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Association between individual level characteristics and take-up of a Minimum Income Guarantee for Pensioners: Panel Data Analysis using data from the British Household Panel survey 1999–2002

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ABSTRACT

A Minimum Income Guarantee (MIG) ensures people have a minimum amount of income for essentials such as healthy food, housing, health care, social and digital networks to support health and well-being. MIGs could be a useful tool to reduce inequalities. A MIG will only be effective if those who are eligible take it up. The aim of this paper is to explore how individual characteristics were associated with take-up of a MIG for pensioners (aged 60+ for women and aged 65+ for men) in England. The data used is from the British Household Panel Survey including 9430 observations from 1893 people, from 1999 to 2002. We estimated a random effects logistic regression. Results show that women were less likely to claim than men (OR ranging from 0.17 [95% CI 0.10–0.29]-0.73 [95% CI 0.40–1.34]), and couples were less likely to claim (OR ranging from 0.04 [95% CI 0.03–0.06]-0.01 [95%CI 0.01–0.02]) than single person households. People with better mental health (OR 1.05 95% CI 1.02–1.08), older pensioners (75+) (OR ranging from 1.98 [95% CI 1.52–2.59]-2.81 [95%CI 2.16–3.67]), those who were registered disabled (OR 4.03 95% CI 2.50–6.52), and those with no formal qualification (OR ranging from 1.74 [95%CI 0.93–3.26]-2.07 [95% CI 1.22–3.51]) were more likely to claim. Understanding who is likely to claim MIGs is important to avoid social security policy inadvertently increasing inequalities.

1. Introduction

A sufficient income to be able to pay rent, energy bills, buy healthy food, stay connected socially and digitally and access health care are essential for health and well-being (Eurohealthnet, 2023). A minimum income guarantee (MIG) is an income floor or an income level below which no one should fall (IPPR, 2023). Ensuring people have a minimum level of income through cash payments may be a powerful policy tool to ensure a basic standard of living for those with the lowest incomes. This is particularly the case during economic downturns, helping to cushion drops in income from reduced opportunities to participate in the labour market. Altogether, a MIG can contribute to sustainable and inclusive growth by acting as a safety net for those in need during economic downturns, providing people the space to gain additional skills to find alternative employment (European Commission, 2022). For older people, a MIG may help support those with no labour income to be able to participate in social activities, which has been shown to be associated with better health and well-being (Cummins 2000). Additionally, a MIG, can support people investing in their health by being able to afford adequate heating, healthy food, and exercise (Scottish Government 2023). Thus, by ensuring everyone has enough resources to invest in their health and well-being a minimum income guarantee can potentially be a mechanism to reduce health inequalities (Deaton & Paxson, 1998). Because of this, there is growing interest in the introduction of

MIGs with some recent pilot studies completed in Finland (Kangas et al., 2020) and Canada (Ontario Government, 2021), and small pilots in parts of the UK (Jarrow, North East England and Grange, East Finchley, London); (Hussen, 2023).

However, a MIG will only be effective if those who are eligible take-up the programme. If those who are eligible do not access the benefit it reduces the chances that the programme will deliver its intended outcomes. Equity is another key concern when considering take up. If some people particularly those with highest need do not know they are eligible for a minimum income guarantee, they may end up having a lower income because of not claiming and are thus, effectively marginalised (Hernanz et al., 2004; Janssens & Van Mechelen, 2022). Understanding if and how individual's socioeconomic characteristics affect the likelihood of claiming a minimum income guarantee if they are eligible is therefore essential to ensure that the introduction of a minimum income does not increase health inequalities.

Incomplete take up of social security benefits is a universal problem. In economics, which has tended to be the dominant field working in exploring quantitative factors associated with the issue of take-up, the issue has been framed around individual costs and benefits associated with claiming at one point in time and over time (Ko & Moffitt, 2022). Factors such as conditionality and onerous or challenging application processes will reduce the expected benefit to the recipient as well as increase the perceived costs of claiming the benefit. In the long-term, uncertainty over eligibility or benefit level may influence take-up if the person is concerned that they may need to pay the benefit back, increasing the perceived costs vs benefits of claiming. For example, if a person's income is volatile over time, pushing them in and out of eligibility, this may impact their take up of the benefit (Ko & Moffitt, 2022). There are also the practical issues for means-tested benefits, in particular uncertainty around eligibility or complexity of forms, need for a bank account for the benefit to go into, and barriers around submitting forms either electronically (lack of equipment and experience with digital technology) or physically (e.g., mobility issues). Other factors which need to be considered include social stigma and norms about claiming benefits, and the interaction between individual characteristics that may interact with experiences and views of government influencing take-up (Inglis et al., 2019).

