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The association between self-reported health, late career transitions and working time modulations in England.

Jacques Wels, PhD
Université libre de Bruxelles, centre Metices
University of Cambridge, Department of sociology
Email: wjacques@ulb.ac.be

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Abstract:
Background. There is an emerging literature focusing on the impact of late career transitions on health, but little is known about the role working time modulations might play in explaining older workers' health. **Methods.** Using the English Longitudinal Study of Ageing (ELSA) waves 4 to 7, the article assesses the association between the different types of change in working time, the total weekly working hours at baseline and the level of income and the change in self-reported health (SPH). The model controls for financial wealth, qualification, gender, age, the sector of activity and self-reported health at baseline. **Results.** Respondents who retire have a better SPH compared with those who keep working at constant working time. Those who work long hours benefit more from retiring. Respondents working long hours before being unemployed tend to be less affected by a negative change in SPH. Those who reduce working time by 50 per cent or more and work long hours at baseline have lower probabilities to be affected by a negative change in SPH compared with those who work fewer hours. Finally, low-paid workers are those who benefit the most from retiring or reducing working time. **Conclusion.** There is a significant association between change in working time and change in self-reported health that needs to be investigated in further research. Results point out the need to foster working time arrangements for low-paid workers.

Keywords: Working time reduction, ELSA, Older workers, Transition to retirement, Longitudinal.

Background

The age at which older workers leave the labour market has drastically increased over the past twenty years in most OECD (Organisation for Cooperation and Development Economics) countries, raising concerns about the health impacts of extending working lives. In Great Britain, the average effective age of retirement – as calculated by the OECD (Keese n.d.; Wels 2016) – was 62.3 and 60.2 years of age in 1997, respectively for men and women. In 2017, it has risen to 65 and 63.9. Hence, the impact of late career transitions on health is subject to a considerable – but still relatively new – amount of research using longitudinal methods. Among the different possible transitions, many studies have focused on the impact of the transition from work to retirement, unemployment and inactivity on health (Graetz 1993; Calvo 2006; Waddell and Burton 2006; Rice et al. 2011; Burton-Jeangros et al. 2015) but also on work or family care histories (Corna and Sacker 2013; Wahrendorf 2014; Benson et al. 2017). So far, a consensual view on this matter has not been reached (Hashimoto 2015). Some research has found a negative association between retirement transitions and post-retirement health while some other studies have demonstrated the health benefits of retiring.

The association between late career transitions and health

For instance, Di Gessa and Grundy (2014) have demonstrated that engagement in paid work contributes to maintaining health in later life compared to people leaving the labour market. Similarly, using cross-sectional data Siegrist and Wahrendorf (2014) have shown that continued participation in socially productive activities improves prospective quality of life in early old age and Alavinia and Burdof (2008) have demonstrated that poor health, chronic diseases, and lifestyle factors are associated with being out of the labour market. Similarly, looking at full-time workers aged 50 and over, Moon et al. (2012) show that retirement is associated with elevated odds of having cardiovascular disease. Using the Health and Retirement Survey, Voss et al. (2018) found that late-career unemployment has no significant effect on self-reported physical health but is associated with lower levels of mental health. Similarly, taking a life-course perspective, Wahrendorf et al. (2018) have shown, for France, that adverse employment histories and years out of work are associated with poor health at the old age. Conversely, a certain number of studies have underlined the positive impact of retiring, particularly for those working in poor work environment. Using the French GASEL dataset, Westerlund et al. (2009) have shown that workers self-perceived health is substantially relieved by retirement for all groups of workers (apart from those with ideal working conditions). Similarly, focusing on sleep disturbance, Vahtera et al. (2009) provide strong evidence for a substantial and sustained

post-retirement decrease in sleep disturbances. Using Belgian data from the SHARE, I (Wels 2018a) found that respondents moving to retirement are more likely to present a better self-perceived health, depression level and quality of life compared to people increasing or keeping the same working-time level, after controlling for the age and other socio-economic variables.

As a matter of fact, the association between retirement transitions and health needs to be nuanced and to account for factors affecting the retirement decision. For instance, Schuring et al. (2015) show that the level of education plays a role in explaining both early retirement decision and post-retirement health. While the health of low-educated workers partly prompts early retirement and economic inactivity, these exit routes prevent further deterioration of their health. The opposite relation is observed for high-educated workers as early retirement has an adverse effect on self-reported health. Slightly different finding was reported by König et al. (2018) using Swedish data: low educated retirees are more likely to stop working for physical reasons and therefore have a poorer post-retirement health. The same kind of result is observed when looking at the occupational class (see, for instance, Virtanen et al., 2017). But other factors can be taken into consideration. For instance, the generosity of the Welfare State plays a role in explaining the change in health following work exit. Comparing 16 European countries, Richardson et al. (2018) found that national expenditure on in-kind benefits is associated with more favourable wellbeing change outcomes after leaving the labour market. The nature of the transition, whether voluntary or involuntary, also affects health. Using the Swedish Longitudinal Occupational Survey of Health, Hyde et al. (2015) show that, compared to voluntary employment exit, involuntary exit is associated with a higher risk of reporting major depression and becoming newly prescribed antidepressant medication. Finally, collective bargaining and trade union membership may also play a role in explaining older workers' health variations. Using the Health and Retirement Study for the United States, I have shown that unionized workers are less likely than non-unionized workers to experience a negative change in self-perceived health and depression level during the different types of late career transitions (Wels 2018b). Unionized workers are also more likely to retire before non-unionized workers. In essence, it can be assumed that working life prolongation may have both adverse and beneficial effects.

