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Mental Health, Caring, and COVID-19: Examining the Gendered Effects of Working from Home on Carers' Mental Health

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Abstract: The COVID-19 pandemic altered labour markets, specifically through the rapid introduction of working from home (WFH) policies, impacting mental health (MH), particularly among carers (those who provide unpaid help or support to someone with a long-term illness, health issue, or an issue related to old age or disability). This study uses the Healthy Ireland Survey to examine MH among employed carers in Ireland during the COVID-19 pandemic, focusing on gender differences. We find a quarter of Irish workers experienced MH declines, with significant impacts on carers and evident gender-specific effects. WFH appeared to alleviate worsening MH for female carers, though it remained at a high level. While WFH is not a panacea for carers' MH and wellbeing, it may help when designing gender-sensitive policy interventions to support them.

I INTRODUCTION

1.1 Working from Home and COVID-19

The COVID-19 pandemic caused a dramatic shift to labour markets through the rapid introduction of mass working from home (WFH) policies. WFH on a large scale is expected to remain across public and private sectors and across countries (Adrjan *et al.*, 2021; Askoy *et al.*, 2023; Hansen *et al.*, 2022), and seems especially prevalent in Ireland. This is borne out in recent data showing a plateauing of the

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share of job postings from Ireland that advertised WFH in either the location or job position (see Figure A.1). However, research has shown that the prevalence of WFH will vary across sectors and professions (Redmond, 2020).

The increase in WFH has precipitated the need for greater understanding of the effects of WFH in order to formulate policy (both corporate and governmental) that supports employees in adjusting to the lasting changes brought about by the pandemic. It is increasingly clear that policies will need to account for the gendered effects of WFH, particularly relating to caring. There are potential positive implications for gender equality in the labour market, especially for WFH as a partial solution to the tension between career and caring responsibilities that disproportionately affects women. This study aims to provide some evidence to guide such policies. However, the interaction between caring and WFH for those in employment, especially female workers, is complicated. Some recent evidence shows that WFH can exacerbate gender inequality rather than overcoming it (Yucel and Chung, 2023). This is reflected in the increasingly conservative turn in gendered parenting attitudes over the course of the pandemic (Mize *et al.*, 2021), and in the increased gender gap in housework among couples WFH compared to those working on-site (Lyttelton *et al.*, 2020). There has been an increase in the share of time spent in unpaid labour among women whose paid hours of work decreased compared to men (Zamberlan *et al.*, 2021). However, Chung *et al.* (2021) found that, among dual-working parents in the UK, mothers were less likely to be reported as the ones solely or mostly responsible for housework and childcare in households where fathers worked from home. Additionally, compared with fathers who worked on-site, fathers WFH during the pandemic were more likely to report increased participation in childcare (Chung *et al.*, 2021).

There is also mixed evidence on the impact of WFH on wellbeing over the course of the pandemic and evidence that any association changed as the effects of the pandemic diminished. WFH has significantly increased flexibility in time-use for many workers, and in the early part of the pandemic, workers who transitioned to WFH reported increased exercise, ease in childcare commitments, and considerably reduced travel time (Askoy *et al.*, 2023). Evidence from Ireland found that WFH may have helped improve workers' productivity and increased opportunities to undertake non-work tasks, with the reduced commute to work a key factor (Geary and Belizon, 2022). However, higher productivity may be due to working longer hours, substituting for travel time whilst WFH. While keeping engaged with work (e.g. answering emails) outside of traditional working hours may increase productivity in the short term, it may negatively impact mental health (MH) and wellbeing.

1.2 Mental Health and COVID-19

COVID-19 prompted an increase in MH problems among many population groups (Arendt *et al.*, 2020; European Commission *et al.*, 2020; Vigo *et al.*, 2020; Bertoni

et al., 2022; Santomauro *et al.*, 2021). Factors such as anxiety about general health and the health impacts of COVID-19 infection (Le *et al.*, 2021), lockdown containment measures (Serrano-Alarcón *et al.*, 2022), economic shocks and job loss (Baranov *et al.*, 2022), and increased loneliness have been found to underpin these MH deteriorations. A gender gap in worsening MH has also been found since the onset of the COVID-19 pandemic, including amongst young adults in Ireland (Etheridge and Spantig, 2020; Smyth and Nolan, 2022) and in the Irish population more generally (Kelly, 2020).

People in employment were significantly impacted by COVID-19 and associated lockdown measures imposed. For many workers, WFH may have been a key cause of worsened MH. Attending workplaces forms part of workers' daily routine, and workplaces and colleagues are an integral component of workers' social capital. Pre-pandemic, evidence from Finland found workers with lower rates of workplace social capital were 1.5 times more likely to be diagnosed with depression compared to workers with higher rates (Oksanen *et al.*, 2010). Many workers, when given the choice, also rejected the opportunity to work remotely. Evidence from a pre-pandemic natural experiment in China found half of workers randomised to WFH decided to return to the office due to loneliness experienced during WFH (Bloom *et al.*, 2015). Analysis of Irish employees' health and wellbeing during COVID-19 showed that while WFH was associated with higher productivity, it also was associated with an increase in "*stress levels, an inability to disconnect from work, and a diminishment in [workers'] health and well-being*" (Geary and Belizon, 2022). The findings were particularly stark among women, who reported worse MH and wellbeing and higher levels of work intensification compared to men (Geary and Belizon, 2022).[1] Burn *et al.* (2022) find that for women, compared with working on-site, WFH was associated with higher prevalence of symptoms of depression. However, other studies have found that the negative effects of WFH may have been more pronounced among men: among workers in China during the pandemic, mandatory WFH was associated with worse MH in men, but not in women (Hao *et al.*, 2022). Additionally, the association between wellbeing and WFH is not consistent across studies. Pelly *et al.* (2022), for example, find that the COVID-19 pandemic and the large-scale transition to homeworking were associated with unchanged or improved worker wellbeing among full-time workers in the UK.

Gendered effects on MH among workers since the onset of COVID-19 have been found in the literature. Worsening MH and wellbeing amongst those WFH has been linked with social factors, especially loneliness, and gendered differences in these social factors may also explain higher rates of poorer MH among female workers. Multiple studies have shown the associations between gender and loneliness during the pandemic, with women often faring worse than men in this

[1] However, as the sample used included only those who worked from home, no comparison with other workers was possible.

regard (Lepinteur *et al.*, 2022; Wickens *et al.*, 2021). Evidence from the UK shows that women, who reported having more friends prior to the pandemic, had higher levels of loneliness during the pandemic (Etheridge and Spantig, 2020). Furthermore, studies that concentrated on the gendered impacts of the pandemic have illustrated that the increased burden of childcare and homeschooling largely fell to women (Petts *et al.*, 2021; Alon *et al.*, 2020a; 2020b), which may have further isolated women by filling time which could otherwise have been used for social connection. These results on the gendered impact of parenting may also reflect gendered effects across caring more generally.

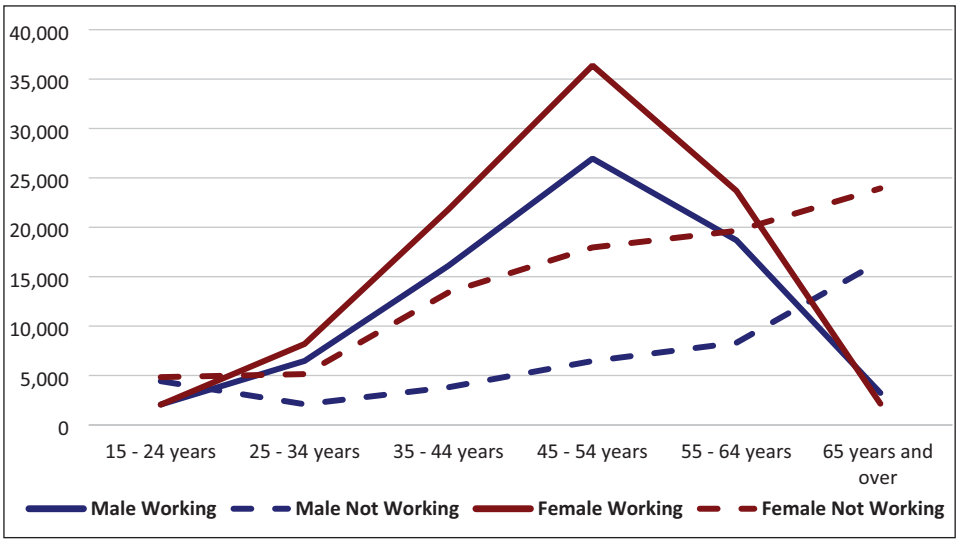
1.3 Caring and COVID-19

The care system in Ireland has historically been based on the family, in contrast with Northern European countries (Russell and Smyth, 2024). Responsibilities for providing unpaid care to a family member, spouse or neighbour also fall disproportionately on women in Ireland (Russell *et al.*, 2019; Family Carers Ireland, 2023). Census 2022 estimates that over 300,000 people had caring responsibilities in Ireland.[2] Figure 1 illustrates that women were more likely to be carers at every age group. However, this figure also shows that while a greater percentage of carers may not be in employment, in absolute terms, a greater number of carers are employed than not employed between the ages of 25 and 64.