The aim of this paper is to understand if and how individual characteristics are associated with the take-up of a MIG for pensioners.

2. Background and research context

When the Labour Government came into power in 1997, the UK became the first country to implement a national strategy to tackle health inequalities (Mackenbach, 2011). This strategy was implemented in the Department of Health's report: 'Reducing Health Inequalities: an action report.' (Macintyre, 1999). The document outlined a number of government strategies including higher benefits and pensions to reduce poverty particularly childhood and pensioner poverty (Toynbee & Walker, 2011). A flagship programme of the Health Inequality Strategy was the Minimum Income Guarantee (MIG) for pensioners.

Minimum Income Guarantee for pensioners in the UK.

Before the introduction of MIG, it was estimated that approximately 2 million people over the age of 60 were experiencing poverty (Albani et al., 2022); out of approximately 8 million people of pensionable age (ONS 2022). The MIG was designed to ensure that all pensioners were receiving a minimum level of income. It was targeted at low-income women over the age of 60 and men over the age of 65. The benefit level was set at three times the level of Income Support, the pre-cursor benefit to MIG (Bozio et al., 2010). The eligibility rules for couples were different to that of single people. For couples, eligibility was based upon at least one person in the couple being 60 or older, one or both people could claim, and eligibility was affected if one household member was in work (State Pension Credit Act, 2002). The benefit level was set at three times the level of the pre-cursor benefit to MIG, which was

Income Support (Bozio et al., 2010). A single pensioner who had been in receipt of Income Support had an additional £800 a year in 2002 GBP or £1411.63 in June 2023 GBP and a couple who had been in Income Support had an additional £1196 a year in 2002 GBP or £2110.39 in June 2023 GBP with the MIG. (UK Parliament Select Committee on Work and Pensions 2002). Fig. 1 outlines a brief history of the MIG for pensioners.

Before the launch of MIG there were concerns about take-up. It was estimated that between 400,000 and 700,000 pensioners who had been eligible for the pre-cursor benefit Income Support, were not claiming this benefit (UK Parliament 1999). The advertisement campaign from May 2002, generated 1 million enquires (UK Parliament Select Committee on Work and Pensions, 2002). In total 1.2 million of the approximately 2 million people eligible for the benefit claimed MIG (UK Parliament Select Committee on Work and Pensions, 2002).

2.1. Theoretical framework

Hypothesised mechanisms which may explain the association between individual characteristics and take-up is summarised in Fig. 2. Measuring socioeconomic position in older people is more challenging than for a working age population (Spiers et al., 2022). Older people's outcomes reflect a lifetime of experiences which may not be quantifiable in the data used to measure socioeconomic status. Limiting long term conditions may be the result of compounded disadvantage across the life course or simply an outcome of the aging process. But, either way it is likely to influence the cost associated with applying for the MIG. We also dive deeper into how health may influence take-up by investigating the association with mental health and mobility. Historic differences between men and women in educational opportunities and labour market participation will impact on both eligibility for MIG and may also influence on the decision to take-up the benefit if eligible (Scharf et al., 2017). Differences in eligibility by marital status and understanding of the rules may influence the likelihood to apply for single vs two or more person households. Older pensioners such as those 75 or older may face higher costs of applying because of difficulty with filling out and sending out the form. It is hypothesised in the take-up literature (Ko & Moffitt, 2022) that those with low educational attainment will face a greater cost to applying for benefits such as a MIG because of lower literacy levels. However, in the UK many older people have similar educational attainment so this may not be a factor influencing take-up in our sample (Grundy & Holt, 2001).