Taking into account working time variations

Yet, most of these studies assume that late career transitions are straightforward and that the health outcomes observed after a professional transition could be measured based on the nature

of the transition that occurred. They fail to consider both the intensity of the workload prior the transition to retirement and the change of its intensity over a selected sequence.

Recently, public arrangements have been gradually implemented in many European countries with the purpose of retaining the older workforce. Simultaneously, flexible work arrangements have gained attention in the scientific literature (Wels 2015; Wheatley 2017). In Great Britain, three major reforms can be pointed out. Firstly, the 2002 Employment Act sets up a statutory right for employees to request contract variation regarding the hours and the time they are required to work. Though, the 2002 employment act focused mainly on youth people. Secondly, in 2011, the UK fully abolished the default retirement age and, consequently, workers are now free to decide when they wish to retire (Lain 2017). Thirdly, the 2014 Employment Act emphases the need for flexible work regulation setting up a minimum of 26 weeks of service for the employee to ask for flexible work. These three regulations have led both to a gradual reduction in the average working time worked by the ageing population and to an increasing proportion of older people remaining at work. Even though it is still difficult to assess to what extent reducing working time in late career would have an impact on retirement decision (Charles and DeCicca 2007), working time arrangements are widespread (Wheatley 2017). About 13 per cent of the working population aged 55 to 69 declares reducing working time in a move towards retirement (Wels 2018c).

Even though there is an extensive knowledge of these arrangements at policy level (Bluestone and Rose 1998; Andor 2012; Berg et al. 2015; Dubois et al. 2016) or at the workplace level (Lewis et al. 2017; Wheatley 2017), the role played by working time arrangements in explaining the change in health in late career is still to investigate. The health implications of working time are well known: most studies find correlations between working hours and general health and physiological and psychological health symptoms (Sparks et al. 1997) but long working hours are also associated with risk of stroke and, to a lesser extent, coronary heart disease (Kivimäki et al. 2015). However, few studies have focused on the concrete implications of working time modulations in late career.

The association between health and working time can be assessed in two different ways, looking either at the way working time is organized or at the working time as such. On the one hand, one can focus on the potential role played by work arrangements in improving workers' health and this implies to account for the potential control workers would have on their working time. For instance, many studies have recently underlined the benefits of using flexible work arrangements (Kim and Gong 2017; Wheatley 2017) on family-related conflicts or employees'

satisfaction or the association between the workload (co-workers support, role conflicts work-family conflicts, etc.) and stress (Bowling et al. 2015). On the other hand, one can also focus on the role played by working time in explaining workers' health. Rather than accounting for the availability and the use of work arrangements, this perspective implies to assess the association between working time – as a numeric variable – and health. In this case, the emphasis is usually on the association between long working hours (overemployment) and short working hours (underemployment) (Bell and Rutherford 2013) and health outcomes.

One famous example that can be found in the literature is Japanese notion of the *Karoshi* (Iwasai et al. 2006) – that can be literally translated as "overwork death" –, designating mortality due to health problems (e.g. heart attack or stroke) caused by long working hours (Otsuka and Horita 2013) (some legislations have been recently passed in Japan to tackle such a phenomenon (Takami 2019), but overemployment remains an issue). Though, underemployment might also be a problem. Looking particularly at the case of the older workforce in the United Kingdom, Bell and Rutherford (2013) find that, even though a large part of the older workforce prefers to work fewer hours, a significant share of the older workforce is underemployment and wishes to work longer hours. A major concern raised by the change in working time in late career is to account for the impact of working hours modulations on work-related incomes. As time remains the main way to measure work, it can be assumed that working time modulations have an impact on incomes. The question is therefore to assess what the impact of working time modulations is, after controlling for the impact of financial variables on health. Such a paradox could be formulated as follow: a high number of working hours might damage health but, similarly, low working hours affect incomes level and could indirectly negatively affect health as well. It is therefore necessary to account for the full spectrum of possible working times and that is where knowledge is missing.

To do so, one needs to account for the changing nature of health and working time, particularly when looking at the older workforce. Working hours are not constant over time and many workers change their working time in the lead up to retirement. Therefore, the only way to account for such changes is to use a longitudinal point of view. In this perspective, one could consider the change in working time as a proper type of transition that could be compared with other types of transitions. Indeed, transitions towards retirement are not linear and take different forms. Aside from involving different types of status (unemployed, unoccupied, early retired, etc.), they also involve different types of working time modulations in the lead up to retirement (Wels 2018c).

Purpose of the study

Using panel data from the English Longitudinal Study of Ageing (ELSA), the aim of this article is to assess whether working time arrangements affect variations in self-perceived health in late career. A strategy to answer this overall aim is to take into consideration three core variables particularly affecting late career transitions: the change in labour status, work intensity (in working time) and income level. Put in another way, the article looks successively to three sub-questions: First, what is the impact of late career transitions on the older workers' self-perceived health (SPH)?; second, does the impact of late career transitions on SPH vary depending on the weekly working time prior the transition?; finally, does the impact of late career transitions on SPH vary depending on the weekly working time, the level of income prior the transition and the interaction between working time and income level?

