh/Asian British: Other	0.72***	0.72-0.73	0.62***	0.61-0.62	0.61***	0.61-0.62	0.50***	0.50-0.51	0.42***	0.41-0.42	0.41***	0.41-0.42	0.45***	0.44-0.45	0.45***	0.44-0.45
Asian/Asian Welsh/Asian British: Pakistani	0.64***	0.64-0.65	0.58***	0.57-0.58	0.60***	0.60-0.60	0.52***	0.52-0.53	0.41***	0.40-0.41	0.41***	0.40-0.41	0.44***	0.43-0.44	0.44***	0.44-0.44
Black/Black Welsh/Black British: African	0.60***	0.60-0.60	0.54***	0.54-0.54	0.54***	0.54-0.54	0.42***	0.42-0.42	0.39***	0.38-0.39	0.39***	0.38-0.39	0.37***	0.37-0.38	0.37***	0.37-0.38
Black/Black Welsh/Black British: Caribbean	0.56***	0.56-0.57	0.54***	0.53-0.54	0.54***	0.53-0.54	0.48***	0.48-0.49	0.53***	0.52-0.54	0.52***	0.52-0.53	0.54***	0.53-0.54	0.54***	0.53-0.54
Black/Black Welsh/Black British: Other	0.41***	0.40-0.41	0.40***	0.40-0.41	0.40***	0.40-0.41	0.36***	0.36-0.37	0.39***	0.38-0.40	0.39***	0.38-0.39	0.39***	0.38-0.40	0.39***	0.38-0.40
Mixed/Multiple	0.63***	0.62-0.63	0.62***	0.62-0.63	0.61***	0.61-0.62	0.59***	0.59-0.60	0.60***	0.60-0.61	0.60***	0.60-0.61	0.60***	0.59-0.60	0.60***	0.59-0.60
Other Ethnic Group	0.63***	0.63-0.64	0.52***	0.52-0.53	0.52***	0.52-0.53	0.44***	0.44-0.45	0.39***	0.38-0.39	0.38***	0.38-0.39	0.44***	0.43-0.44	0.44***	0.44-0.44
White: Other White	1.49***	1.48-1.50	1.19***	1.18-1.19	1.16***	1.16-1.17	0.97***	0.97-0.98	0.93***	0.93-0.94	0.93***	0.92-0.93	0.98***	0.97-0.99	0.98***	0.97-0.99
Interaction (Ref: Non-Carer x White: English/ Welsh/ British)																
High-Intensity x Arab	1.73***	1.57-1.90	1.75***	1.59-1.93	1.73***	1.57-1.90	1.67***	1.51-1.85	1.68***	1.51-1.86	1.67***	1.51-1.85	1.60***	1.45-1.78	1.60***	1.45-1.78
Mid-Intensity x Arab	1.28***	1.19-1.38	1.19***	1.10-1.29	1.17***	1.08-1.26	1.14**	1.05-1.23	1.11*	1.02-1.21	1.13**	1.04-1.22	1.15***	1.06-1.25	1.15***	1.06-1.25
Low-Intensity x Arab	1.59***	1.48-1.72	1.61***	1.48-1.75	1.59***	1.47-1.72	1.78***	1.63-1.95	1.94***	1.78-2.12	1.91***	1.75-2.08	1.90***	1.74-2.08	1.91***	1.74-2.08

High-Intensity x Asian/Asian Welsh/Asian British: Bangladeshi	1.70***	1.60-1.81	1.60***	1.50-1.71	1.57***	1.47-1.68	1.51***	1.41-1.62	1.48***	1.38-1.59	1.51***	1.41-1.62	1.53***	1.43-1.65	1.54***	1.43-1.66
Mid-Intensity x Asian/Asian Welsh/Asian British: Bangladeshi	1.83***	1.73-1.94	1.62***	1.53-1.72	1.59***	1.50-1.69	1.56***	1.47-1.67	1.55***	1.45-1.65	1.56***	1.47-1.67	1.51***	1.41-1.61	1.51***	1.42-1.61
Low-Intensity x Asian/Asian Welsh/Asian British: Bangladeshi	1.58***	1.50-1.67	1.26***	1.19-1.33	1.26***	1.19-1.33	1.41***	1.32-1.50	1.49***	1.40-1.59	1.50***	1.41-1.59	1.48***	1.39-1.58	1.49***	1.40-1.59
High-Intensity x Asian/Asian Welsh/Asian British: Chinese	1.97***	1.75-2.22	2.32***	2.04-2.63	2.30***	2.02-2.61	2.38***	2.08-2.71	2.53***	2.21-2.89	2.50***	2.19-2.87	2.27***	1.98-2.60	2.27***	1.98-2.61
Mid-Intensity x Asian/Asian Welsh/Asian British: Chinese	2.66***	2.34-3.02	2.56***	2.25-2.93	2.53***	2.22-2.89	2.91***	2.53-3.35	3.09***	2.68-3.56	3.06***	2.66-3.53	3.19***	2.77-3.68	3.19***	2.77-3.68
Low-Intensity x Asian/Asian Welsh/Asian British: Chinese	1.37***	1.26-1.49	1.26***	1.15-1.37	1.25***	1.15-1.37	1.45***	1.33-1.59	1.59***	1.45-1.74	1.59***	1.45-1.74	1.59***	1.45-1.74	1.59***	1.45-1.74
High-Intensity x Asian/Asian Welsh/Asian British: Indian	1.79***	1.71-1.87	2.08***	1.98-2.17	2.06***	1.97-2.16	2.20***	2.10-2.32	2.42***	2.30-2.54	2.44***	2.32-2.56	2.29***	2.18-2.41	2.32***	2.20-2.44
Mid-Intensity x Asian/Asian Welsh/Asian British: Indian	1.59***	1.53-1.66	1.71***	1.64-1.79	1.69***	1.62-1.77	1.77***	1.69-1.86	1.87***	1.78-1.96	1.89***	1.80-1.98	1.81***	1.73-1.90	1.82***	1.74-1.91
Low-Intensity x Asian/Asian Welsh/Asian British: Indian	1.29***	1.25-1.34	1.25***	1.21-1.30	1.26***	1.21-1.30	1.42***	1.37-1.48	1.54***	1.49-1.60	1.55***	1.49-1.61	1.55***	1.49-1.61	1.56***	1.50-1.62
High-Intensity x Asian/Asian Welsh/Asian British: Other	1.92***	1.80-2.04	1.98***	1.86-2.12	1.97***	1.85-2.11	2.11***	1.97-2.27	2.11***	1.97-2.27	2.09***	1.95-2.25	1.97***	1.83-2.12	1.98***	1.84-2.13
Mid-Intensity x Asian/Asian Welsh/Asian British: Other	2.31***	2.17-2.46	2.29***	2.14-2.44	2.25***	2.11-2.40	2.40***	2.23-2.57	2.40***	2.24-2.58	2.41***	2.25-2.59	2.32***	2.16-2.49	2.33***	2.17-2.50
Low-Intensity x Asian/Asian Welsh/Asian British: Other	1.15***	1.09-1.21	1.11***	1.05-1.17	1.12***	1.06-1.18	1.31***	1.23-1.39	1.40***	1.32-1.49	1.39***	1.31-1.48	1.33***	1.25-1.41	1.34***	1.26-1.42
High-Intensity x Asian/Asian Welsh/Asian British: Pakistani	1.84***	1.76-1.92	1.72***	1.64-1.79	1.70***	1.62-1.77	1.60***	1.53-1.68	1.63***	1.56-1.71	1.67***	1.59-1.75	1.59***	1.51-1.67	1.60***	1.52-1.68
Mid-Intensity x Asian/Asian Welsh/Asian British: Pakistani	1.58***	1.52-1.64	1.45***	1.39-1.51	1.43***	1.38-1.49	1.41***	1.36-1.47	1.40***	1.35-1.46	1.42***	1.36-1.48	1.37***	1.31-1.43	1.37***	1.32-1.43
Low-Intensity x Asian/Asian Welsh/Asian British: Pakistani	1.50***	1.44-1.55	1.35***	1.30-1.40	1.34***	1.29-1.40	1.48***	1.42-1.54	1.59***	1.52-1.65	1.58***	1.52-1.65	1.53***	1.47-1.60	1.54***	1.48-1.60
High-Intensity x Black/Black Welsh/Black British: African	2.79***	2.63-2.95	2.58***	2.43-2.74	2.54***	2.40-2.70	2.58***	2.42-2.75	2.61***	2.45-2.78	2.64***	2.48-2.81	2.42***	2.27-2.58	2.42***	2.27-2.58
Mid-Intensity x Black/Black Welsh/Black British: African	3.18***	3.03-3.33	2.94***	2.80-3.09	2.88***	2.74-3.02	2.89***	2.75-3.05	2.90***	2.75-3.06	2.90***	2.75-3.06	2.80***	2.65-2.95	2.80***	2.65-2.95