Social stigma and social norms are likely to influence take-up and potentially interact with the individual characteristics in Fig. 2. There may be differences in social norms by gender regarding perceptions of receiving support from the Government via social security benefits. Older men living in poverty are more likely to be socially isolated and have negative preconceptions around claiming benefits then older women living in poverty which may influence up-take (Bennett & Daly, 2014). We explore this by estimating some models separately for men and women. We also include interaction terms in some models such as for gender and disability status and educational attainment and disability status to understand if and how social norms and stigmas influence individual factors associated with take-up. We focus on disability status interacted with other factors as being registered disabled may increase targeted marketing material raising awareness about the benefit (Albani et al., 2022). Thus, we can see how stigma and norms may influence take-up as these people are more likely to be aware of the benefit.

3. Methods

We used data from the British Household Panel Survey (BHPS) (University of Essex. Institute for Social and Economic Research 2018). The BHPS was a nationally representative longitudinal household survey of approximately 5500 households which ran from 1991 to 2008.
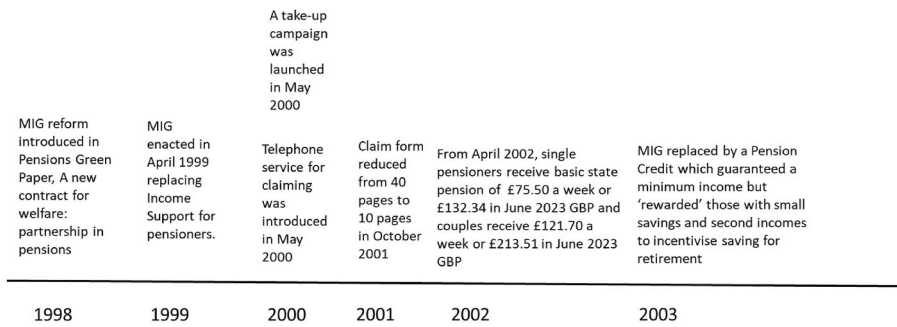
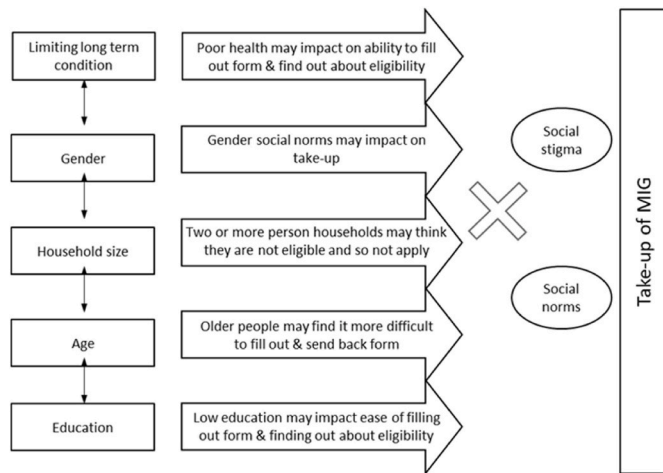**Fig. 1.** A timeline of the MIG for pensioners in England.

Fig. 2. Hypotheses of mechanisms explaining relationship between individual characteristics and take-up of MIG.

Respondents were chosen for the survey using a stratified post code sampling technique. The survey was conducted annually with each household member aged 16+ and most interviews were carried out face-to-face between September and November each year. We use data from 1999 (after the introduction of MIG in April) until 2002. After this date, MIG was replaced with Pension Credit, which has wider eligibility criteria (Bozio et al., 2010).

3.1. Estimation sample

We restrict our sample to respondents who would be eligible for the MIG and lived in England. All data used in the analysis is at the individual level. Eligibility is determined by age and income. People need to be of pensionable age or 60 years or older for women and 65 years and older for men and have an income below the poverty level. We use poverty as a proxy for eligibility and uptake of MIG to reduce potential recall bias in the benefit and income data which is likely to be higher in older populations (Spiers et al., 2022). A household is considered to be living in poverty if their household income is below 60% of the median income for all households over the study period 1999–2002 (UK Parliament Select Committee on Work and Pensions, 2002). Following Albani et al. (2022), we assessed this using income data for respondents in the BHPS survey. We define those in poverty simply as households falling below 60% of the median (equivalized) income, where equivalized income is simply total household income divided by the number of people in the household. Income is used to assess receipt of MIG which is calculated as an uptake of income from the previous year equal to the amount that would be received by MIG. We controlled for inflation leading to increases in income which do not reflect increases in spending power using the Consumer Price Index with 2015 as the base year. Our

sample includes data on 1893 people and 9430 observations across the 4 years of surveys.