Methods

Data

Data come from the English Longitudinal Study of Ageing (ELSA) (Steptoe et al. 2013). The ELSA sample has been designed to represent people aged 50 and over, who were living in private households in England in the first wave (2002/2003). The sample was refreshed in waves 3, 4 and 6 to make the sample representative of all age groups. Wave 3 included a refreshment sample of people aged between 50 and 53. ELSA sample was further refreshed across a wider age range of 50 to 74 years at wave 4. At wave 6, a refreshment sample of respondents aged between 50 and 55 years was included. In this study, transitions between waves 4 (2008), 5 (2010), 6 (2012) and 7 (2014) are taken into consideration. Only respondents declaring being employed or self-employed at baseline and aged 55 to 65 in wave 4 were selected (they were aged 61 to 71 in wave 7). The total sample in wave 4 contains 3,718 respondents. 445 respondents dropped out from wave 4 to wave 5 (12 per cent of the original sample), 148 respondents dropped out from wave 5 to wave 6 (4.5 per cent) and 264 from wave 6 to wave 7 (8.4 per cent)[1]. The percentage of the sample moving from employment to retirement is 12.8 in wave 5, 27.1 in wave 6 and 58.1 in wave 7.

[1] The causes of attrition are difficult to detect for two major reasons. First, the technical report indicating the causes of the drop out is currently updated for wave 5 but no information is available for waves 6 and 7 yet. Second, the knowledge of the causes of attrition depends particularly on the information provided by relatives and registers. This is particularly problematic when the attrition is due to death. From wave 4 to wave 5, the mortality status collected from the Office for National Statistics (ONS) shows that 1.16 per cent of the original sample died from wave 4 to wave 5. Though, there was no permission to check for the mortality status for 205 respondents. 93.3 per cent of the selected sample was still alive in wave 5 – which means that the information was missing for 5.51 per

[Please insert table 1]

The paper aims to assess the association between the change in working time associated or not with a change in labour status from wave 4 to wave 5 on the one hand, and, on the other hand, the change in self-perceived health observed between wave 4 and wave 6 and between wave 4 and wave 7.

Dependent variable

The dependent variable is the change in self-reported health (HRS version) between baseline and follow-up. Self-reported health ('How is your health in general?'), contains five answering categories coded from 1 (excellent) to 5 (poor) (Benavides et al. 2000). This variable is considered in the literature as an independent predictor of mortality (Mossey and Shapiro 1982; Idler and Benyamini 1997). The dependent variable was calculated as the difference in self-perceived health between wave 4 and wave 6 (model 1) and between wave 4 and wave 7 (model 2) and coded '0' when a worsening SPH is observed, '1' when no change is observed and '2' when a positive change is observed.

Independent variables

Two variables are of particular interest in this paper. The first variable is the change in labour status from wave 4 to wave 5. This variable is constructed using two variables provided by ELSA: the economic activity (*ecpos_*) observed in wave 5 (only working people, both employees or self-employees were selected in wave 4) and the change in hours of work in all jobs (employed or self-employed) (*hours_aj_*) observed between wave 4 and wave 5 calculated as a percentage. As the change in hours includes overtime, a threshold of five percentage points of change was selected in order to not overestimate the change in working time within the sequence[2]. After merging these two variables, one obtains a typology (11 types) of the change in labour status, taking into consideration the change in working time.

The model deliberately does not take into consideration the usual full-time/part-time distinction, which is usually recorded on a declarative basis (van der Horst et al., 2017). Indeed, among people declaring reducing working hours in the lead up to retirement, about 27 per cent of male and 10 per cent of female workers declared working full-time (Wels 2018c). What matters is therefore the extent to which workers reduce their weekly working hours

cent of the original sample. As the attrition rate from wave 4 to wave 5 was 11.97 per cent, 5.27 per cent of the sample was still alive but dropped out.

2 Based on the British Labour Force Survey in 2014 (quarterly data), the average paid overtime is 3 hours a week and the average unpaid overtime is 5 hours a week.

independently from their initial working time. However, in order to account for the workload without using a full-time/part-time distinction, a second independent variable is taken into consideration in the model looking at the total weekly working time in all jobs at baseline.

Covariates

Several covariates are included in the model to control for demographics and socio-economic background: the age (in years, at baseline); the gender (male or female); the Highest Educational Qualification distinguishing 'degree or equivalent, 'higher education below degree', 'A-level equivalent', 'O-level equivalent', 'other grade equivalent', 'foreign/other' and 'no qualification'; the net household financial wealth (in pounds – can be negative), the net monthly individual earnings at baseline (in pounds)[3]; the type of occupation at baseline (NS-SEC - long version) containing 35 modalities; the type of household, distinguishing 'single', 'lone plus dependent children', 'lone plus non-dependent children aged under 30', 'lone plus non-dependent children aged 30 or over, 'lone plus both', 'couple', 'couple plus dependent children', 'couple plus non-dependent children under 30', 'couple plus non-dependent children aged 30 and over', 'couple plus both', 'extended family', 'extended family plus children', 'other multiple tax unit', 'other multiple tax unit plus children'; whether the respondent was employee or self-employee at baseline; whether the worker had health problem limiting work at baseline; and, finally, the change in self-perceived health from wave 4 to wave 5.