Low-Intensity x Black/Black Welsh/Black British: African	1.28***	1.22-1.34	1.14***	1.09-1.19	1.14***	1.09-1.19	1.37***	1.30-1.44	1.46***	1.38-1.53	1.45***	1.38-1.53	1.47***	1.40-1.55	1.48***	1.40-1.55
High-Intensity x Black/Black Welsh/Black British: Caribbean	1.75***	1.63-1.87	1.80***	1.68-1.93	1.78***	1.66-1.91	1.68***	1.56-1.81	1.79***	1.66-1.93	1.79***	1.66-1.94	1.67***	1.55-1.80	1.67***	1.55-1.81
Mid-Intensity x Black/Black Welsh/Black British: Caribbean	1.63***	1.54-1.74	1.66***	1.56-1.78	1.64***	1.54-1.75	1.62***	1.51-1.74	1.63***	1.52-1.75	1.63***	1.52-1.75	1.54***	1.44-1.66	1.54***	1.44-1.66
Low-Intensity x Black/Black Welsh/Black British: Caribbean	1.26***	1.20-1.32	1.20***	1.14-1.26	1.21***	1.15-1.27	1.29***	1.22-1.36	1.32***	1.25-1.39	1.32***	1.25-1.39	1.33***	1.26-1.41	1.34***	1.27-1.41
High-Intensity x Black/Black Welsh/Black British: Other	1.86***	1.66-2.09	1.84***	1.64-2.08	1.82***	1.62-2.06	1.76***	1.55-1.99	1.94***	1.70-2.20	1.99***	1.75-2.26	1.90***	1.67-2.16	1.91***	1.68-2.17
Mid-Intensity x Black/Black Welsh/Black British: Other	2.40***	2.17-2.66	2.30***	2.07-2.56	2.28***	2.05-2.53	2.19***	1.96-2.45	2.31***	2.06-2.58	2.32***	2.07-2.60	2.20***	1.96-2.46	2.20***	1.96-2.47
Low-Intensity x Black/Black Welsh/Black British: Other	1.18***	1.09-1.27	1.05	0.96-1.14	1.05	0.97-1.14	1.08	0.99-1.18	1.16**	1.06-1.26	1.16**	1.06-1.26	1.19***	1.09-1.30	1.19***	1.09-1.30
High-Intensity x Mixed/Multiple	1.51***	1.44-1.60	1.38***	1.31-1.46	1.37***	1.29-1.44	1.43***	1.35-1.52	1.51***	1.43-1.61	1.51***	1.42-1.60	1.50***	1.41-1.59	1.50***	1.41-1.59
Mid-Intensity x Mixed/Multiple	1.34***	1.28-1.41	1.28***	1.22-1.35	1.27***	1.21-1.34	1.27***	1.20-1.34	1.32***	1.25-1.40	1.32***	1.25-1.39	1.30***	1.23-1.38	1.30***	1.23-1.38
Low-Intensity x Mixed/Multiple	1.22***	1.17-1.26	1.11***	1.07-1.15	1.11***	1.07-1.16	1.27***	1.22-1.32	1.33***	1.28-1.39	1.33***	1.27-1.38	1.36***	1.30-1.42	1.36***	1.30-1.42
High-Intensity x Other Ethnic Group	1.52***	1.43-1.61	1.64***	1.54-1.74	1.62***	1.52-1.71	1.69***	1.58-1.80	1.70***	1.60-1.82	1.72***	1.61-1.83	1.61***	1.51-1.72	1.62***	1.52-1.72
Mid-Intensity x Other Ethnic Group	1.90***	1.80-2.01	1.94***	1.83-2.05	1.92***	1.81-2.03	2.09***	1.97-2.22	2.08***	1.96-2.21	2.08***	1.96-2.21	1.98***	1.86-2.10	1.99***	1.87-2.11
Low-Intensity x Other Ethnic Group	1.35***	1.29-1.42	1.37***	1.30-1.43	1.37***	1.30-1.44	1.67***	1.58-1.76	1.76***	1.67-1.85	1.75***	1.66-1.84	1.58***	1.49-1.66	1.58***	1.50-1.67
High-Intensity x White: Other White	1.02	0.99-1.05	1.16***	1.12-1.20	1.15***	1.11-1.19	1.33***	1.28-1.38	1.33***	1.28-1.38	1.32***	1.27-1.37	1.24***	1.19-1.29	1.24***	1.19-1.29
Mid-Intensity x White: Other White	1.08***	1.05-1.12	1.17***	1.13-1.22	1.15***	1.11-1.20	1.30***	1.25-1.35	1.30***	1.25-1.36	1.30***	1.25-1.35	1.28***	1.23-1.33	1.28***	1.23-1.33
Low-Intensity x White: Other White	0.73***	0.71-0.75	0.79***	0.76-0.81	0.79***	0.76-0.81	1.00	0.97-1.03	1.06**	1.02-1.09	1.06***	1.02-1.09	0.98	0.95-1.01	0.98	0.95-1.02
Age																
Age Spline 1			10.66***	10.58-10.73	10.72***	10.65-10.80	13.21***	13.12-13.31	8.26***	8.20-8.32	8.58***	8.52-8.65	9.22***	9.15-9.29	9.21***	9.14-9.28
Age Spline 2			10.92***	10.83-11.01	10.91***	10.82-11.00	14.97***	14.84-15.11	8.62***	8.55-8.70	9.08***	9.00-9.16	9.31***	9.22-9.40	9.30***	9.21-9.39
Age Spline 3			4.57***	4.55-4.60	4.58***	4.55-4.61	6.72***	6.68-6.77	3.61***	3.58-3.63	3.84***	3.82-3.87	4.63***	4.60-4.67	4.63***	4.59-4.66
Age Spline 4			29.56***	29.21-29.92	29.90***	29.54-30.27	50.71***	50.06-51.35	24.19***	23.87-24.51	31.77***	31.34-32.21	33.10***	32.63-33.57	33.26***	32.80-33.74
Age Spline 5			0.39***	0.38-0.39	0.38***	0.38-0.38	0.45***	0.45-0.45	0.21***	0.21-0.21	0.23***	0.23-0.23	0.27***	0.27-0.27	0.27***	0.27-0.27
Region (Ref: London)																