This means our analyses captures a scenario of take-up of MIG amongst those who meet the eligibility criteria within the BHPS sample; the results will therefore be generalisable in terms of the generalisability of the pension sample in the BHPS.

3.2. Outcome variable

Our outcome variable is a binary variable which equals one if the individual claims MIG and is equal to zero if the person is eligible for MIG but does not claim.

3.3. Explanatory variables

Our explanatory variables are related to individual characteristics and the hypothesised mechanisms by which they influence take-up are described above in Fig. 2. These include a binary variable for gender (male vs female), a binary variable if a person is 75 or older compared to being between 60 and 74 if a woman or 65–74 if a man, number of people in the household, and a binary variable if the person is registered disabled or not. A binary variable for educational attainment comparing those with formal qualifications compared to no-qualifications is included in the analysis. Grundy and Holt (2001) point out that people born at the start of the 20th century until before the second world war in the UK and for much of Europe, finished formal school at the minimum age with no academic qualifications. This means that the extent of differentiation by qualification level possible is limited. Thus, rather than using a categorical variable for educational attainment we use a binary variable to distinguish the most advantaged who have formal qualifications from the rest of the population. We also include a dummy variable for if the person lived in the North or Midlands compared to living in the rest of England to explore if there were potential geographical differences in take-up rates. Geography is defined using the ONS Regions definition (ONS 2021).

To further explore how health may impact on eligibility beyond having a limiting long-term condition, we include, for descriptive statistics only (because of small sample sizes) Activity of Daily Living Scores (ADL). These are tasks related to daily living and include 1) bathing/showering; 2) managing stairs; 3) getting around house; 4) cutting toenails; 5) getting in and out of bed; and 6) walking down the road. Scores can range from 0-no assistance needed to 6-total dependence. Higher scores mean that an individual needs more support/assistance (Edemekong et al., 2019). This variable can explore if mobility issues were associated with take-up. We also include GHQ-12 (the General Health Questionnaire, 12 item version) index with values ranging from 0 (worst possible wellbeing) to 36 (best possible wellbeing, after reverse scoring), which is a 12-item questionnaire intended to screen for general mental health problems (non-psychotic) in the population (Goldberg et al., 1997). This mental health variable will allow us to explore if and how mental health is associated with take-up. We

hypothesise that there will be higher costs for those with poor mental health to apply for MIG which may impact on take-up.

3.4. Analysis

We start with descriptive statistics where we estimated the means and standard deviations for those who receive MIG and those who are eligible but do not claim. For binary variables to explore if the means are statistically different between the two groups, we employ a Wilcox Rank Sum Test. For continuous variables we use t-tests to estimate differences in the means, with p-values. Next, we estimated a random effects logistic model to understand if and how our explanatory variables are associated with the likelihood of taking up MIG. This model accounts for individual heterogeneity and repeated measurements for some individuals over time. First, we start with a basic model including age and gender only. Variables are added based upon the theoretical framework in Fig. 2. Next, we added in household size. Then, we include educational attainment. Then, we add in mental health and registered disabled. Finally, we include a variable for living in the Midlands/North vs the rest of England. Because of similarities in healthy life expectancy, poverty, poor health we compare the Midland and North of England to the rest of England (Dorling, 2018). We add variables to the model to test the framework outlined in Fig. 2. We also explore some interaction terms to understand how different individual characteristics working together may influence likelihood of take-up. Odds ratios with 95% confidence intervals are presented for ease of interpretation. Odds ratios greater than one indicate an increased likelihood of take up whereas odd ratios of less than one indicates a decreased likelihood of taking up MIG. To further explore the potential role of stigma and social norms, we also estimate a random effects logistic model where we control for age and a model including all explanatory variables for men and women living on their own to understand how gender-based social norms may influence take-up.