Poor MH and wellbeing were common among people who provide unpaid care even prior to the COVID-19 pandemic. In a 2019 survey of family carers in Ireland, carers were less likely than the general population to report themselves as being in good overall health, and 48 per cent of carers reported that they had been diagnosed with depression and/or anxiety (Family Carers Ireland, 2020a). Two-thirds of those reporting a diagnosis of depression and/or anxiety said that their role as a carer had caused or exacerbated their mental ill-health (Family Carers Ireland, 2020a). A study using The Irish Longitudinal Study on Ageing (TILDA) data, conducted in the initial stages of the COVID-19 pandemic, focused on caring and health and wellbeing among older and mainly non-employed carers (McGarrigle *et al.*, 2022). It found that rates of caring and caring intensity increased significantly during the pandemic, while carers reported increased depression and stress and saw a deterioration in overall quality of life. The study also showed a disproportionate increase in depression among female carers. In recent international research, MH difficulties among carers have been found to have been exacerbated by the onset of COVID-19 (Bahn *et al.*, 2020; Rhodes *et al.*, 2024). Evidence from an online survey of carers in the UK, conducted in September 2020, found that 64 per cent of respondents reported worsened MH as a result of the pandemic (Carers UK, 2020), with 74 per cent reporting feeling worn out and exhausted from caring. This survey found that in the early part of the pandemic, 81 per cent of carers reported

[2] Based upon responses to the question: "Do you provide regular unpaid personal help or support to a family member, neighbour or friend with a long-term illness, health issue, an issue related to old age or disability?".

Figure 1: Carers in Ireland by Gender and Employment Status, 2022



Source: CSO Census 2022.
Notes: Numbers based on responses to the Census question: "Do you provide regular unpaid personal help or support to a family member, neighbour or friend with a long-term illness, health issue, an issue related to old age or disability?".

providing more care since the start of the pandemic and 64 per cent reported not being able to take breaks from caring responsibilities (Carers UK, 2020). The authors argue that closure of health and social care facilities, as well as fear of contracting COVID-19, increased the demands on family carers. This has also been expressed in evidence from Ireland, where increased stress due to lack of supports has been shown to reduce the wellbeing of carers (Family Carers Ireland, 2020b). Additionally, earlier research by O'Riordan and Kelleher (2016) found that loneliness and isolation were often reported by carers and underpinned MH difficulties.

A potential factor influencing the MH and wellbeing of those WFH during the pandemic was the struggle to balance work with other responsibilities. Stefanova *et al.* (2023) found that carers experienced more conflict between work and family during lockdown compared to non-carers, a finding that was particularly pronounced among female carers. Lafferty *et al.* (2022) identified four key themes emerging from qualitative interviews with family carers regarding the balancing of work and care during the pandemic in Ireland. First, a collision of worlds was identified which required an investment of time and energy to reconcile work and caring roles. A perceived inability to commit fully to work or care led to increased guilt and internal conflict. Second, the loss of supports for the care-recipient (and carer) as restrictions closed health and social care facilities increased the care load.

Feelings of loneliness, isolation, and being unsupported increased. Third, a sense of uncertainty among family carers as to what the future would hold, especially surrounding services reopening, was identified. However, carers also highlighted some positive impacts, including being more available to provide care and the slower pace of life during lockdown, which gave them new perspectives on their values and wants. Many reported that the pandemic brought their families closer together. Similarly, while the re-bundling of WFH with other social practices created tension between caring practices and household responsibilities (Wethal *et al.*, 2022), remote working also brought the potential for greater flexibility.

1.4 Research Question

The COVID-19 pandemic has impacted MH, especially among carers and workers. However, little is known about how the interaction of WFH and caring may have changed MH outcomes, and the extent to which women's MH (and the MH of female carers in particular) changed since the onset of the pandemic. This paper aims to shed light on this complicated topic and focus on Ireland, where a particular dearth of statistical evidence exists. Therefore, this research examines whether MH outcomes worsened among carers in employment since the onset of the COVID-19 pandemic. It further examines to what extent female carers may have seen larger MH effects than male carers, whether WFH may have helped alleviate some MH effects, and whether the effect of WFH on MH differed across female and male carers.

II DATA AND METHODS

This analysis uses data from Wave 7 of the Healthy Ireland Survey (HIS). The HIS was conducted by IPSOS MRBI on behalf of the Department of Health and is the largest nationally representative survey on health in Ireland. HIS Wave 7 includes data from 7,454 interviews of people aged 15+ and was conducted between October 2020 and March 2021 (Healthy Ireland, 2021). The data were gathered in the first year of the COVID-19 pandemic and capture two significant periods of lockdown in Ireland: first, the six weeks of Level 5 restrictions introduced on 21 October 2020; and second, the extended period of Level 5 restrictions introduced on 24 December 2020 and lasting until 2 March 2021.[3] Owing to pandemic-induced restrictions, and unlike previous waves of the survey, data were collected via a telephone interview (previous HIS waves were completed using face-to-face interviews). However, many of the questions asked in Wave 7 were comparable to previous waves and, where required, modifications to questions to account for the telephone-based nature of the interviews were made.

[3] A timeline of key COVID-19 events, societal restrictions in Ireland, and HIS data collection dates is provided in Table A.1 in the Appendix.

In addition to questions relating to health and wellbeing, the HIS includes relevant sociodemographic variables, such as age, marital status, education, occupation, and county of residence. Several additional questions were introduced in Wave 7 aiming to capture the impact of the COVID-19 pandemic on mental and physical health and on social connection over the period of the pandemic. We use these additional questions to examine MH, WFH, and caring following the onset of COVID-19.

2.1 Outcome Variables

The key outcome variables in our analyses relate to MH. We examined both subjective and standardised MH measures. To capture subjective MH changes since the onset of COVID-19, we utilised responses to the following question:

> *Since the start of COVID-19 restrictions in March, would you say that your mental health has improved, stayed the same, or worsened?*

This question provided us with a unique opportunity to examine how MH may have changed since the onset of the pandemic. We first created a categorical variable capturing responses to this question to compare whether MH improved or worsened compared to a base category of staying the same. We also created a second binary variable with a value of 1 for respondents who stated that their MH worsened, and zero otherwise.

Secondly, we created a standardised MH variable, using a measure of probable mental health problems (PMHPs). This measure captures potentially more severe MH issues that may require medical interventions. Questions in the HIS allowed us to use a standardised measure of PMHP based on the Mental Health Inventory (MHI-5) five-item version. The MHI-5 was developed by Stewart *et al.* (1988) as part of the MOS Short-form General Health Survey and it is commonly used to measure MH problems across countries and datasets. Based upon the MHI-5 criteria, we created the standardised measure (PMHP) as a composite of answers given to five questions, using the following format:

> *In the last four weeks, what proportion of time have you…*
> - *Been a very nervous person?*
> - *Felt so down in the dumps that nothing could cheer you up?*
> - *Felt calm and peaceful?*
> - *Felt downhearted and blue?*
> - *Been a happy person?*

For each of these questions, respondents could choose to answer (i) *none of the time*; (ii) *a little of the time*; (iii) *some of the time*; (iv) *a good bit of the time*; (v) *most of the time*; or (vi) *all of the time*. Scores were applied to each response.