East of England	1.23***	1.22-1.23	1.23***	1.22-1.23	1.16***	1.15-1.17	1.15***	1.15-1.16	1.21***	1.20-1.22	1.21***	1.20-1.22
East Midlands	1.09***	1.08-1.09	1.13***	1.12-1.14	1.07***	1.07-1.08	1.07***	1.06-1.08	1.13***	1.13-1.14	1.13***	1.13-1.14
North East	0.75***	0.75-0.76	0.81***	0.80-0.82	0.78***	0.77-0.78	0.78***	0.77-0.78	0.81***	0.80-0.81	0.81***	0.80-0.81
North West	0.89***	0.88-0.89	0.95***	0.95-0.96	0.92***	0.92-0.93	0.92***	0.92-0.93	0.97***	0.96-0.97	0.97***	0.96-0.97
South East	1.26***	1.25-1.26	1.23***	1.23-1.24	1.16***	1.16-1.17	1.16***	1.15-1.16	1.18***	1.17-1.18	1.18***	1.17-1.18
South West	1.15***	1.14-1.15	1.17***	1.17-1.18	1.11***	1.11-1.12	1.11***	1.10-1.12	1.13***	1.12-1.14	1.13***	1.12-1.14
West Midlands	0.94***	0.94-0.95	0.98***	0.97-0.98	0.94***	0.93-0.94	0.94***	0.93-0.94	1.00	1.00-1.01	1.00	1.00-1.01
Yorkshire and the Humber	0.93***	0.93-0.94	0.98***	0.97-0.98	0.93***	0.93-0.94	0.93***	0.93-0.94	0.99**	0.99-1.00	0.99**	0.99-1.00
Wales	0.84***	0.84-0.85	0.94***	0.93-0.94	0.89***	0.89-0.90	0.89***	0.89-0.90	0.94***	0.93-0.94	0.94***	0.93-0.94
Disability (Ref: Not Disabled: No Long-Term Conditions)												
Disabled: Activity Reduced a Little			0.29***	0.29-0.29	0.31***	0.31-0.31	0.31***	0.31-0.32	0.32***	0.32-0.32	0.32***	0.32-0.32
Disabled: Activity Reduced a Lot			0.04***	0.04-0.04	0.04***	0.04-0.04	0.04***	0.04-0.04	0.05***	0.05-0.05	0.05***	0.05-0.05
Not Disabled: Long-Term Condition, Activity Not Reduced			0.91***	0.91-0.91	0.90***	0.90-0.91	0.91***	0.91-0.91	0.86***	0.85-0.86	0.86***	0.85-0.86
Marital Status (Ref: Single)												
Married/in a Civil Partnership					2.61***	2.60-2.62	2.44***	2.43-2.45	2.28***	2.27-2.29	2.28***	2.27-2.28
Separated/Divorced/Legally Dissolved Civil Partnership					1.70***	1.69-1.71	1.67***	1.66-1.68	1.63***	1.62-1.63	1.63***	1.62-1.63
Widowed/Surviving Partner of Civil Partnership					1.21***	1.19-1.22	1.16***	1.14-1.18	1.15***	1.14-1.17	1.15***	1.14-1.17
Dependent Children (Ref: No Dependent Children <18)												
1 dependent child < 18							1.33***	1.32-1.33	1.35***	1.34-1.35	1.36***	1.35-1.36
2 dependent children < 18							1.38***	1.37-1.39	1.39***	1.38-1.40	1.40***	1.39-1.40
3+ dependent children < 18							0.93***	0.92-0.93	1.01*	1.00-1.01	1.01***	1.01-1.02
Highest Qualification (Ref: Level 4+ Qualifications)												

Apprenticeship	0.98***	0.98-0.99	0.99***	0.98-0.99
Level 1 Qualifications	0.61***	0.61-0.61	0.61***	0.61-0.61
Level 2 Qualifications	0.76***	0.76-0.76	0.76***	0.76-0.76
Level 3 Qualifications	0.87***	0.87-0.87	0.87***	0.87-0.87
No Qualifications	0.36***	0.36-0.36	0.36***	0.36-0.36
Other Qualifications	0.65***	0.65-0.66	0.65***	0.65-0.66
Multigenerational Living (Ref: Non-Multigeneration Household)				
Multigeneration Household			0.93***	0.92-0.94

** p≤ 0.05, ** p ≤ 0.01, *** p ≤ 0.001*

4.8: Female Employment Nested Regression Output

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7		Model 8	
Term	**OR**	**95% CI**	**OR**	**95% CI**	**OR**	**95% CI**	**OR**	**95% CI**	**OR**	**95% CI**	**OR**	**95% CI**	**OR**	**95% CI**	**OR**	**95% CI**
(Intercept)	2.73***	2.73-2.73	0.78***	0.78-0.79	0.78***	0.78-0.79	0.91***	0.91-0.92	0.91***	0.91-0.92	1.19***	1.18-1.19	1.66***	1.65-1.68	1.67***	1.66-1.68
Care (Ref: Non-Carer)																
High-Intensity	0.23***	0.23-0.23	0.21***	0.21-0.21	0.21***	0.21-0.21	0.22***	0.22-0.23	0.22***	0.22-0.22	0.25***	0.25-0.25	0.27***	0.27-0.27	0.27***	0.27-0.27
Mid-Intensity	0.43***	0.43-0.44	0.43***	0.43-0.43	0.44***	0.43-0.44	0.46***	0.45-0.46	0.45***	0.45-0.46	0.47***	0.47-0.48	0.50***	0.49-0.50	0.50***	0.49-0.50
Low-Intensity	1.15***	1.15-1.16	1.26***	1.25-1.26	1.26***	1.25-1.27	1.19***	1.18-1.19	1.19***	1.19-1.20	1.18***	1.17-1.18	1.05***	1.05-1.06	1.05***	1.04-1.06
Ethnicity (Ref: White: English/ Welsh/ British)																
Arab	0.21***	0.20-0.21	0.17***	0.17-0.17	0.17***	0.17-0.17	0.15***	0.15-0.15	0.15***	0.15-0.15	0.17***	0.17-0.17	0.17***	0.17-0.17	0.17***	0.17-0.17
Asian/Asian Welsh/Asian British: Bangladeshi	0.25***	0.25-0.25	0.20***	0.20-0.21	0.21***	0.20-0.21	0.18***	0.18-0.18	0.18***	0.18-0.18	0.22***	0.21-0.22	0.26***	0.26-0.26	0.26***	0.25-0.26
Asian/Asian Welsh/Asian British: Chinese	0.61***	0.60-0.62	0.52***	0.51-0.53	0.52***	0.51-0.52	0.40***	0.40-0.41	0.41***	0.40-0.41	0.37***	0.37-0.38	0.36***	0.36-0.37	0.36***	0.36-0.37
Asian/Asian Welsh/Asian British: Indian	0.83***	0.82-0.83	0.72***	0.71-0.72	0.71***	0.71-0.72	0.60***	0.59-0.60	0.61***	0.61-0.62	0.60***	0.59-0.60	0.58***	0.58-0.59	0.58***	0.58-0.58
Asian/Asian Welsh/Asian British: Other	0.60***	0.60-0.61	0.50***	0.50-0.50	0.49***	0.49-0.50	0.40***	0.40-0.41	0.41***	0.41-0.41	0.41***	0.41-0.41	0.45***	0.44-0.45	0.45***	0.44-0.45
Asian/Asian Welsh/Asian British: Pakistani	0.27***	0.27-0.28	0.23***	0.23-0.23	0.24***	0.23-0.24	0.20***	0.20-0.21	0.21***	0.21-0.21	0.25***	0.24-0.25	0.27***	0.27-0.28	0.27***	0.27-0.27
Black/Black Welsh/Black British: African	0.64***	0.63-0.64	0.54***	0.54-0.55	0.54***	0.54-0.55	0.45***	0.45-0.46	0.45***	0.45-0.45	0.53***	0.52-0.53	0.51***	0.51-0.52	0.51***	0.51-0.52
Black/Black Welsh/Black British: Caribbean	0.81***	0.81-0.82	0.80***	0.80-0.81	0.80***	0.80-0.81	0.79***	0.79-0.80	0.79***	0.78-0.79	0.84***	0.83-0.84	0.78***	0.78-0.79	0.78***	0.77-0.79
Black/Black Welsh/Black British: Other	0.58***	0.57-0.59	0.56***	0.55-0.57	0.55***	0.55-0.56	0.54***	0.53-0.55	0.53***	0.52-0.54	0.57***	0.56-0.58	0.54***	0.53-0.55	0.53***	0.53-0.54
Mixed/Multiple	0.77***	0.76-0.77	0.71***	0.70-0.71	0.70***	0.70-0.71	0.70***	0.69-0.70	0.69***	0.69-0.70	0.69***	0.69-0.70	0.67***	0.66-0.67	0.67***	0.66-0.67
Other Ethnic Group	0.50***	0.49-0.50	0.42***	0.41-0.42	0.41***	0.41-0.42	0.36***	0.36-0.36	0.36***	0.36-0.36	0.37***	0.37-0.38	0.43***	0.43-0.44	0.43***	0.43-0.44
White: Other White	1.19***	1.19-1.20	0.99***	0.99-1.00	0.97***	0.97-0.98	0.84***	0.83-0.84	0.84***	0.83-0.84	0.80***	0.79-0.80	0.85***	0.84-0.85	0.84***	0.84-0.85
Interaction (Ref: Non-Carer x White: English/ Welsh/ British)																
High-Intensity x Arab	1.64***	1.51-1.78	1.69***	1.55-1.84	1.68***	1.55-1.83	1.55***	1.43-1.69	1.57***	1.44-1.71	1.51***	1.38-1.64	1.58***	1.45-1.73	1.57***	1.44-1.72
Mid-Intensity x Arab	1.98***	1.84-2.12	1.86***	1.73-2.00	1.85***	1.72-1.99	1.76***	1.64-1.90	1.76***	1.63-1.90	1.78***	1.65-1.92	1.87***	1.73-2.02	1.86***	1.72-2.01
Low-Intensity x Arab	1.56***	1.45-1.69	1.43***	1.32-1.54	1.42***	1.31-1.54	1.63***	1.51-1.77	1.62***	1.49-1.75	1.60***	1.47-1.73	1.70***	1.56-1.84	1.69***	1.55-1.84