4. Results

Our sample contains information for 1308 people or 6589 observations over the four years of data for those who were eligible for MIG but did not claim and for 585 people or 2841 observations for people who did claim MIG over the sample period. In Table 1A, we can see that the mean age of the sample is 73 years old and approximately 35 percent of the sample is female suggesting more men are both eligible and claim for MIG. Approximately 44% of the sample lives in a two person household, the mean GHQ score in the sample is 11.83 which is considered a typical score for the population (GHQ-12 2017), 12% of the overall sample are registered disabled, approximately 70% of the population has no formal qualifications (which is consistent with other studies looking at older UK populations from this time (Grundy & Holt, 2001), and 59% of the sample lives in the North or Midlands. In Table 1B, we can see that for all variables there are statistically significant differences (p < 0.05) between those who claim MIG and those who are eligible but did not claim. Fifty seven percent of those eligible for MIG but do not claim were in two person households, compared to 13% for those who receive MIG. A higher percentage of people living in the North/Midlands both claimed and were eligible but did not claim compared to those living in the rest of England. Mean ADL scores were higher, meaning greater assistance needed, in the group claiming MIG. Similarly, the mean GHQ score was higher (better mental wellbeing) for those claiming compared to those who were eligible but did not claim. Twenty percent of those who received MIG were disabled compared to 9% of those who were eligible but did not claim MIG.

In Table 2, we present odds ratios from the random effects logistic regression. For the base model (Model 1) where we only control for age and gender, we can see that older pensioners (age 75+) have a 2.81 (95% CI 2.16–3.67) higher odds of claiming compared to younger pensioners and women have a 0.17 lower odds (95% CI 0.10–0.29) of

Table 1

Descriptive statistics.

Full Sample (A)	
Variables	Mean or percentage/Standard Deviation/N
Age	73.19 (10.45) N = 9430
Female	35% (0.48) N = 9430
Two or more people in household	44% (0.50) N = 9429
No formal Qualifications	70% (0.46) N = 9430
GHQ-12	11.84 (5.22) N = 8901
Registered Disabled	12% (0.33) N = 6700
Lives in the North/Midlands	59% (0.49) N = 9430

Splitting Sample by MIG uptake (B)			
	Received MIG	Eligible but did not claim MIG	Difference
	Mean/SD/N	Mean/SD/N	p-values
Female	30% (0.46) N = 2841	37% (0.48) N = 6589	p < 0.001
Over age of 75	58% (0.49) N = 2425	45% (0.50) N = 6589	p < 0.001
Two or more people in household	13% (0.33) N = 2841	57% (0.49) N = 6588	P < 0.001
No qualifications	71% (0.45) N = 2841	69% (0.46) N = 6589	p = 0.0162
Lives in the North/ Midlands	61% (0.49) N = 2841	58% (0.49) N = 6589	p = 0.0230
Registered Disabled	20% (0.40) N = 2119	9% (0.29) N = 4581	p < 0.001
ADL Score	0.97 (1.39) n = 497	0.51 (1.02) n = 2028	p < 0.001
GHQ-12	12.71 (5.71) n = 2655	11.46 (4.96) n = 6246	p < 0.001

Notes: Means shown for continuous variables. Percentages shown for binary variables.

Notes: ADL score are tasks related to daily living (bathing/showering, managing stairs, getting around house, cutting toenails, getting in and out of bed, walking down the road). Scores can range from 0-no assistance needed to 6-total dependence. Higher scores mean that individual needs more support/assistance. GHQ-12 is reverse coded where 36 means best mental health and 0 worse. All binary variables are presented as percentages.

claiming then men. In Model 2, we add the two-person household binary variable. The odds ratio on older pensioners is reduced to 2.01(95% CI 1.54–2.63) but still statistically significant. In Model 2, the female dummy is now (0.49 95% CI 0.28–0.82) and those in two person households compared to single households are significantly less likely to claim (0.04 95% CI 0.03–0.06). In Model 3, we add in the educational attainment dummy variable. The odds ratios on age and gender are similar to Model 1. Those with no qualifications have 2.07 (95% CI 1.22–3.51) higher odds of claiming MIG compared to those with formal qualifications. In Model 4, we add the health variables: GHQ and being registered disabled. People with better mental health have 1.05 (95% CI 1.02–1.08) higher odds of claiming than those with worse mental health. People who are registered disabled have a 4.03 (95% CI 2.50–6.51) higher odds of claiming than those who are not. In Model 4, the female dummy variable is no longer significant, the two-person household dummy is still significant but the magnitude of the odds ratio is smaller (0.01 95% CI 0.01–0.02), and the educational attainment dummy magnitude of the OR is reduced and it is no longer statistically significant (1.74 95% CI 0.93–3.25). Older pensioners are at increased odds of taking up MIG (2.37 95% CI 1.60–3.52). The final model specification is Model 5 in Table 2. All odds ratios are statistically significant. The odds ratios on age, gender, and mental health are similar to in column 4. There is no statistically significant difference comparing those who live in the Midlands/North of England to the rest of England (0.97 95% CI 0.56–1.67).