Models

The change in self-reported health is an ordinal variable coded 0 (negative change), 1 (no change) or 2 (positive change). Consequently, an ordered logit regression model is used. The general features of the model, after controlling for the above-mentioned covariates, are shown in figure 1. The model explains the change in SPH both from wave 4 to wave 6 (model 1) and from wave 4 to wave 7 (model 2)[4]. First, we use a simple model (model I) using the labour transitions (categorical variable) as the explanatory variable. Second, we use a two-way interaction effect (model II) looking at the interaction between the type of labour market transition on the one hand and the working time at baseline on the other hand. Third, we use a

[3] This variable combines financial derived variables for both employees and self-employees.

[4] The impact of professional transitions and change in working time might differ when it comes to the length of the sequence (Coe and Zamarro 2011). That is the reason for why a second model (model 2) is calculated in order to look at the change in self-perceived health from wave 4 to wave 7, i.e. over a six-years period versus a four-years period for model 1.

three-way interaction effect[5] (model III) looking at the interactions between working time at baseline, labour market transitions and the level of income at baseline[6] (in quintiles).

[Please, insert figure 1]

The coefficients produced by the ordered logit model are in log odds (the logarithm of the odds). As log odds are difficult to interpret, they can be transformed either in proportional odds ratios (by exponentializing the log odds) or in probabilities[7]. Results in model I are in proportional odds ratios. The proportional odds ratios give information about the odds of being in the highest categories of the dependent variable (i.e. a positive change versus no change or a negative change, or a positive change or no change versus a negative change). The odds ratios are from 0 to infinity. A value of 1 means that no association is observed between the selected dependent variable and the independent variable. A value lower than one means that the odds of being in the highest modalities of the ordinal dependent variable are lower. A value higher than one means that the odds of being in the highest modalities of the ordinal dependent variable are higher. Results for model I and II are in predicted probabilities (in percentage). Finally, as the sequence is affected by attrition, multiple imputation was used using the Random Forest Imputation method (Tang and Ishwaran 2017). Data were calculated separately with or without weights (cross-sectional weight in wave 4) with no major difference in the coefficients.

Results

Descriptive statistics: Labour market transitions and working time

Table 2 exhibits some descriptive statistics about labour market transitions and change in working time over the selected sequence. It shows the distribution – expressed in percentage – of the change in labour status from wave 4 to wave 5, looking at people aged 55 to 65 at baseline only. The table includes missing data. What can be observed is that the percentage of respondents remaining at work and keeping the same working time over the period (a change in working time of less than 5 percentage points of the original working time is not considered

5 Interaction effects occur when the effect of one variable depends on the value of another variable. In the two-way interaction, one looks at the impact of working time at baseline by type of professional transition. Put in another way, the model analyses the specific impact of labour market transitions depending on the working time at baseline. Similarly, the three-way interaction effect looks at the specific impact on SPH of labour market transitions by working time at baseline depending on the level of income (in quintiles) at baseline. Interaction effects could cause some heteroscedasticity problems that were controlled using the Levene's test. More details about the characteristics of the interaction effect in logit and probit models can be found in Norton et al. (2004)

6 It has been shown that long-term income is more important for health than current income (Benzeval and Judge 2011) and that variations in income have little effect on health outcomes.

7 For details on the way log odds are transformed in probabilities, please read Fullerton (2009).

as a significant change) is 29.7 per cent of the sample. The total percentage of people reducing working time by more than 5 percentage points is 24 per cent of the sample. 12.7 per cent (the majority) reduced working time by 5 to 24 percentage points, 6.2 and 5.1 per cent of the sample reduced working time by respectively 25 to 49 and more than 50 percentage points. The percentage of respondents increasing working time over the sequence is 16.7 per cent. The percentage of respondents unoccupied or seeking for work at follow-up accounts for 3.9 per cent.

[Please, insert table 2]

Model I. Association between labour market transitions and change in SPH

Table 3 shows the results of the ordered logit model when looking at the association between the change in SPH from wave 4 to wave 6 (model 1) and from wave 4 to wave 7 (model 2) and the change in labour status. Respondents remaining in employment over the selected period and for whom no change in working time was observed are selected as the reference category. Estimates are in proportional odds ratios and 95 per cent confidence intervals are shown in parentheses. The two selected models were performed using non-weighted and weighted data.

[please, insert table 3]

Some interesting results can be observed. First, looking at retirement transitions (compared with respondents remaining in employment and keeping the same working time over the sequence), the odds of being affected by a positive change in SPH (versus no change or a negative change in SPH) are 6 percentage points (when looking at the non-weighted model) and 7 percentage points (when looking at the weighted model) higher for those who retired. Similar association is observed when looking at long-term change in SPH (from wave 4 to wave 7). The odds of having a better SPH in wave 7 are respectively 1.05 and 1.08. Put in another way, the odds of having a better SPH are higher for those who retired compared to those who remained in employment.

Second, the transitions from work to ‘seeking work’ and ‘sick and not seeking’ are associated with a worsening SPH over the short sequence (from wave 4 to wave 6). The odds of having a better SPH versus a similar or declining SPH are 33 percentage points (non-weighted) and 45 percentage points (weighted) lower for those seeking for a job versus those who remain in employment. The same kind of association is observed for those who are sick and do not look for a job (the odds are 25 and 33 percentage points lower). But what is interesting is that the negative effects of being a job seeker or being sick in wave 5 disappear when looking at the

long-term transition. When looking at the impact of the transition from wave 4 to wave 7, one observes positive odds of having a better self-perceived health (versus similar or negative). The negative effects of unemployment and sickness are temporary.