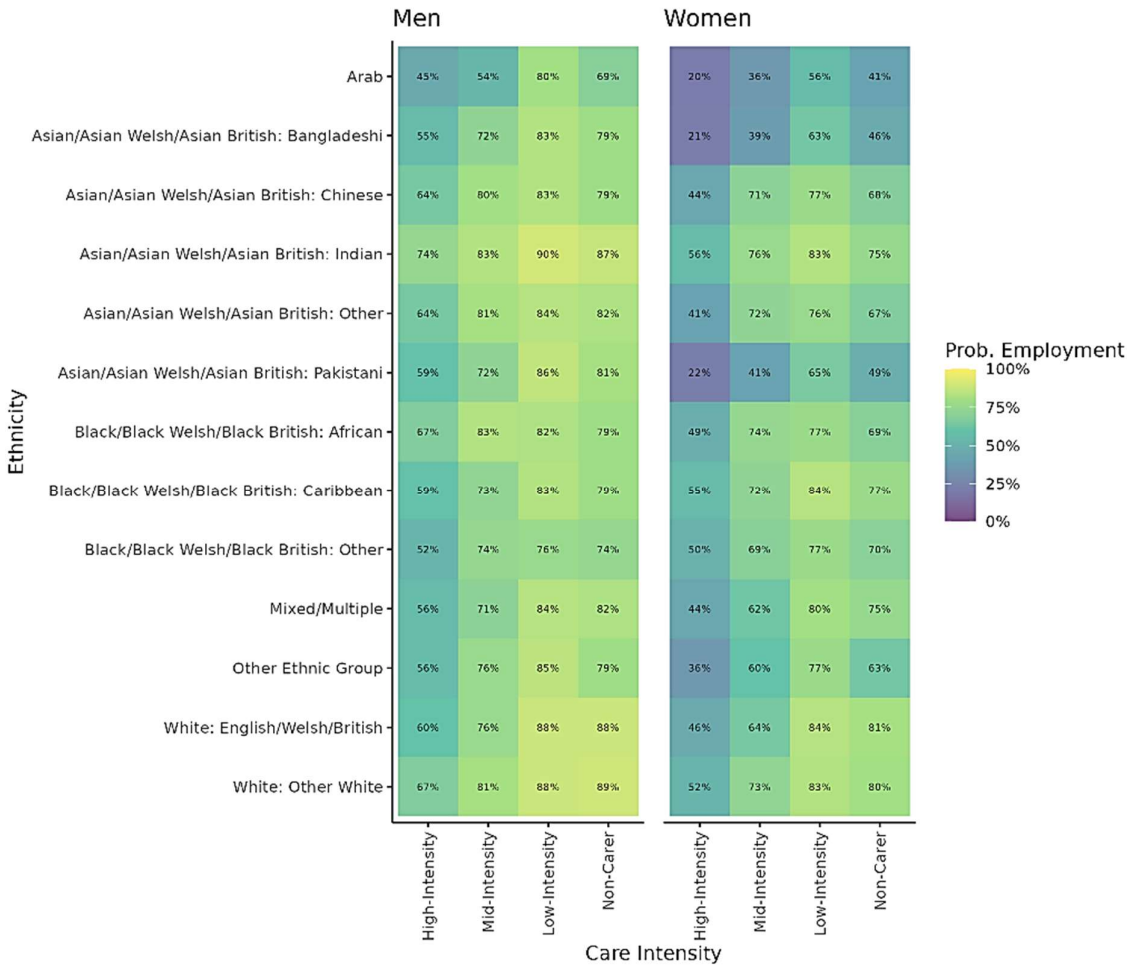
High-Intensity x Asian/Asian Welsh/Asian British: Bangladeshi	1.44***	1.36-1.52	1.46***	1.38-1.54	1.45***	1.37-1.54	1.36***	1.28-1.44	1.37***	1.29-1.45	1.21***	1.15-1.29	1.30***	1.23-1.38	1.28***	1.21-1.36
Mid-Intensity x Asian/Asian Welsh/Asian British: Bangladeshi	1.93***	1.84-2.03	1.75***	1.66-1.84	1.73***	1.65-1.82	1.71***	1.63-1.80	1.71***	1.63-1.80	1.60***	1.52-1.69	1.61***	1.53-1.70	1.59***	1.51-1.68
Low-Intensity x Asian/Asian Welsh/Asian British: Bangladeshi	1.82***	1.74-1.91	1.61***	1.53-1.69	1.61***	1.53-1.68	1.87***	1.78-1.97	1.85***	1.76-1.95	1.81***	1.72-1.91	1.84***	1.75-1.94	1.82***	1.72-1.91
High-Intensity x Asian/Asian Welsh/Asian British: Chinese	1.46***	1.35-1.59	1.71***	1.57-1.86	1.70***	1.56-1.85	1.65***	1.52-1.80	1.66***	1.52-1.81	1.60***	1.46-1.74	1.48***	1.36-1.62	1.48***	1.35-1.62
Mid-Intensity x Asian/Asian Welsh/Asian British: Chinese	2.41***	2.20-2.64	2.59***	2.36-2.85	2.54***	2.32-2.80	2.66***	2.41-2.93	2.67***	2.43-2.95	2.69***	2.44-2.97	2.69***	2.43-2.98	2.69***	2.43-2.98
Low-Intensity x Asian/Asian Welsh/Asian British: Chinese	1.23***	1.15-1.31	1.20***	1.13-1.28	1.20***	1.12-1.28	1.40***	1.31-1.50	1.40***	1.31-1.50	1.45***	1.36-1.56	1.49***	1.39-1.60	1.48***	1.38-1.59
High-Intensity x Asian/Asian Welsh/Asian British: Indian	1.71***	1.66-1.77	2.04***	1.98-2.11	2.05***	1.98-2.12	1.97***	1.91-2.04	1.98***	1.91-2.05	1.83***	1.77-1.89	1.81***	1.74-1.87	1.78***	1.71-1.84
Mid-Intensity x Asian/Asian Welsh/Asian British: Indian	2.31***	2.24-2.39	2.43***	2.34-2.51	2.41***	2.33-2.50	2.42***	2.33-2.51	2.43***	2.34-2.52	2.39***	2.30-2.48	2.38***	2.29-2.47	2.35***	2.26-2.44
Low-Intensity x Asian/Asian Welsh/Asian British: Indian	1.38***	1.34-1.42	1.30***	1.27-1.34	1.31***	1.27-1.35	1.48***	1.43-1.52	1.46***	1.42-1.51	1.49***	1.44-1.54	1.52***	1.47-1.57	1.50***	1.45-1.55
High-Intensity x Asian/Asian Welsh/Asian British: Other	1.47***	1.40-1.53	1.60***	1.53-1.67	1.61***	1.54-1.68	1.54***	1.47-1.61	1.55***	1.48-1.63	1.43***	1.36-1.49	1.38***	1.32-1.45	1.38***	1.31-1.44
Mid-Intensity x Asian/Asian Welsh/Asian British: Other	2.82***	2.70-2.95	2.81***	2.68-2.94	2.78***	2.65-2.91	2.79***	2.66-2.92	2.81***	2.68-2.94	2.75***	2.62-2.88	2.71***	2.58-2.85	2.70***	2.57-2.84
Low-Intensity x Asian/Asian Welsh/Asian British: Other	1.26***	1.21-1.32	1.21***	1.16-1.26	1.21***	1.16-1.27	1.43***	1.36-1.49	1.42***	1.35-1.48	1.43***	1.37-1.50	1.46***	1.39-1.53	1.45***	1.38-1.52
High-Intensity x Asian/Asian Welsh/Asian British: Pakistani	1.44***	1.39-1.49	1.44***	1.39-1.49	1.44***	1.39-1.49	1.30***	1.25-1.34	1.31***	1.26-1.35	1.16***	1.12-1.20	1.21***	1.17-1.26	1.20***	1.16-1.25
Mid-Intensity x Asian/Asian Welsh/Asian British: Pakistani	1.80***	1.75-1.85	1.68***	1.63-1.73	1.67***	1.62-1.72	1.58***	1.53-1.63	1.58***	1.53-1.63	1.48***	1.43-1.53	1.51***	1.46-1.56	1.49***	1.44-1.54
Low-Intensity x Asian/Asian Welsh/Asian British: Pakistani	1.76***	1.71-1.81	1.56***	1.52-1.61	1.56***	1.51-1.61	1.72***	1.66-1.77	1.70***	1.65-1.76	1.66***	1.61-1.72	1.69***	1.64-1.75	1.67***	1.62-1.73
High-Intensity x Black/Black Welsh/Black British: African	2.02***	1.95-2.10	2.08***	2.00-2.15	2.06***	1.99-2.14	1.91***	1.84-1.99	1.90***	1.83-1.97	1.85***	1.79-1.93	1.81***	1.74-1.88	1.81***	1.74-1.88
Mid-Intensity x Black/Black Welsh/Black British: African	3.09***	2.99-3.19	2.96***	2.87-3.06	2.93***	2.83-3.03	2.84***	2.75-2.94	2.84***	2.74-2.94	2.82***	2.72-2.92	2.65***	2.56-2.74	2.65***	2.55-2.74