In Fig. 3A and B, we explored some interaction terms to investigate how social norms and stigmas may influence uptake. In Fig. 3A, we saw that there are higher odds of claiming MIG if disabled and male

Table 2
Random Effects Logistic model of Individual Factors associated with Take-up of MIG.

VARIABLES	(Model 1)		(Model 2)		(Model 3)		(Model 4)		(Model 5)	
	Odds Ratio	95% CI	Odds Ratio	95% CI	Odds Ratio	95% CI	Odds Ratio	95% CI	Odds Ratio	95% CI
pensioner_75+	2.81*** (0.38)	2.16–3.67	2.01*** (0.27)	1.54–2.63	1.98*** (0.27)	1.52–2.59	2.37*** (0.48)	1.60–3.52	2.37*** (0.08)	1.60–3.52
female	0.17*** (0.05)	0.10–0.29	0.49** (0.12)	0.28–0.82	0.53** (0.14)	0.32–0.90	0.73 (0.23)	0.40–1.34	0.73 (0.23)	0.40–1.34
2 person household			0.04*** (0.01)	0.03–0.06	0.04*** (0.01)	0.03–0.06	0.01*** (0.003)	0.01–0.02	0.01*** (0.003)	0.01–0.02
No qualifications					2.07** (0.56)	1.22–3.51	1.74* (0.55)	0.93–3.25	1.74* (0.56)	0.93–3.26
Mental health							1.05** (0.01)	1.02–1.08	1.05** (0.02)	1.02–1.08
Registered Disabled							4.03*** (0.98)	2.50–6.51	4.03*** (0.98)	2.50–6.52
Lives in the North									0.97 (0.27)	0.56–1.67
Rho	0.91 (0.01)	0.89–0.92	0.86 (0.01)	0.83–0.88	0.86 (0.01)	0.83–0.88	0.85 (0.01)	0.83–0.88	0.85 (0.01)	0.83–0.88
Individuals	1745		1744		1744		1562		1562	
Observations	9014		9013		9013		6046		6046	

Notes: Standard errors in parentheses. ***p < 0.01, **p < 0.05, *p < 0.1. Column 1 is base model, column 2 adds in household size, column 3 is base model plus educational attainment, column 4 is base model plus educational attainment, plus registered disabled and mental health. Column 5 is base model plus educational attainment, mental health, and lives in the North/Midlands.
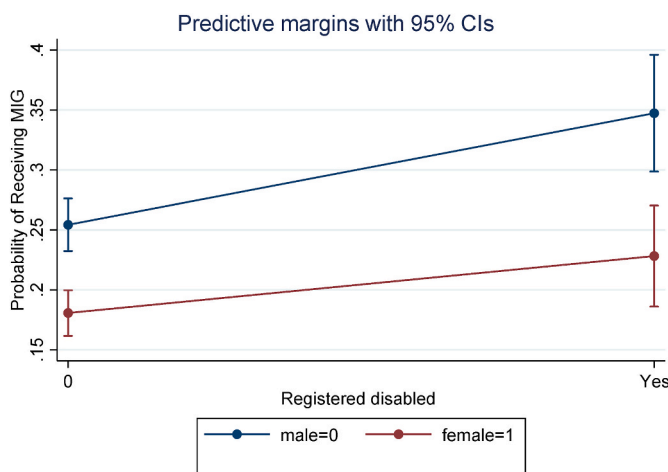