For negative questions, a range of 6-1 was applied to responses, while the inverse scoring was applied to positive questions. A higher total MHI-5 score indicates better MH, and a lower probability of having MH problems. We created a binary PMHP variable that equalled 1 if, based on their answers, an individual had a score of 56 or lower, and equal to zero if not.[4] It was also possible to construct a positive self-reported MH variable based on the questions included in the HIS, called the Energy and Vitality Index (EVI: Ware *et al.*, 1993). However, we focused on negative MH, as this is likely to be more pertinent to policymakers.

2.2 Independent Variables of Interest

The two key independent variables in this study are caring status and changes in WFH status. To capture changes in WFH status, we utilised the following question:

In what ways did COVID-19 affect your employment status or job?

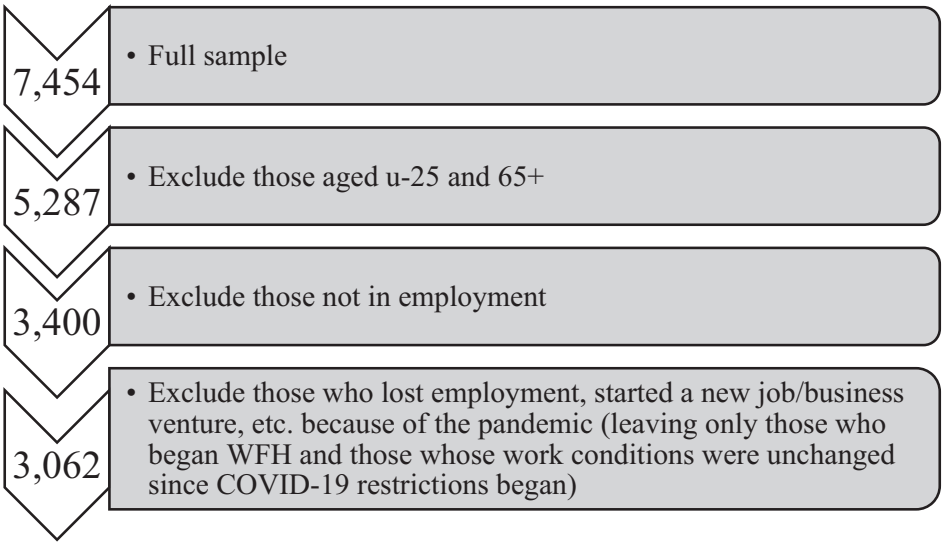
Responses to this question were:

- *Loss of employment;*
- *Temporary lay-off;*
- *Closure of own business/ceased trading;*
- *Remained in current job but work environment changed/working from home;*
- *Started a new job;*
- *Unable to start a new job;*
- *Started a new business;*
- *Changed business model e.g. online/takeaway;*
- *Other.*

We coded our WFH variable equal to 1 if a respondent was employed and answered *"Remained in current job, but work environment changed/working from home"* to the above question, and equal to zero if a respondent was employed and answered that their employment status or job was not affected by COVID-19. As this analysis focused on the impact of WFH compared to on-site working, respondents who stated they had lost employment, started a new job or business etc, were excluded from the main analyses. These represented 9.5 per cent of all those in employment aged 25-64. Sensitivity analyses were conducted whereby this group was compared to those WFH or on-site. The final sample for this study was constructed as per Figure 2.

[4] Different cut-off points were identified in the literature: Holmes (1998) recommends 52 for detecting major depression, while Rumpf et al. (2001) recommend 65 as a cut-off point for identifying mood and/or anxiety disorders. For this analysis we used the same cut-off point as those conducting the HIS, i.e. 56. However, results are similar using different other cut-off points (such as 65).

Figure 2: Sample Construction



Source: Author's own.

The HIS captured whether an individual undertakes unpaid caring duties, asking respondents:

> *Do you provide regular unpaid personal help for a friend or family member with a long-term illness, health problem or disability? Include problems which are due to old age. Personal help includes help with basic tasks such as feeding or dressing.*

This question is the same as asked in the Census and was used to create a binary variable equal to 1 if the respondent provides regular unpaid personal help, and zero otherwise.

Other independent variables included in this study that were judged to be pertinent for MH outcomes, WFH status, and caring were: age (included linearly and as a squared term in regression analyses), gender, marital status (married or cohabitating versus other), parent (of child aged less than 18 years, or not), educational attainment (college degree or lower), Medical Card and GP Visit Card status, and chief earner status. As the survey covered the period prior to the full rollout of COVID-19 vaccinations, worry around potential exposure to COVID-19 and actual infection was important to capture. Therefore, in our analyses, we included a binary variable on whether the respondent reported being diagnosed with COVID-19. In recognition that WFH is impacted by the type of profession or sector where someone worked (e.g. desk-based workers were more likely to have the

opportunity of WFH compared to farmers), occupation dummy variables based on the Standard Occupational Classification 2010 (SOC2010) were included in the regression analyses. Furthermore, as the prevalence of occupations also differ across regions in Ireland, resulting in region-level WFH variation, county dummy variables were also included.

2.3 Statistical Analyses

We estimate both multinomial logistic and logistic regressions to examine our subjective MH variable in both its categorical and binary forms. First, using multinomial logistic regressions we examined the association between caring, WFH, and gender, and reporting better or worsened MH since the onset of the COVID-19 pandemic:

$$\log\left(\frac{\Pr(\mathrm{MH_i} = z)}{\Pr(MH_t = unchanged)}\right) = \beta_0 + \beta_1\, Carer_i + \beta_2 \mathrm{WFH_i} + \beta_3\, female_{i_i} + \\ + SD + \varepsilon_{\mathrm{i}} \quad (1)$$

where $z \in \{better,\ worse\}$ *MH* since the start of the COVID-19 pandemic. The multinomial models allow us to examine the extent to which MH may have both improved and worsened since the onset of the pandemic.

We also estimated logistic regressions to focus specifically on worsened MH since the onset of the COVID-19 pandemic:

$$\log\left(\frac{\Pr(MH_i = worse)}{\Pr(MH_i = better\ or\ unchanged)}\right) = \beta_0 + \beta_1\, Carer_i + \beta_2\, WFH_i + \\ + \beta_3\, female_{i_i} + SD + \varepsilon_i \quad (2)$$

Across these regressions, the independent variables included are *Carer,* which captures if the respondent undertakes unpaid work as a carer, and *WFH*, which captures whether they work at home (fully or partly) or on-site. *SD* is a vector of sociodemographic controls, including age, marital status, and education, occupation, and county of residence control variables.

Second, we estimate logistic regressions to examine our PMHP variable:

$$\log\left(\frac{\Pr(PMHP_i = 1)}{\Pr(PMHP_i = 0)}\right) = \beta_0 + \beta_1 Carer_i + \beta_2 WFH_i + \beta_3\, female_{i_i} + \mathrm{SD} + \varepsilon_i \quad (3)$$

where $\Pr(PMHP_i = 1)$ represented the probability of scoring 56 or above on the standardised measure of probable MH problems. The independent variables included are consistent with those outlined in Equations 1 and 2.

Based upon evidence from the literature outlined in Section I, it may be expected that a complex association exists between MH outcomes and our key independent variables of interest – caring, WFH, and gender. Therefore, in addition to the models expressed above, we estimated a number of alternative model specifications where carer, WFH, and female were interacted across specifications. These interaction models allowed us to further examine the role WFH may have in mediating any impact on MH for carers, and female carers in particular. Interaction effects are estimated holding all variables at their means. Across all models, results are expressed as percentage point differences (average marginal effects).

III RESULTS

3.1 Descriptive Statistics

Table 1 presents descriptive statistics of our sample, partitioned by caring status. Overall, 10 per cent of the sample stated they were carers and 31 per cent of carers WFH compared to 29 per cent of non-carers.

Sixty per cent of carers were females, compared to 45 per cent of non-carers, reflecting previous research showing that carers in general were more likely to be female in Ireland (Family Carers Ireland, 2020a). Carers were more likely to be married than non-carers, and a lower percentage held a degree. Carers were also more likely to report worsened MH since the pandemic, as well as having higher rates of PMHP.