Low-Intensity x Black/Black Welsh/Black British: African	1.30***	1.26-1.35	1.20***	1.16-1.25	1.20***	1.15-1.24	1.37***	1.32-1.42	1.36***	1.31-1.41	1.35***	1.29-1.40	1.43***	1.37-1.48	1.42***	1.36-1.48
High-Intensity x Black/Black Welsh/Black British: Caribbean	1.75***	1.66-1.83	1.78***	1.70-1.88	1.78***	1.69-1.87	1.74***	1.65-1.83	1.74***	1.65-1.83	1.67***	1.58-1.76	1.51***	1.43-1.60	1.50***	1.42-1.59
Mid-Intensity x Black/Black Welsh/Black British: Caribbean	1.81***	1.73-1.89	1.79***	1.70-1.87	1.77***	1.69-1.86	1.70***	1.62-1.79	1.70***	1.62-1.79	1.65***	1.57-1.73	1.54***	1.46-1.62	1.54***	1.46-1.62
Low-Intensity x Black/Black Welsh/Black British: Caribbean	1.33***	1.28-1.38	1.27***	1.22-1.32	1.27***	1.22-1.32	1.41***	1.35-1.47	1.40***	1.34-1.46	1.42***	1.36-1.48	1.44***	1.38-1.51	1.44***	1.38-1.50
High-Intensity x Black/Black Welsh/Black British: Other	2.04***	1.87-2.22	2.07***	1.90-2.27	2.07***	1.90-2.26	1.89***	1.72-2.07	1.88***	1.71-2.06	1.75***	1.60-1.93	1.70***	1.55-1.87	1.69***	1.54-1.86
Mid-Intensity x Black/Black Welsh/Black British: Other	2.31***	2.12-2.51	2.24***	2.05-2.44	2.22***	2.03-2.42	2.08***	1.90-2.28	2.08***	1.90-2.28	2.09***	1.91-2.29	1.91***	1.74-2.10	1.91***	1.74-2.10
Low-Intensity x Black/Black Welsh/Black British: Other	1.28***	1.20-1.37	1.14***	1.07-1.23	1.15***	1.07-1.23	1.27***	1.19-1.37	1.27***	1.18-1.36	1.24***	1.15-1.33	1.26***	1.17-1.36	1.26***	1.17-1.35
High-Intensity x Mixed/Multiple	1.33***	1.28-1.38	1.28***	1.23-1.33	1.28***	1.23-1.33	1.35***	1.30-1.41	1.35***	1.30-1.41	1.39***	1.34-1.45	1.33***	1.27-1.38	1.32***	1.27-1.38
Mid-Intensity x Mixed/Multiple	1.38***	1.32-1.43	1.28***	1.23-1.33	1.28***	1.23-1.33	1.31***	1.26-1.37	1.31***	1.26-1.37	1.34***	1.29-1.40	1.32***	1.26-1.38	1.32***	1.26-1.37
Low-Intensity x Mixed/Multiple	1.17***	1.14-1.21	1.07***	1.04-1.11	1.07***	1.04-1.11	1.27***	1.23-1.31	1.26***	1.22-1.30	1.28***	1.24-1.33	1.29***	1.25-1.33	1.29***	1.25-1.33
High-Intensity x Other Ethnic Group	1.45***	1.38-1.51	1.58***	1.51-1.65	1.57***	1.51-1.65	1.52***	1.45-1.59	1.53***	1.46-1.60	1.45***	1.38-1.52	1.36***	1.30-1.43	1.36***	1.29-1.42
Mid-Intensity x Other Ethnic Group	1.94***	1.86-2.02	2.01***	1.92-2.10	1.99***	1.90-2.07	2.00***	1.91-2.09	2.00***	1.91-2.10	1.97***	1.88-2.07	1.85***	1.76-1.94	1.84***	1.75-1.93
Low-Intensity x Other Ethnic Group	1.56***	1.50-1.62	1.54***	1.48-1.61	1.54***	1.48-1.60	1.80***	1.72-1.88	1.79***	1.71-1.87	1.78***	1.70-1.85	1.60***	1.53-1.67	1.59***	1.52-1.66
High-Intensity x White: Other White	1.15***	1.12-1.17	1.28***	1.25-1.31	1.27***	1.24-1.30	1.32***	1.29-1.36	1.32***	1.29-1.35	1.33***	1.30-1.36	1.21***	1.18-1.24	1.20***	1.17-1.24
Mid-Intensity x White: Other White	1.43***	1.40-1.47	1.51***	1.47-1.55	1.49***	1.45-1.53	1.59***	1.54-1.63	1.58***	1.54-1.63	1.61***	1.56-1.65	1.53***	1.49-1.58	1.53***	1.49-1.57
Low-Intensity x White: Other White	0.87***	0.85-0.89	0.92***	0.90-0.94	0.92***	0.90-0.94	1.13***	1.11-1.16	1.13***	1.10-1.16	1.19***	1.16-1.21	1.06***	1.04-1.09	1.06***	1.04-1.09
Age																
Age Spline 1			4.05***	4.02-4.07	4.05***	4.02-4.07	4.34***	4.31-4.36	4.37***	4.34-4.40	5.59***	5.56-5.63	5.57***	5.53-5.61	5.60***	5.56-5.64
Age Spline 2			5.98***	5.94-6.03	5.96***	5.91-6.00	7.26***	7.21-7.32	7.25***	7.19-7.31	8.07***	8.00-8.13	7.42***	7.35-7.48	7.46***	7.40-7.53
Age Spline 3			3.11***	3.10-3.13	3.11***	3.09-3.12	4.08***	4.06-4.11	4.01***	3.99-4.04	2.99***	2.97-3.01	3.81***	3.78-3.83	3.79***	3.77-3.82
Age Spline 4			11.46***	11.33-11.59	11.46***	11.33-11.59	15.63***	15.44-15.82	15.70***	15.51-15.90	8.59***	8.48-8.70	9.27***	9.15-9.39	9.18***	9.06-9.30
Age Spline 5			0.25***	0.25-0.25	0.25***	0.25-0.25	0.27***	0.27-0.27	0.27***	0.27-0.27	0.21***	0.21-0.21	0.28***	0.28-0.28	0.28***	0.28-0.28
Region (Ref: London)																
East of England					1.09***	1.09-1.10	1.08***	1.07-1.08	1.08***	1.07-1.08	1.11***	1.10-1.11	1.18***	1.17-1.18	1.18***	1.17-1.19
East Midlands					1.00	1.00-1.01	1.03***	1.02-1.03	1.03***	1.03-1.04	1.06***	1.05-1.06	1.16***	1.15-1.16	1.16***	1.15-1.16
North East					0.83***	0.83-0.84	0.89***	0.88-0.89	0.89***	0.88-0.89	0.91***	0.90-0.91	0.98***	0.97-0.98	0.98***	0.97-0.98
North West					0.94***	0.94-0.95	1.00	0.99-1.00	1.00	0.99-1.00	1.03***	1.02-1.03	1.10***	1.09-1.10	1.10***	1.09-1.10