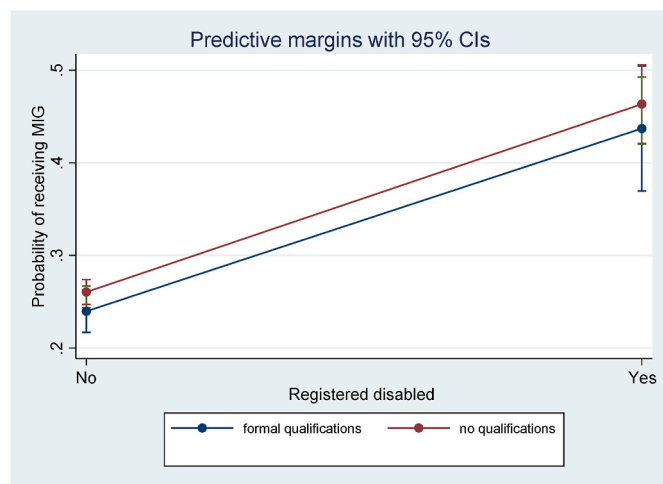**Fig. 3A.** Interaction term for gender and registered disabled.

Fig. 3B. Interaction term for educational attainment and registered disabled.

compared to disabled and female. This may partially explain why the female dummy is not significant in columns 4 and 5. Whereas in Fig. 3B, there is not a statistically significant difference in the probability of uptake for those who are registered disabled by educational attainment.

In Table 3, we estimate random effect logistic models separately for men and women living on their own to understand how social norms related to gender may be related to take-up. In Table 3, we can see when comparing the base model that for men only, older single men have a higher odds (1.91 95% CI 1.35–2.72) of claiming MIG if eligible then younger men whereas this variable is not significant for women (1.22 95%CI 0.61–2.49). In Column (2) for men, having no formal qualifications compared to formal qualifications (3.04 95% CI 1.16–7.95), reporting better mental health (1.06 95% CI 1.02–1.10) and being registered disabled compared to not being registered disabled (5.14 95% CI 2.63–10.05) is associated with increased odds of benefit take-up. As in Table 2, for single men, there was no statistically significant difference for those living in the Midlands or North compared to the rest of England (1.14 95% CI 0.50–2.57). For women in Table 3, none of the odds ratios are statistically significant. A similar pattern for all odds ratios are found except for education in column 2 where single women with no formal qualifications are less likely to claim than those with formal qualifications (0.79 95% CI 0.18–3.52).

5. Discussion

In this paper, we explore the relationship between individual characteristics and take-up of a minimum income guarantee for pensioners which was available between 1999 and 2002. We find that those who were eligible and did claim were more likely to be older, be registered disabled, have better mental health as measured by GHQ-12, no formal qualifications, be male, and live in a single person household. There was some significant interaction between individual characteristics such as being male and being registered disabled having a higher odds of claiming than women who were registered disabled suggesting social norms may influence take-up. Women in general were less likely to claim which may potentially explain why we found a lower claim rate in two person households. As our results showed that one person household were more likely to claim than two person-households we further explored gender social norms by estimating models separately for single man and woman (one person) households. In these models, similar characteristics were statistically significantly associated with take-up for

Table 3

Random Effects Logistic model of Separate Models for One person households and Men and Women of Individual Factors associated with Take-up of MIG.

VARIABLES	MEN				WOMEN			
	(1)		(2)		(1)		(2)	
	odds ratio	95% CI	odds ratio	95% CI	odds ratio	95% CI	odds ratio	95% CI
Pensioner_75over	1.91*** (0.34)	1.35–2.72	2.12** (0.60)	1.23–3.67	1.22 (0.44)	0.61–2.49	2.35 (1.19)	0.87–6.33
No qualifications			3.04** (0.12)	1.16–7.95			0.79 (0.60)	0.18–3.52
Mental Health			1.06** (0.02)	1.02–1.10			1.01 (0.04)	0.93–1.10
Registered Disabled			5.14*** (1.76)	2.63–10.05			11.15 (7.51)	2.98–41.78
Lives in the North			1.14 (0.47)	0.50–2.57			1.41 (1.00)	0.35–5.79
Rho	0.86 (0.02)	0.82–0.89	0.87 (0.02)	0.83–0.89	0.87 (0.03)	0.81–0.92	0.86 (0.04)	0.77–0.91
Individuals	833		725		281		230	
Observations	3822		2625		1075		692	