Tables A.2 and A.3 in the Appendix also show that there were considerable changes since the start of the pandemic in other factors such as loneliness, social connectedness, and relationships with family members, neighbours, work colleagues, and community groups. However, there was little significant variation in worse outcomes for these variables between carers and non-carers.

Figure 3 shows the percentage of our sample reporting worse MH since the onset of the pandemic partitioned by caring status and gender. Clear differences in worse MH are observed across caring status and gender. Females were more likely to report worse MH compared to males. Almost 40 per cent of female carers reported worse MH, compared with 33 per cent for female non-carers. Conversely, male carers reported slightly lower rates of worse MH compared to male non-carers. Additionally, male carers were much less likely to report worse MH than their female carer counterparts.

3.2 Statistical Analyses – Changes in Mental Health since COVID-19

Table 2 presents the associations of better or worse MH, compared to staying the same, following multinomial logistic regressions. These results show the variation in reporting both better or worse MH seen across the independent variables of interest. Results show that carers were 7.8 percentage points ($p<0.01$) more likely

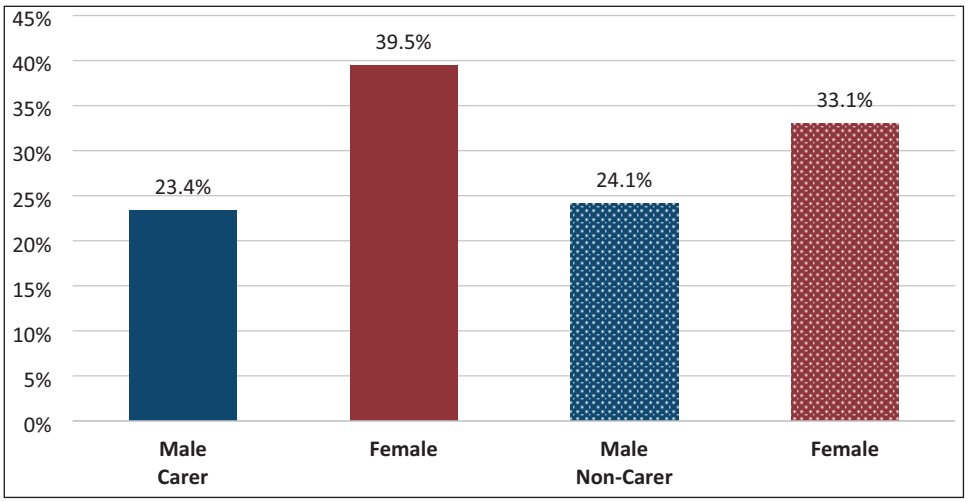
Table 1: Descriptive Statistics

		Non-Carer (%)	*Carer (%)*
Total		90.06	9.94
Working from home	No	70.61	69.01
	Yes	29.39	30.99
Gender	Male	54.55	39.56
	Female	45.45	60.44
Age	25-34	30.11	9.76
	35-44	32.48	35.88
	45-54	23.29	29.93
	55-64	14.12	24.43
Marital Status	Married/Co-habiting	41.18	60.41
	Single/never married/ divorced	58.82	39.59
Education	Less than degree	53.95	59.95
	Degree or higher	46.07	40.05
Self-Reported Health	Fair or worse	6.88	10.35
	Good or very good	93.12	89.65
Mental Health since COVID-19	Better	5.35	9.58
	Stayed the same	67.60	61.66
	Worse	27.05	28.76
PMHP	No	89.59	86.26
	Yes	10.41	13.74
COVID-19 Infection	No	94.81	95.33
	Yes	5.19	4.67

Source: Authors' analysis of Healthy Ireland Survey Wave 7 data.
Note: Study sample includes respondents in employment aged 25-64 years old.

than non-carers to have improved MH since the onset of the COVID-19 pandemic. However, no statistically significant difference was seen across caring status for worse MH. WFH was also associated with a 6.4 percentage point ($p<0.01$) higher probability of reporting worse MH since the onset of the pandemic, though no difference in better MH was seen across WFH status. Females also reported a 5.7 percentage point ($p<0.01$) increase in worse MH compared to males, though no difference in better MH was seen across gender. The results show that, apart from caring status, no differences in better MH were seen across other sociodemographic characteristics. However, respondents who were a parent, had a degree, and had a COVID-19 infection were much more likely to report worse MH.

Figure 3: Percentage of Workers in Ireland Reporting Worse Mental Health by Caring Status and Gender



Source: Authors' analysis of Healthy Ireland Survey Wave 7 data.
Note: Study sample includes respondents in employment aged 25-64 years old.

Table 2 shows greater variation in reporting worse MH across our key variables of interest. Therefore, we focus on worse MH (compared to a base category of 'improved' or 'stayed the same') in the rest of the analysis. Table 3 presents the associations of worse MH, compared to reporting stayed the same or better MH, following logistic regressions. Column I (which does not include any interaction effects) shows that carers were not significantly more likely than non-carers to report worsened MH since the onset of COVID-19, and respondents WFH (compared to on-site workers) and females were more likely to report worse MH. Column II presents results interacting caring and WFH status. Results show no statistically significant interaction effect for caring and WFH status. Column III presents results interacting caring and gender. Results show that female carers had a 13.9 percentage point ($p<0.01$) higher rate of reporting worse MH compared to male non-carers. These results highlight the gendered nature of the MH impact of the pandemic among carers.

Results in Table 3 show that changes in MH varied considerably across caring status, WFH status, and gender. To further examine this effect, we estimate logistic regressions focused on worse MH, where we interact carer, WFH, and gender (Figure 4). Results are presented as 'probability of worse MH' for ease of interpretation. The results show clear variation in the probability of reporting worse MH across WFH status and carer status. Overall, the largest variation in rates of worse MH across carer status was found among females working on site. Within this group, being a carer was associated with a 12-percentage point increase in the

Table 2: Associations of Changes in Mental Health since COVID-19 among Workers in Ireland

	Improved Mental Health	*Worsened Mental Health*
Carer	0.078***	0.017
WFH	0.011	0.064***
Female	–0.015	0.057***
Age	–0.003	–0.000
Age Sq.	0.000	0.000
Married/co-habit	0.011	–0.062***
Parent	–0.007	0.047**
Degree	0.015	0.061***
Irish Nationality	0.007	0.006
COVID-19 Infection	0.016	0.127***
GP Visit Card	–0.024	0.001
Medical Card	0.011	0.028
Chief Earner	0.002	–0.049
Mean Improved	0.055	
Mean Stayed the Same	0.680	
Mean Worsened	0.265	
Occupation controls	Yes	
County controls	Yes	
N	2,971	
R2	0.07	

Source: Authors' analysis of Healthy Ireland Survey Wave 7 data.
Note: Study sample includes respondents in employment aged 25-64 years old. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

rates of worse MH. However, no such difference was observed across caring status for females WFH. However, females WFH reported very high rates of worse MH regardless of their caring status. The opposite effect was observed for males. Worse MH rates were lower among male carers, with a sharp drop seen within the male WFH group.