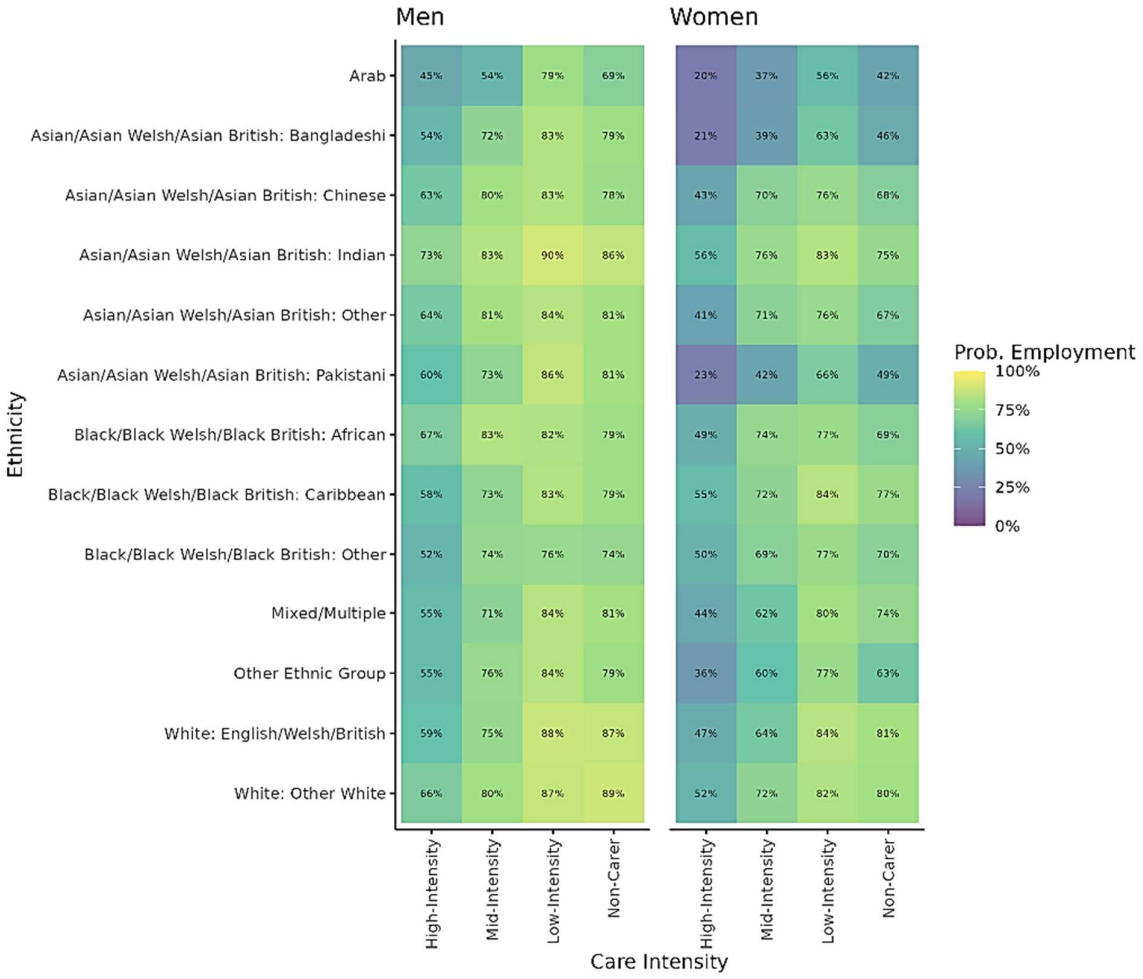
South East	1.13***	1.12-1.13	1.10***	1.10-1.11	1.11***	1.10-1.11	1.13***	1.12-1.13	1.15***	1.15-1.16	1.15***	1.15-1.16
South West	1.11***	1.10-1.11	1.12***	1.11-1.12	1.12***	1.11-1.12	1.14***	1.13-1.14	1.16***	1.15-1.17	1.16***	1.16-1.17
West Midlands	0.93***	0.93-0.94	0.95***	0.95-0.96	0.95***	0.95-0.96	0.99***	0.98-0.99	1.07***	1.07-1.08	1.07***	1.07-1.08
Yorkshire and the Humber	0.93***	0.93-0.94	0.96***	0.95-0.96	0.96***	0.95-0.96	0.98***	0.98-0.99	1.08***	1.07-1.08	1.08***	1.07-1.08
Wales	0.88***	0.87-0.88	0.95***	0.95-0.96	0.96***	0.95-0.96	0.98***	0.98-0.99	1.04***	1.03-1.04	1.04***	1.03-1.04
Disability (Ref: Not Disabled: No Long-Term Conditions)												
Disabled: Activity Reduced a Little			0.46***	0.46-0.46	0.45***	0.45-0.46	0.44***	0.44-0.44	0.45***	0.44-0.45	0.45***	0.44-0.45
Disabled: Activity Reduced a Lot			0.07***	0.07-0.07	0.07***	0.07-0.07	0.06***	0.06-0.06	0.07***	0.07-0.07	0.07***	0.07-0.07
Not Disabled: Long-Term Condition, Activity Not Reduced			1.07***	1.07-1.08	1.07***	1.07-1.08	1.04***	1.04-1.04	0.95***	0.95-0.96	0.95***	0.95-0.96
Marital Status (Ref: Single)												
Married/in a Civil Partnership					0.96***	0.95-0.96	1.12***	1.11-1.12	1.04***	1.04-1.04	1.04***	1.04-1.05
Separated/Divorced/Legally Dissolved Civil Partnership					1.23***	1.22-1.23	1.38***	1.38-1.39	1.35***	1.35-1.36	1.35***	1.35-1.36
Widowed/Surviving Partner of Civil Partnership					0.84***	0.83-0.84	0.96***	0.95-0.96	1.01	1.00-1.01	1.00	0.99-1.01
Dependent Children (Ref: No Dependent Children <18)												
1 dependent child < 18							0.73***	0.72-0.73	0.76***	0.76-0.77	0.75***	0.75-0.76
2 dependent children < 18							0.56***	0.56-0.56	0.59***	0.58-0.59	0.58***	0.58-0.58
3+ dependent children < 18							0.28***	0.28-0.28	0.32***	0.32-0.33	0.32***	0.32-0.32
Highest Qualification (Ref: Level 4+ Qualifications)												
Apprenticeship									0.64***	0.64-0.65	0.64***	0.64-0.65
Level 1 Qualifications									0.43***	0.43-0.43	0.43***	0.43-0.43
Level 2 Qualifications									0.60***	0.60-0.60	0.60***	0.60-0.60
Level 3 Qualifications									0.76***	0.76-0.76	0.76***	0.76-0.76
No Qualifications									0.25***	0.25-0.25	0.25***	0.25-0.25
Other Qualifications									0.44***	0.44-0.45	0.44***	0.44-0.44
Multigenerational Living (Ref: Non-Multigeneration Household)												
Multigeneration Household											1.13***	1.13-1.14