Notes: Standard errors in parentheses. ***p < 0.01, **p < 0.05, *p < 0.1. Column 1 is base model, column 2 is base model plus educational attainment, mental health, and lives in the North/Midlands.

single men but no variables were statistically significant in the female only models. These results are similar to a review of take-up of pension benefits using the Families Resource Survey (Hancock et al., 2003). The Hancock et al. (2003) study had less granular data on individual characteristics but found lower take-up of pension benefits by women and younger pensioner couple households.

There are many studies, looking at how the design of benefits programmes impact on take-up (see Hernanz et al., 2004 for an overview of some of this literature in OECD countries). This includes the administrative process of claiming the benefit and any associated cost and uncertainty around eligibility. For example, the fear of making a mistake in the claim form and having to pay back the benefit was found as a barrier to claiming in research undertaken by the DWP (2003). This study found that some people feared making a mistake with the claim process. Our findings add to this literature by showing that these design issues may impact on people differently. Differences in eligibility for couple vs single pensioner households and for women who may have not worked throughout their whole life may exacerbate this fear of making a mistake which could potentially explain some of our findings on take-up. Other factors associated with the design of the system may also be important. For example, Engles et al. (2000) found that amongst older people in Germany, people were less likely to claim benefits as they did not want to seem reliant on the state. These social norms and stigmas around claiming need further investigation to ensure that these are not a barrier to claiming for certain people. In particular, it is worth exploring if certain groups of people are more likely to feel social stigma or a social norm against claiming benefits. For example, Baumberg et al. (n.d) found in the UK that those with low social grade and low educational attainment attached greater stigma to claiming benefits.

Some of these barriers have been considered in the design of benefits, such as with the Finnish universal basic income pilot. There participants were identified by their national identity number so did not need to apply as the funds went directly to their bank accounts which had been provided to the social security agency Kela (Kangas et al., 2020). However, most UK benefits are opt-in rather than opt-out.

If the UK were to implement an equitable minimum income, it would need to consider who were the target beneficiaries, how to advertise the benefit to not exclude certain groups, and co-design the application process to ensure that this was not a barrier to claiming. Barriers to take-up of benefit schemes may exacerbate inequalities. To achieve, this it is worth considering how health may be a barrier to take-up.

5.1. Strengths and limitations

Our study provides some important insights into how individual characteristics are associated with take-up of a MIG for pensioners. We are able to use micro-level data to look at individual behaviour. However, we lack qualitative data on participants to fully understand how the decision to claim or not to claim was made. Additionally, to avoid potential re-call bias (which is a particular concern in older populations (Spiers et al., 2022) and missing data we use income as a proxy for eligibility and uptake of MIG. We are looking at a minimum income before the digital age. Digital access may create an additional barrier for some older people. Thus, it is important to understand what other factors may influence uptake to ensure that digital access may not exacerbate these barriers. More generally, future research and design of a minimum income need to consider equity in take-up and what this means for effectiveness of the benefit in terms of reducing health inequalities.

6. Conclusion

Understanding what individual characteristics influence take-up is important for designing a benefit system that contributes to reducing health inequalities and promoting equity.

CRediT authorship contribution statement

Heather Brown: Writing – original draft, Methodology, Funding acquisition, Formal analysis, Conceptualization. **Viviana Albani:** Writing – review & editing, Data curation. **Luke Munford:** Writing – review & editing, Funding acquisition. **Matt Sutton:** Writing – review & editing, Funding acquisition. **Fiona McHardy:** Writing – review & editing, Funding acquisition. **Eric Silverman:** Writing – review & editing, Funding acquisition. **Matteo Richiardi:** Writing – review & editing, Funding acquisition. **Anna Pearce:** Writing – review & editing,

Methodology. **Alison Heppenstall:** Writing – review & editing, Funding acquisition. **Petra Meier:** Writing – review & editing, Funding acquisition. **Rachel Thomson:** Writing – review & editing, Funding acquisition. **Srinivasa Katikireddi:** Writing – review & editing, Funding acquisition.

Declaration of competing interest

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