Third, the change in working time (in percentage) observed over the sequence shows contradictory results. When looking at those working higher hours in wave 5 compared to wave 7, it can be observed that those increasing their working time by 50 per cent or more are more likely to experience a positive change in SPH over the short sequence (results are contradictory when looking at non-weighted and weighted odds ratios for the long sequence). Conversely, those who increase working time by 25 to 49 per cent tend to have a worsening SPH – the odds are 11 (non-weighted) and 9 (weighted) percentage points lower in model 1. When looking at those who reduced working time over the sequence, it can be observed that those who reduced working time by 5 to 24 per cent are more likely to have a better SPH over the short sequence (by 16 and 21 percentage points) but they are also more likely to experience a negative change in SPH over the long sequence (0.86, 0.92). Put in another way, the health outputs vary depending on the intensity of change in working time.

Model II. Association between labour market transitions by working hours at baseline and change in SPH

One way to refine the information flowing from model I is to use an interaction effect between the labour market transitions and the total working hours at baseline. Figures 2 and 3 show the predicted probabilities for the change in self-perceived health associated with the change in labour status and the working time at baseline. The sum of the predicted probabilities equals one (one hundred per cent) for the three modalities of the ordered dependent variable (same, better or worse self-perceived health). Each box within the figures corresponds to a type of labour market transition. The working time at baseline is shown on the x-axis (from 0 to 60 hours a week). As in the previous section, the models control for socio-economic and demographic variables.

When looking at those who retired over the short sequence, it can be observed that a high working time is associated with a decrease in the odds of being affected by a negative change in SPH. Similarly, having a high working time at baseline is associated with higher probabilities of having a better or same SPH. Same results are observed when looking at the long sequence (from wave 4 to wave 7) but with wider confidence intervals. Overall, it can be assumed that those who retire are more likely to experience a positive change in SPH if they worked long hours prior retirement.

The transition from employment to unemployment ('seeking work') is also of particular interest. It can be clearly observed that those who worked long hours before being unemployed tend to be less affected by a negative change in SPH. The probability of experiencing a negative change is still higher than the probability of having a positive change but a high working time is associated with lower probabilities of experiencing such a negative effect. This is particularly clear in the model II.1 (table 2) but also when looking at the long sequence (model II.2, table 3). The opposite relationship can be observed when looking at those who are sick and do not seek for a job. In this case, a high working time at baseline is clearly associated with higher probabilities of being affected by a negative change in SPH.

Working time modulations seem to have an impact on the change in SPH over the sequences. When looking at respondents who increased working time by 5-24, 25-49 and >50 per cent, significant differences between positive and negative change in SPH were observed only for those who increased their working time by 25 to 49 per cent. What can be assumed looking at this specific category is that the effect of increasing working time by 25 to 49 per cent tend to be positive for those working less than 20 hours a week but tend to be negative for those working more than 20 hours a week: beyond 20 hours, the probability of experiencing a negative change in SPH increases. This is true independently from the level of income and financial wealth. Results for those who reduced working time are more explicit. Those who reduced working time by 50 per cent or more and worked long hours at baseline have lower probabilities to be affected by a negative change in SPH compared with those who worked fewer hours. This is significant both for the short and long sequences (the long sequence extrapolates what is observed in the short sequence). Interestingly, that is exactly the opposite relationship that is observed for those who reduced working time by 5 to 25 per cent: there are positive effects for those who worked less than 40 hours a week at baseline but negative effects on those who worked longer hours.

Finally, it is also interesting to look at those who kept working over the sequence and did not increase or reduce their working time by more than 5 per cent as they account for about 30 per cent of the sample. What can be clearly observed when looking at the short sequence is that there is no significant difference in probabilities of experiencing a positive or a negative change in SPH for those who worked less than 55 hours (i.e. the majority of the population). However, one observes that there are significant negative effects on health for those working beyond 55 hours a week. Again, the long sequence (from wave 4 to wave 7) extrapolates the results that were observed for the short sequence. When looking at a long time period, one can clearly

observe a positive association between the weekly working time and the probability to experience a change in negative health. Excessive working time has a negative effect on health, and this is particularly true when looking at long-term effects.

[Please, insert figures 2 & 3]

Model III. Association between labour market transitions by working hours at baseline and level of income and change in SPH

Finally, figure 4 shows the results of a three-way interaction between the type of labour market transition, the working hours at baseline and the earnings level. To ease interpretation, the earnings level was decomposed in five *quintiles* (coded from 1 to 5, 1 being the lowest level of earnings and 5 the highest level). As in figures 2 and 3, only results flowing from the weighted model are shown in this paper. The number of hours worked at baseline is shown on the horizontal axis, the probabilities of being affected by a negative change in SPH are on the vertical axis and the earnings quintiles are shown on the transversal axis (z-axis). Each box represents a specific type of transition, those at the top are for the short sequence. Each box also includes a regression plane in order to summarize the results in a more straightforward way.