** p≤ 0.05, ** p ≤ 0.01, *** p ≤ 0.001*

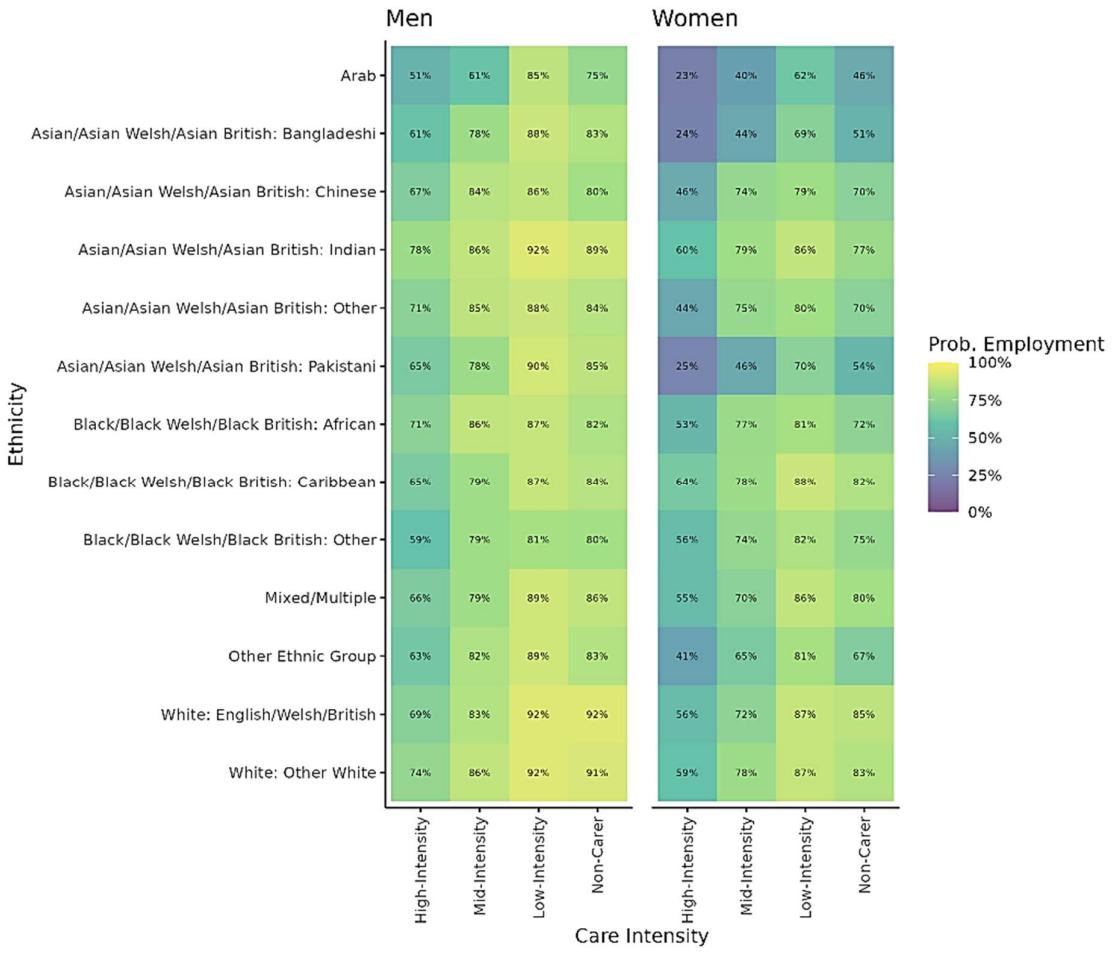
4.9: Plot of Predicted Probabilities of Employment for Men and Women of Different Ethnicities by Caring (Model 2: Controls for Age)