3.2.1 Heterogenous Effects

We undertook a number of sensitivity and subgroup analyses examining changes in MH since the onset of the COVID-19 pandemic. First, we examined whether the results above differed by caring intensity. In the HIS, for respondents who stated they were carers, they were further asked how many hours per week they provided care. Figure A.2 in the Appendix shows the distribution of caring hours. Approximately 50 per cent of carers reported less than ten hours per week and

Table 3: Associations of Worsened Mental Health since COVID-19 among Workers in Ireland

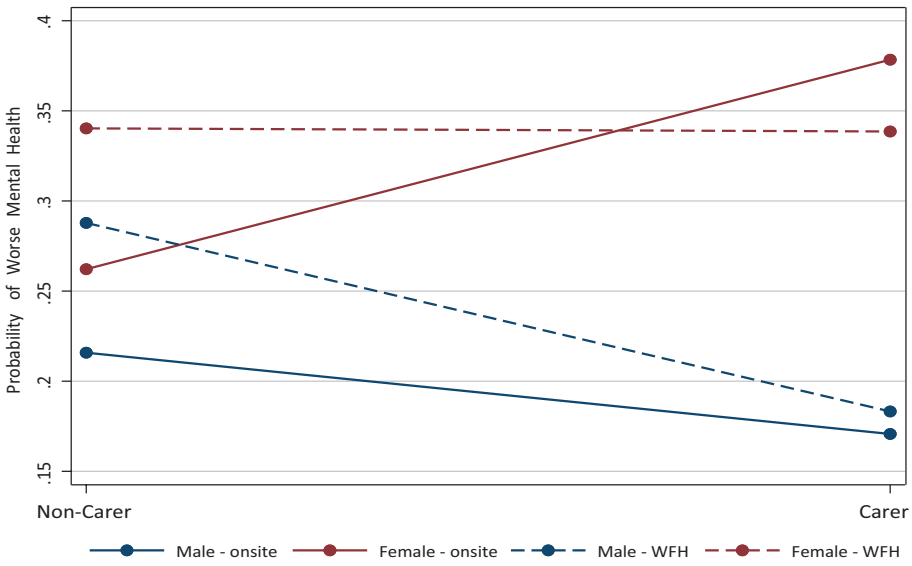
	Worsened Mental Health		
	I	*II*	*III*
Carer	0.023	0.023	0.009
WFH	0.065***	0.065***	0.065***
Carer*WFH	–	–0.080	–
Female	0.058***	0.057***	0.059***
Carer*Female	–	–	0.139***
Age	–0.001	–0.001	–0.001
Age Sq.	0.000	0.000	0.000
Married/co-habit	–0.062***	–0.061***	–0.062***
Parent	0.047**	0.046**	0.046**
Degree	0.061***	0.062***	0.061***
Irish Nationality	0.005	0.004	0.006
COVID-19 Infection	0.126***	0.124***	0.126***
GP Visit Card	–0.001	–0.001	–0.002
Medical Card	0.028	0.029	0.029
Chief Earner	–0.049	–0.049	–0.047
Occupation controls	Yes	Yes	Yes
County controls	Yes	Yes	Yes
N	2,971	2,971	2,971
R2	0.05	0.05	0.06

Source: Authors' analysis of Healthy Ireland Survey Wave 7 data.
Notes: Study sample includes respondents in employment aged 25-64 years old. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

50 per cent reported ten or more hours per week. Using logistic regressions focused on worse MH, we interact caring intensity, WFH, and gender (controlling for a range of independent variables. In Figure 5, we illustrate that care intensity is associated with worse reported MH, and that differences between female and male carers are larger among carers who provide more care.

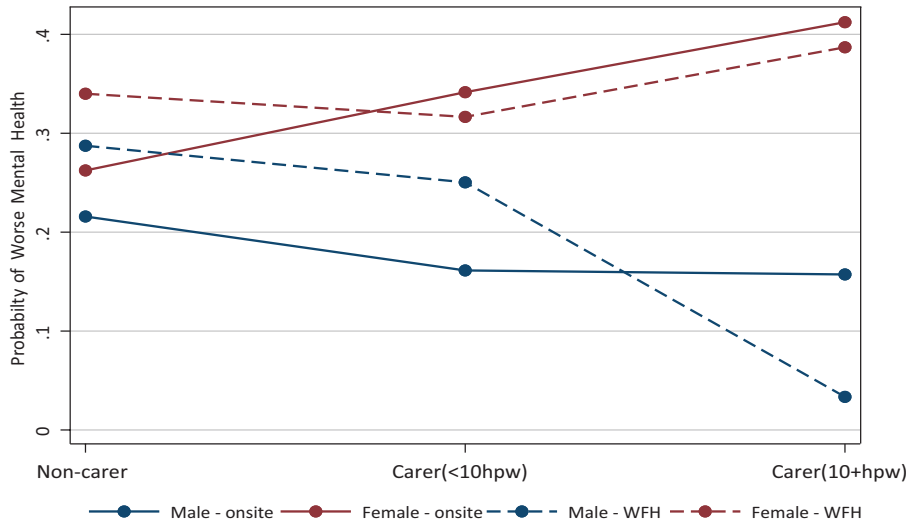
In further analyses, we also partitioned our sample by education status (degree versus non-degree), to examine whether results across gender and caring status was driven by lower or higher educated workers. In Figure 6 we illustrate that the overall pattern of results found above are similar across education status; compared to male carers, female carers were found to have a significantly higher probability of having worsened MH since the onset of the COVID-19 pandemic. However no differences were observed between female and male non-carers. However, the size of the effect is slightly larger for non-degree females.

Figure 4: Associations of Changes in Mental Health since COVID-19 among Workers in Ireland: Interaction Plots



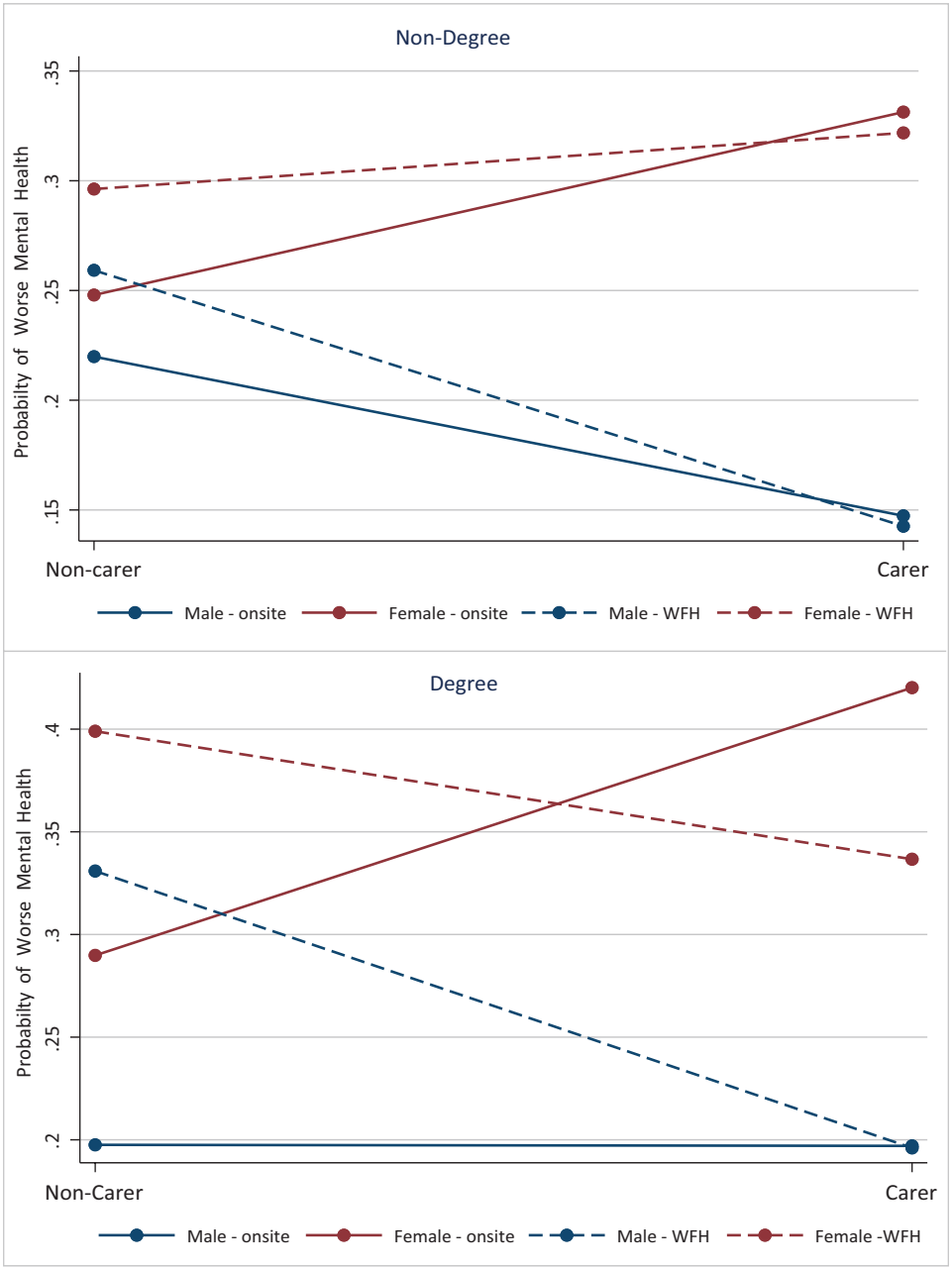
Source: Authors' analysis of Healthy Ireland Survey Wave 7 data.
Note: Study sample includes respondents in employment aged 25-64 years old.