[Please, insert figures 4a and 4b]

As observed above, the impact of the transition from work to retirement on health in a function of the working time at baseline. However, the highest levels of earnings are those who suffer the most from the transition to retirement. Put in another way, low-paid workers are less likely to be affected by a negative change in health during the transition to retirement compared with highly paid workers. Similarly, the long sequence particularly shows that working long hours at baseline is clearly associated with lower probabilities of being affected by a negative change in SPH for all earnings quintiles.

The difference between low-paid workers and highly paid workers is also particularly interesting when looking at those who remained in employment over the sequence. Interestingly, the number of hours worked at baseline tends to have an impact on the difference between quintiles when looking at the short sequence. Low-paid workers (quintiles 1 and 2) who worked long hours have lower probabilities of being affected by a negative change in SPH compared with highly paid workers but also compared with low-paid workers who worked fewer hours. Conversely, the working time tends to be negatively associated with the SPH for quintiles 3, 4 and 5. The long sequence confirms what is observed over the short period: there is a clear positive association between the probabilities of being affected by a negative change

in SPH and the working time at baseline for quintiles 4 and 5 (and, to a lesser extent, 3). Conversely, one observes that there is a negative association between the probabilities of being affected by a negative change in SPH and the working time at baseline for quintiles 1 and 2.

Working time modulations by 25 to 49 per cent also show interesting results. Looking at those who reduced working time over the period, one can clearly observe a gap between quintiles when looking at working time at baseline. Those who worked long hours and are low-paid workers benefit more from working time reductions compared with those who worked long hours but are highly paid. Low-paid workers who work long hours benefit from working time reductions and this account for about five per cent reduction in probability of being affected by a negative change in SPH. Again, the long sequence extrapolates these figures: there is a negative association between working time and the probabilities of being affected by a negative change in SPH for quintiles 1, 2 and 3 and a positive association for quintiles 4 and 5. As in the previous section, results are slightly more difficult to interpret when looking at those who increased working time. What can be observed is that low-paid workers (quintiles 1 and 2) who worked long hours at baseline are more affected by an increase in working time by 25 to 49 per cent compared with quintiles 3, 4 and 5.

Limitations

There are several limitations in this study. Firstly, analyses were performed using four waves from the English Longitudinal Study of Ageing (ELSA). As data are collected every two years, no information is available on a shorter time sequence (e.g. on a monthly basis). Therefore, the impact of professional transitions on health is assessed on a four-year period and it is impossible to investigate the impact of these transitions over a shorter period of time. Secondly, attrition was controlled using multiple imputation methods but, due to the lack of precise information about the reasons for why respondents dropped out from one wave to another, analyses do not account for respondents who died over the selected sequence. Even though the share of respondents passing away from one wave to another is relatively small, the reasons for why they died are not known and, therefore, no assumptions can be made in terms of health. Thirdly, the model used in this article is an ordered logit model. The change in health, professional status and working time are post-calculated variables. This is the most straightforward approach to analyse the interaction between working time and professional transitions, but other types of methods – e.g. latent growth models – could be used in further research to control for health at the baseline and look at the change in health over time (for an example of this type of method, please read Wels 2019). Finally, the models control for different covariates, but the physical

nature of the job is not taken into consideration. It can be assumed that variables such as the sector of activity, the level of education or the incomes can be used instead, but further research should control for it, particularly when looking at working time.

Discussion

Working time is becoming a key topic in the sociological analysis of labour market dynamics, particularly when looking at the association between employment trajectories and health. A recent study has demonstrated that a shorter number of working hours might generate significant mental health and well-being benefits (Kamerāde et al. 2019). This article adds up some information, when looking particularly at the older workforce. On the one hand, the nature and the intensity of the association between change in working time and health outcomes is affected by the income level. On the other hand, such an association cannot be fully understood without accounting for the other types of transitions that occurs over the life course (e.g. retirement). This has strong policy implications.

Public policies supporting a smooth transition to retirement were recently implemented in the United Kingdom and in other European countries. Flexible work schemes play nowadays a greater role in late career and, consequently, should be taken into consideration when looking at late career transitions. The paper clearly shows that working hours modulations have different impact depending both on the change in working hours and on the work intensity at baseline. A consistent public policy focusing on late career transitions should carefully look at both aspects and try to find a good balance between working time in late career (i.e. work intensity) and opportunities to reduce working hours (i.e. flexible working time). However, further research is needed, particularly taking into consideration work histories (Sirviö et al. 2012; Benson et al. 2017), the reasons for why working time varies (Chung and Tijdens 2012) as well as the role played by companies in improving older workers' wellbeing. But there is a lot to do in terms of labour market policy. What was observed in this paper is that low-paid workers are those who benefit the most from working time reduction in terms of health outcomes. In comparison with some other European countries such as Belgium, Sweden or France (Wels 2018c), the United Kingdom does not provide social benefits compensating the income loss after reducing working time. One could wonder whether the implementation of a proper financial incentive for reducing working time in late career could favour those who cannot afford to reduce working time for financial reasons. This is such an important matter as we also observed that low-paid workers who work long hours are also those who benefit the most from retiring (in other words, they are those who suffer the most from not retiring). In the

current policy context, there are potential long-term damages in increasing the length of the working life, particularly for these categories. One way to increase the labour market participation of low-paid workers without damaging their health would be to implement such financial arrangements.