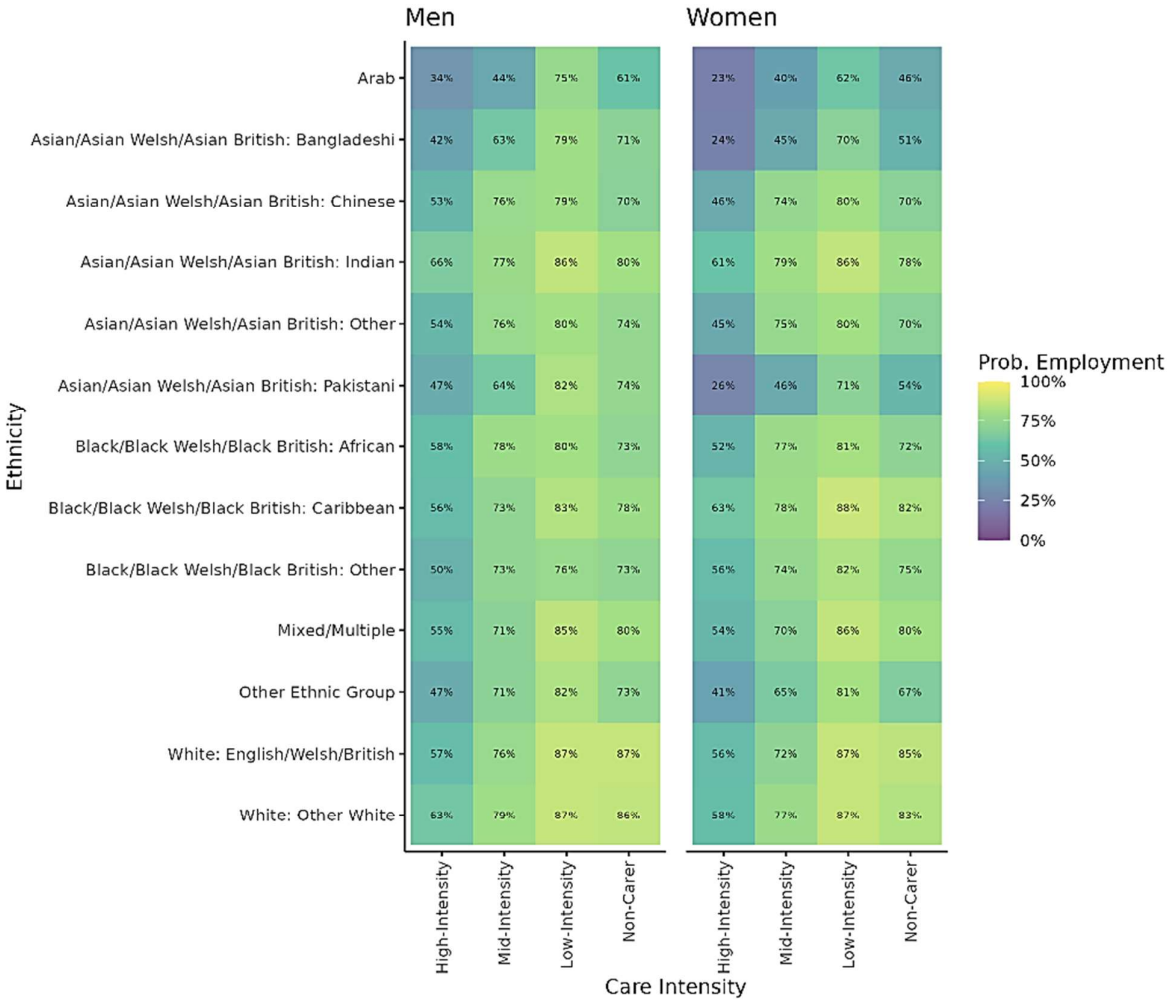
4.10: Plot of Predicted Probabilities of Employment for Men and Women of Different Ethnicities by Caring (Model 3: Controls for Age and Region)



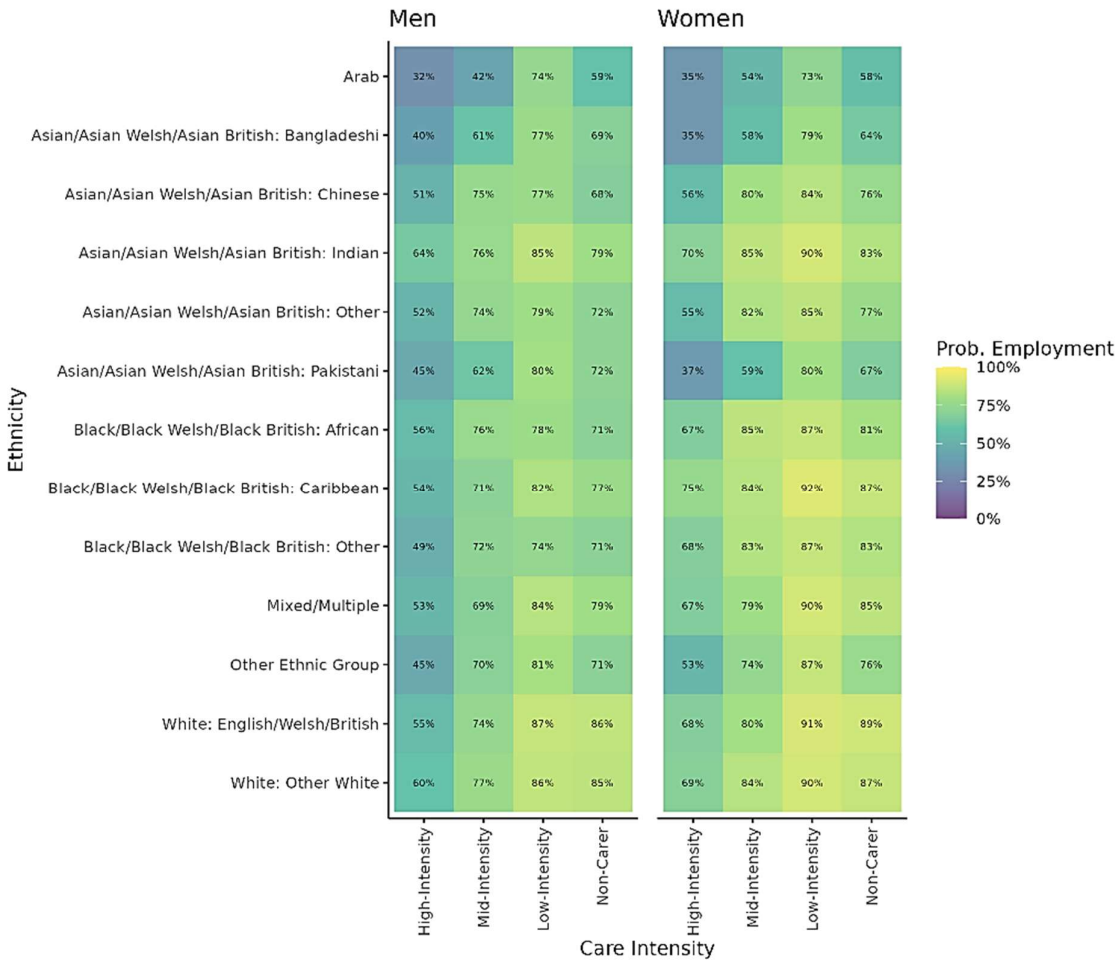
4.11: Plot of Predicted Probabilities of Employment for Men and Women of Different Ethnicities by Caring (Model 4: Controls for Age, Region, and Disability)



4.12: Plot of Predicted Probabilities of Employment for Men and Women of Different Ethnicities by Caring (Model 5: Controls for Age, Region, Disability, and Marital Status)



4.13: Plot of Predicted Probabilities of Employment for Men and Women of Different Ethnicities by Caring (Model 6: Controls for Age, Region, Disability, Marital Status, and Number of Dependent Children)



4.14: Plot of Predicted Probabilities of Employment for Men and Women of Different Ethnicities by Caring (Model 7: Controls for Age, Region, Disability, Marital Status, Number of Dependent Children, and Highest Qualification)