Figure 5: Associations of Changes in Mental Health since COVID-19 among Workers in Ireland: Interaction Plots by Caring Intensity



Source: Authors' analysis of Healthy Ireland Survey Wave 7 data.
Note: Study sample includes respondents in employment aged 25-64 years old.

Figure 6: Associations of Changes in Mental Health since COVID-19 among Workers in Ireland: Interaction Plots by Education Status



Source: Authors' analysis of Healthy Ireland Survey Wave 7 data.
Note: Study sample includes respondents in employment aged 25-64 years old.

3.3 Probable Mental Health Problems

The previous section focused on subjective MH changes since the onset of COVID-19. We also examine a more standardised measure of MH that captures more severe cases of mental ill-health. Results in Table 4 present the determinants of being classed as having a probable mental health problem (PMHP) following logistic regressions, with results presented as average marginal effects, and interaction terms once more estimated holding all variables at their means. Overall, we also find variation in PMHP across our key variables of interest: carer status, WFH status, and gender.

Table 4 shows that among the employed sample, carers have higher rates of PMHPs compared to non-carers. Results from Column I show carers were more likely to have a higher probability of having a PMHP (4.8 percentage points higher) compared to non-carers. The results also show that female workers are significantly more likely to have a high PMHP compared to males. While no statistically significant effect is observed for the carer*female interaction term, results do suggest female carers may have a disproportionately high probability of having a PMHP.

We find no statistically significant variation in PMHP across WFH status. Results for other independent variables shows that being a parent, married/co-habiting and having a degree reduces the probability of being classed as having a PMHP, while having a COVID-19 infection increases the probability.

IV DISCUSSION

4.1 Key Findings

This paper provides a number of insights into the experiences of workers (with and without caring responsibilities) during the COVID-19 pandemic in Ireland.

First, workers who began WFH during the pandemic were found to have a 6.5 percentage-point higher rate of reporting worsened MH compared to workers whose working conditions remained unchanged. This finding is consistent with much of the literature on WFH and MH. Evidence from pre-pandemic studies (Oksanen *et al.*, 2010; Bloom *et al.*, 2015) suggest that reductions in social capital may be one channel through which MH deterioration occurred for those WFH. The time period of this study means many people were forced into WFH due to the State's imposition of restrictions, which would likely have had negative impacts on their social capital. Additional analysis undertaken on the effects of restrictions on social capital, presented in the Appendix, support this: when questioned about changes in relationships with various groups since the onset of COVID-19, over 20 per cent of those in our sample reported worsening relationships with friends, colleagues, neighbours, and community groups. However, it should be noted that WFH was not significantly associated with the probability of being classed as having a probable mental health problem. As the PMHP measure captures MH outcomes in

Table 4: Associations of Probability of Mental Health Problems among in Ireland

	I	*II*	*III*
Carer	0.048*	0.048*	0.045
WFH	–0.017	–0.018	–0.018
Carer*WFH	–	–0.014	–
Female	0.034**	0.034**	0.035**
Carer*Female	–	–	0.048
Age	–0.001	–0.001	–0.001
Age Sq.	0.000	0.000	0.000
Married/co-habit	–0.029*	–0.029*	–0.029*
Parent	–0.035**	–0.035**	–0.035**
Degree	–0.036**	–0.036**	–0.036**
Irish Nationality	–0.000	–0.000	–0.000
COVID-19 Infection	0.115***	0.115***	0.115***
GP Visit Card	0.024	0.024	0.023
Medical Card	0.019	0.019	0.019
Chief Earner	–0.036	–0.036	–0.035
Occupation FEs	Yes	Yes	Yes
County FEs	Yes	Yes	Yes
N	2,905	2,905	2,905
R2	0.07	0.07	0.07

Source: Authors' analysis of Healthy Ireland Survey Wave 7 data.
Note: Study sample includes respondents in employment aged 25-64 years old. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

the four weeks preceding a respondent's participation in the HIS, and therefore represents a later time period than the general MH measure, this could reflect Robinson *et al.*'s (2022) findings of declines in MH symptoms following an observed increase in March-April 2020.

Second, this study found that carers had worse MH on average as measured by the PMHP score, in line with previous research on carers in Ireland (Family Carers Ireland, 2020; McGarrigle *et al.*, 2022) and internationally. However, since the onset of the pandemic, carers were more likely to report improved MH (or at least were no more likely to report worse MH) compared with non-carers. Given the different time scales across the two questions (with the subjective MH measure referring to the period since restrictions and the PMHP measure referring to the last four weeks), this discrepancy could be illustrative of a potential normalisation of MH problems among carers. Further analyses identified significant gendered effects on MH outcomes across carers. We estimated that reports of worsened MH among

carers were driven predominantly by female carers. Compared to male carers, female carers were 14 percentage points more likely to report worse MH since the onset of the pandemic. While females in general were found to have a significantly higher probability of having worsened MH, the gender effect among carers was almost three times larger than the gender effect observed for non-carers.

Variation in MH outcomes among carers was also found to differ across WFH status, but only once gender effects were considered. Few differences in MH were observed among males. Among female workers whose working situation did not change during the pandemic, being a carer was associated with a 12 percentage-point increase in the probability of reporting worsened MH. However, no such difference was observed for female workers who began WFH during the pandemic, indicating that the transition to WFH may have mitigated some of the MH issues associated with caring. This could be related to the context of the pandemic – female carers who were working on-site during the pandemic may have experienced additional stress from the fear of spreading the virus from their workplace to those they are caring for, which could have been mitigated by WFH. Similarly, being in closer proximity to the care recipient, and the reduced time spent commuting from work, may also have eased the time pressures on female carers. Importantly, the study finds that regardless of WFH status, the probability of female carers reporting worsened mental health since the start of the pandemic was very high – far higher than for male carers.

4.2 Policy Implications

COVID-19 has had significant impact across various parts of the economy and society. The impacts of the COVID-19 pandemic will continue to reverberate especially in employment policy and practices (Goode, 2022). The *National Remote Work Strategy* (Department of Enterprise, Trade, and Employment, 2021), published during the pandemic, considered the relationship between remote work and productivity in depth, though further attention to the MH impacts of remote work would have been a valuable complement to this. The *Code of Practice for Employers and Employees on the Right to Disconnect* (Workplace Relations Commission, 2021), enshrines in legislation the right to a reasonable work-life balance, along with providing best practice guidance for workplaces to develop a Right to Disconnect Policy. However, it is unclear to what extent workplaces may be assessed in relation to this code of practice, beyond employees referring particular grievances to the WRC. The government has also introduced tax relief for those WFH. However, less attention has been given to the potential positive and negative implications of remote work and employee's MH (beyond discussions of the right to disconnect). This study's findings highlight the need for more rounded policies that can help support the MH of those in employment, especially for those now WFH and those with caring responsibilities.

Family carers, or informal carers, are still often characterised as a forgotten group in society (Chan *et al.*, 2020), with a lack of attention given to their physical, mental, and social wellbeing. However, during the COVID-19 pandemic, caring labour, caring at home, and the power relations within caring were given increased attention from academia and the media in Ireland and elsewhere. Echoing the findings of this research, female carers were shown to have had disproportionate deterioration in their MH (McGarrigle *et al.*, 2022). Out of this focus, new bodies in Ireland, including the Commission on Care for Older People, will be used to help understand the needs of carers and how best to support them in the future. In this context, there is an opportunity to problematise the pre-pandemic "normal" – or, in the case of carers, to re-centre this problematisation in advocating for reform (Huppatz and Craig, 2022). Relatedly, there is an opportunity to interrogate and debate the incorporation of developments that occurred during the pandemic – such as remote working and WFH – into a "new normal" for carers. Rather than framing WFH as "an ephemeral element of exceptional times" (Goode, 2022), appropriate debate regarding the potential long-term consequences of its development is required. The findings of this research contribute to this necessary debate, showing the potential benefits of WFH for female carers in particular.