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TABLES

Table 1. Sample composition

	W4	W5	W6	W7
N	3,718	3,273	3,125	2,861
Attrition (in percent)		-12.0	-4.5	-8.4
In employment (percentage)	100	82.8	68.9	58.1
Retired (percentage)	-	12.8	27.1	37.9
Other statuses (percentage)	-	4.4	4.0	4.0

Source: ELSA, waves 4, 5, 6 and 7.

Table 2. Distribution by type of transition

Type of transition	Original Sample (in per cent)
Same Working Time (+/- 5%)	29.7
Missing	13.5
Lower Working Time (5-24%)	12.7
Retired	11.2
Higher Working Time (5-24%)	8.9
Lower Working Time (25-49%)	6.2
Lower Working Time (>50%)	5.1
Higher Working Time (>50%)	4.3
Higher Working Time (25-49%)	3.5
Unoccupied	2.0
Seekig work	1.9
Sick and not seeking	1.0
Total (N)	3,718

Table 3. Model I – Association between change in self-perceived health (SPH) from wave 4 to wave 6 and from wave 4 to wave 7 and change in labour status from wave 4 to wave 5. Ordered Logit Regression (proportional odds ratios). ELSA-England.

	Model 1 (W4_W6)		**Model 2 (W4_W7)**	
	Non-weighted	Weighted	Non-weigthed	Weigthed
Higher WT 25-49%	0.89***	0.91***	0.98***	1.08***
	(0.89, 0.89)	(0.90, 0.91)	(0.98, 0.99)	(1.08, 1.09)
Higher WT 5-24%	0.95***	1.01	0.96***	1.10***
	(0.94, 0.97)	(0.99, 1.02)	(0.95, 0.98)	(1.09, 1.12)
Higher WT > 50%	1.11***	1.09***	0.99*	1.03***
	(1.10, 1.12)	(1.08, 1.10)	(0.98, 1.00)	(1.02, 1.04)
Retired	1.06**	1.07***	1.05***	1.08***
	(1.02, 1.11)	(1.03, 1.11)	(1.01, 1.10)	(1.04, 1.12)
Seeking work	0.67***	0.55***	1.18***	1.39***
	(0.67, 0.68)	(0.55, 0.56)	(1.18, 1.19)	(1.639 1.40)
Sick and not seeking	0.75***	0.67***	1.35***	1.51***
	(0.75, 0.75)	(0.66, 0.67)	(1.35, 1.35)	(1.50, 1.51)
Unoccupied	1.06***	1.42***	1.03***	1.22***
	(1.06, 1.06)	(1.42, 1.42)	(1.48, 1.49)	(1.21, 1.22)
Lower WT 5-24%	1.16**	1.21**	0.86***	0.92***
	(1.10, 1.21)	(1.15, 1.27)	(0.81, 0.91)	(0.86, 0.97)
Lower WT 25-49%	1.01*	1.16***	0.96***	1.02**
	(1.00, 1.02)	(1.16, 1.17)	(0.95, 0.97)	(1.00, 1.03)
Lower WT > 50%	0.96***	1.00***	0.79***	0.82***
	(0.95, 0.97)	(0.90, 1.01)	(0.78, 0.80)	(0.81, 0.83)

Note: results after Random Forest Imputations, odds ratios and CI at 95 per cent. The model controls for gender, age (square), the level of net individual earnings, the level of net total wealth, the level of education, the occupation, and whether the respondent had health problem limiting work at baseline. Data come from the English Longitudinal Study of Ageing (ELSA), waves 4-7. The reference category for the change in labour status is 'same working time'. The change in labour status was calculated based on 5 per cent threshold – i.e. the working time changed, positively or negatively, of more than 5 per cent from wave 4 to wave 4. The working hours at baseline corresponds to the weekly working hours in wave 4. Data are weighted using a standardized version (the sum of the individual weights equals N) of the individual cross-sectional waves provided by ELSA in wave 4. Significance levels should be read as follow: *p < 0.1,**p < 0.05,***p < 0.01.