As norms surrounding female labour market participation have changed (Bonsang and Costa-Font, 2023), so too has the opportunity cost of caring faced by women. This opportunity cost has increased in line with the increased earnings women could reasonably expect to forgo through taking on caring responsibilities (Costa-Font, 2023; Van Houtven *et al.*, 2013). Caring responsibilities for workers are especially important, and many carers may effectively have two full-time jobs to juggle. This can contribute to stress, fatigue, and mental ill-health and can crowd out time for carers to look after their own health and wellbeing. In this context, understanding how carers were impacted by COVID-19, and changes to working conditions, may also reduce the burden of caring in the future for the State, as there is a clear link between being a carer and subsequently requiring care at a younger age (Costa-Font *et al.*, 2023). As such, interventions and caregiving supports that relieve some of the load shouldered by caregivers can contribute to improved wellbeing among carers, and female carers in particular (Costa-Font *et al.*, 2023). Additionally, policy relating to WFH and remote work should consider gendered differences in the experience of WFH, particularly among those with caring responsibilities.

4.3 Limitations

There are several limitations to this study. First, COVID-19 impacted the data available to examine MH in this study. Unlike previous waves of the HIS, interviews for Wave 7 took place remotely (via telephone). Because of this, it was not possible to include several variables that may impact MH health including deprivation and diagnosed mental illness, which have been examined elsewhere

using data from previous HIS Waves. Additionally, because of the change in methodology, it was difficult to compare MH in Wave 7 with previous waves of the survey. Second, the WFH variable included is based upon a response to this change in working environment being a consequence of COVID-19 restrictions. It is possible some people were classed as WFH prior to the pandemic, and this would not be captured in our analysis. Furthermore, WFH in the period studied was likely determined by restrictions imposed by the State, while WFH or hybrid working arrangements currently are based upon company-level decisions. Therefore, workers likely have a greater choice on their WFH arrangements now, compared to the period of HIS Wave 7. Third, this study focused on working carers aged 25-64 years. However, we acknowledge the percentage of people caring does increase at older ages (see Figure 2), and recent research showed that about one-in-five younger people in Ireland provided care during the pandemic (Russell and Smyth, 2024). Finally, we did not examine those who became unemployed or furloughed as a consequence of the pandemic. Additional analyses found this group likely suffered the greatest deterioration in their reported MH. However, it was felt this group required a specific focus on research, and therefore were outside the scope of this research question.

4.4 Conclusions

This study provides evidence on the complex relationship between caring, WFH, and MH. This study is one of the first highlighting that the COVID-19 pandemic and associated restrictions had significant impacts on the MH of workers in Ireland. In general, workers who were WFH and female workers saw the largest reductions in their MH. We found that the evidence that WFH mitigated MH deterioration for carers was weak, except in the case of female carers. However, further research may be required in this area, especially given that workers themselves now have more input into WFH, at least on a partial basis. While WFH may help many carers juggle their career and caring responsibility, it is not a panacea for improving the lives of working carers and additional policies will be needed. Finally, this research shows that failure to consider the gendered effects of caring on MH, especially when the majority of carers in Ireland are female, may reduce the ability to formulate effective policies to improve the health and wellbeing of carers.

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APPENDIX

Table A.1: COVID-19 Restrictions in Ireland, March 2020 – March 2021

Date	*Implementation/Relaxation of Public Health Restriction(s)*
08/03/2020	Travel restriction for Northern Italy issued.
09/03/2020	St Patrick's Day parade cancelled.
12/03/2020	Closure of schools/colleges/childcare facilities, public venues. Indoor gatherings of more than 100 people and outdoor gatherings of more than 500 people not allowed. Social distancing and working from home recommended.
18/03/2020	All overseas arrivals to self-quarantine.
24/03/2020	Stay-at-home order, all non-essential businesses close, playgrounds close, sporting events cancelled. Essential services required to implement physical distancing. Unnecessary travel either within Ireland or overseas not permitted. Physical distancing required when outside. Work from home unless essential services.
27/03/2020	Full lockdown (except for essential workers) until 12/04/2020. Essential travel only, limit 2km, public gatherings not allowed. Cocooning recommended.
10/04/2020	Full lockdown to remain in place until 05/05/2020 review.
01/05/2020	Government announces Roadmap for Reopening Business and Society.
18/05/2020	Phase 1 of restrictions easing: travel limit 5km (from 2km), gatherings of four people outdoors permitted, outdoor work can resume, re-opening of select retail, e.g. garden centres.
08/06/2020	Phase 2 of restrictions easing: travel limit 20km, gatherings of six people indoors/outdoors, re-open retail. Organised sporting, cultural, or social activities for up to 15 people are allowed. Still work from home and avoid public transport if possible.
29/06/2020	Phase 3 of restrictions easing: travel within Ireland allowed, indoor gatherings of 50, outdoor of 200 people, public venues, childcare, restaurants, cafes, hotels re-opened. Still work from home and avoid public transport if possible. Cocooning – personal judgement. Avoid all non-essential overseas travel – quarantine for 14/7 if returning from overseas. Face coverings recommended for public transport and places where difficult to maintain social distancing.
14/07/2020	Delay to Phase 4 of restrictions easing until 10/08/2020. Limits on social gatherings in private homes: max. ten people from four households.
23/07/2020	Agreement by NPHET of a *Framework for Future COVID-19 Pandemic Response*, setting out a strategic approach to Ireland's future response to the pandemic.

Table A.1: COVID-19 Restrictions in Ireland, March 2020 – March 2021 (Contd.)

Date	*Implementation/Relaxation of Public Health Restriction(s)*
04/08/2020	Further delay to Phase 4 of restrictions easing. Pubs, bars, and nightclubs remain closed, restrictions on numbers attending indoor and outdoor remain the same.
07/08/2020	Enhanced public health measures applied to Kildare, Laois, and Offaly for two weeks: travel restricted to within county, limits on social gatherings and sporting events, cafes and restaurants closed for indoor service, cultural and leisure facilities closed, religious services moved online.
17/08/2020	Enhanced public health measures applied nationwide until 13/09/2020, including limits on social gatherings; no spectators and sporting events; cafes and restaurants open but with legally binding conditions relating to closing times, face coverings, table service, and numbers per table; people to work from home unless essential to attend in person.
21/08/2020	Lifting of additional measures in Laois and Offaly (alignment with national measures). Continuation of additional measures in Kildare.
31/08/2020	Lifting of additional measures in Kildare (alignment with national measures).
15/09/2020	Government publishes *Plan for Living with COVID-19*. Level 2 of the new framework in place nationally until 04/10/2020. Additional measures applied in Dublin: six visitors from one other household permitted, enhanced measures in higher education, people in Dublin encouraged to limit travel outside of the county. Government announce reopening of wet pubs outside Dublin to take place on 21/09/2020.
18/09/2020	Dublin to move to Level 3 of the *Plan for Living with COVID-19*: visits to private homes and gardens limited to six visitors from one other household; no organised indoor gatherings; maximum of 15 at organised outdoor gathering; work from home unless absolutely necessary; remain in the county unless for essential purposes; retail services, schools, early learning, childcare services, gyms, leisure centres, swimming pools to remain open with protective measures; no matches or other sporting events; restaurants and cafes open for take-away and delivery and outdoor dining to a maximum of 15 people; indoor museums, galleries, cinemas and cultural attractions closed; religious services moved online (exemptions: 25 guests for wedding ceremony and reception; 25 mourners for funerals).
24/09/2020	Donegal to move to Level 3 of the *Plan for Living with COVID-19*.
01/10/2020	Healthy Ireland Survey interviews commence.
05/10/2020	Level 3 restrictions to apply nationally.

Table A.1: COVID-19 Restrictions in Ireland, March 2020 – March 2021 (Contd.)

Date	*Implementation/Relaxation of Public Health Restriction(s)*
14/10/2020	Donegal, Cavan, Monaghan to move to Level 4 of the *Plan for Living with COVID-19*, national ban on household visits.
19/10/2020	Taoiseach announces national move to Level 5 of the *Plan for Living with COVID-19,* effective from 21/10/2020 until 01/12/2020: no social or family gatherings in homes or gardens (except on compassionate grounds and for caring purposes); restaurants, cafes, and bars to provide takeaway services only; closure of non-essential retail; everyone in the country to stay at home, exercise permitted within 5km radius of home; working from home unless essential; continuation of construction work and most manufacturing.
27/11/2020	Government agrees phased move to Level 3 restrictions nationally from 01/12/2020.
01/12/2020	Non-essential retail shops, gyms and leisure centres, cinemas, museums, galleries, hair and beauty providers reopen.
04/12/2020	Restaurants, cafes, gastropubs, and hotel pubs reopen.
22/12/2020	Level 5 restrictions to apply nationally until earliest 12/01/21 (a number of adjustments applied at Christmas).
26/01/2021	Extension of Level 5 restrictions until 05/03/2021. Mandatory 14-day quarantine period for all people travelling into Ireland without a negative COVID-19 test.
23/02/2021	Extension of Level 5 restrictions until 05/04/2021. Government announces revised plan for managing the virus over the coming months – *COVID-19 Resilience and Recovery 2021: The Path Ahead.*
30/03/2021	Those who have received the second dose of the vaccine can meet with other fully vaccinated people from one other household indoors without wearing masks or staying two metres apart. Government announces phased easing of public health restrictions, to commence on 12 April.
31/03/2021	Healthy Ireland Survey interviews completed.

Sources: Conway *et al.* (2021), Department of the Taoiseach (2020; 2021), Government of Ireland (2021), Kelly *et al.* (2022), NPHET Policy Unit (2021).

The green shaded area shows the period in which data collection for Wave 7 of the Healthy Ireland Survey took place. It should be noted that the different measures of mental health used in this analysis are based on different time periods: the general measure of mental health (the main measure used in our analysis) asks respondents how their mental health has changed *since the start of COVID-19 restrictions in March*, whereas the PMHP measure is based on respondents' experiences *in the*

past four weeks. While all respondents would have been subject to some restrictions in the past four weeks (regardless of when they completed the survey), the intensity of these restrictions may vary across respondents.

Table A.2: Changes in Mental Health, Social Connection, and Loneliness since COVID-19 among Workers in Ireland

	Carers	*Non-Carers*
Mental Health		
Improved	9.6%	5.4%
Stayed the Same	61.7%	67.6%
Worsened	28.8%	27.1%
Social Connection		
More Socially Connected	7.4%	3.5%
Has not Changed	80.6%	82.6%
Less Socially Connected	11.9%	13.9%
Loneliness (last four weeks)		
Often/Always	3.8%	4.3%
Some of the Time	13.5%	11.1%
Occasionally	18.8%	18.7%
Hardly Ever	17.9%	23.9%
Never	46.1%	42.1%

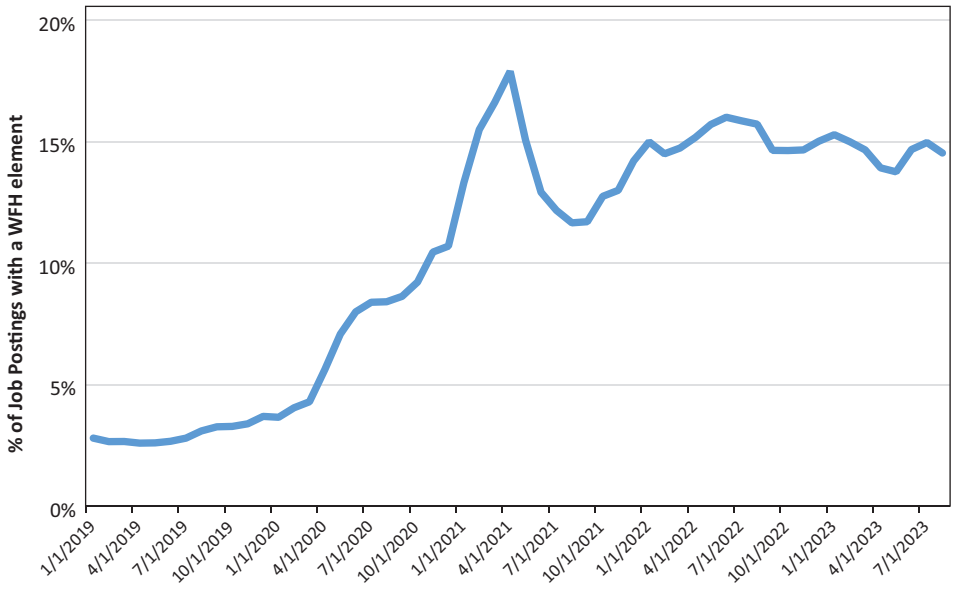
Source: Authors' analysis of Healthy Ireland Survey Wave 7 data.
Note: Study sample includes respondents in employment aged 25-64 years old.

Table A.3: Relationship Changes since COVID-19 among Workers in Ireland

	Carers	*Non-Carers*
Children		
Improved	19.7%	13.1%
Stayed the Same	62.0%	71.5%
Worsened	18.4%	15.5%
Parents		
Improved	20.8%	14.1%
Stayed the Same	69.1%	72.4%
Worsened	10.1%	13.4%
Neighbours		
Improved	9.1%	7.3%
Stayed the Same	66.2%	66.5%
Worsened	24.8%	26.1%
Friends		
Improved	9.3%	7.0%
Stayed the Same	58.4%	63.0%
Worsened	32.3%	30.1%
Colleagues		
Improved	7.7%	9.0%
Stayed the Same	71.2%	70.0%
Worsened	21.2%	21.1%
Community Groups		
Improved	10.2%	8.0%
Stayed the Same	47.1%	55.9%
Worsened	42.8%	36.1%

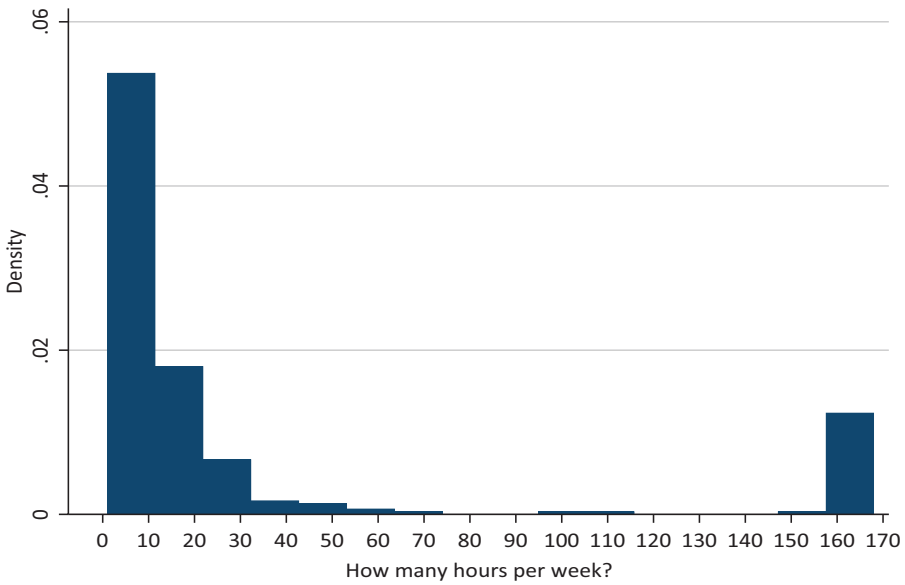
Source: Authors' analysis of Healthy Ireland Survey Wave 7 data.
Note: Study sample includes respondents in employment aged 25-64 years old.

Figure A.1: Share of Job Postings in Ireland with a Working from Home Element



Source: Indeed-OECD Project on Remote Work (Adrjan *et al.*, 2023).

Figure A.2: Caring Hours Per Week among Workers in Ireland



Source: Authors' analysis of Healthy Ireland Survey Wave 7 data.
Note: Study sample includes respondents in employment aged 25-64 years old.