FIGURES

Figure 1. Model

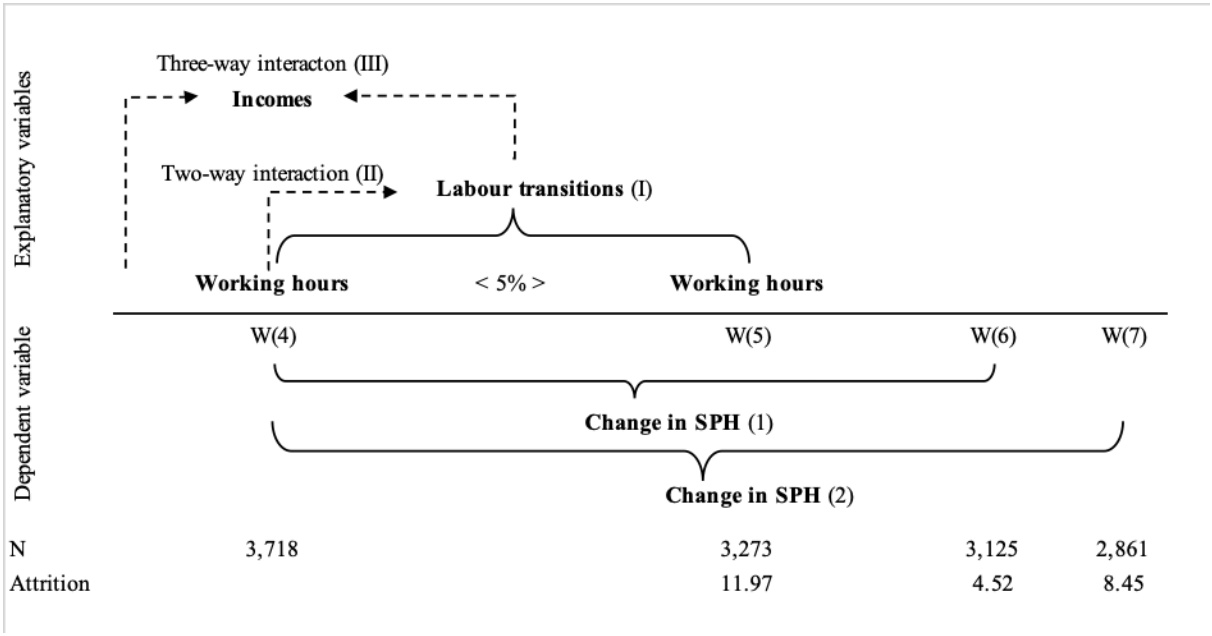


Figure 2 . Model II.1 - 2-ways interaction effect short sequenceDisclosure of potential

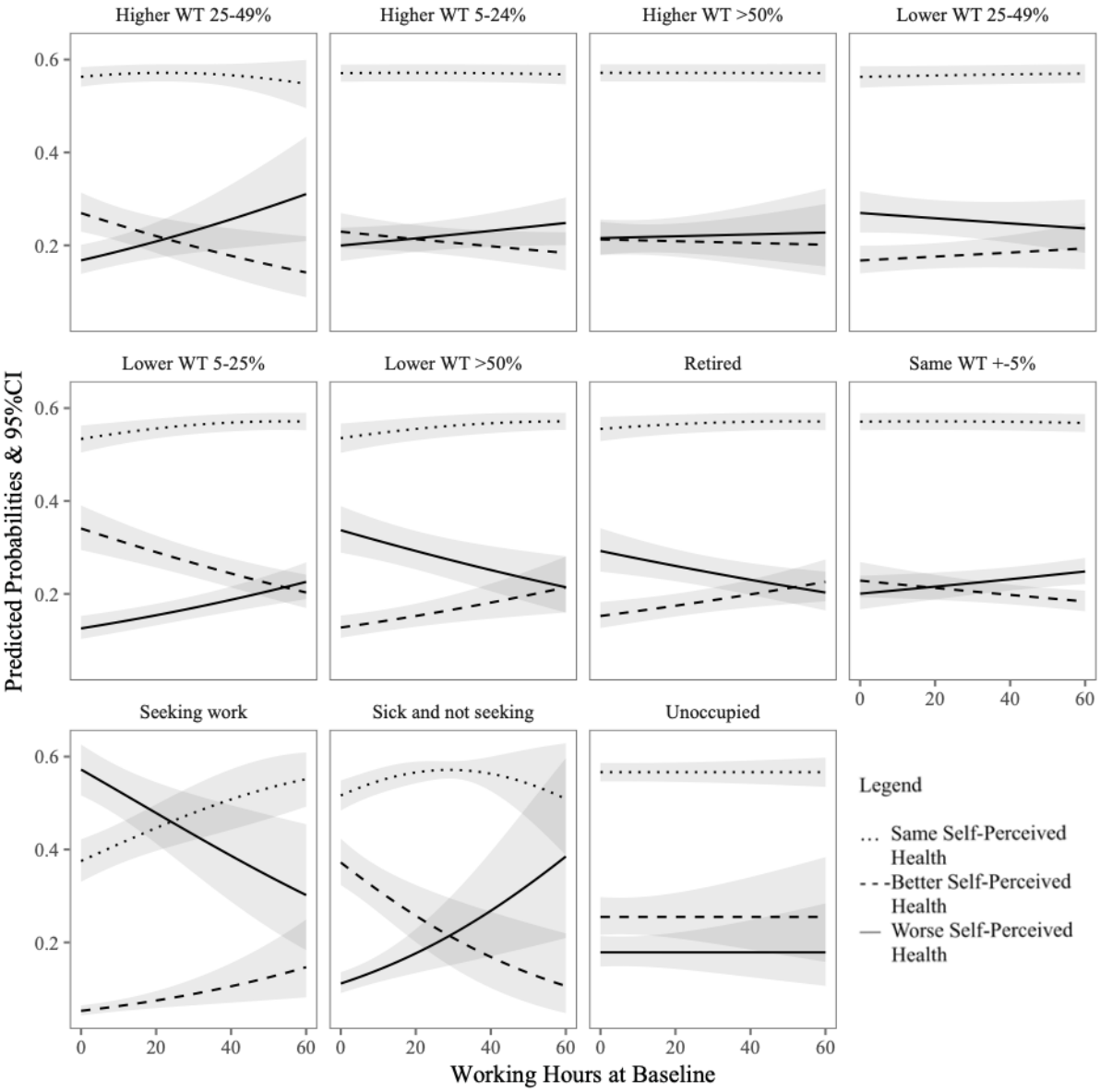


Figure 3. Model II.2 - 2-ways interaction effect long sequence

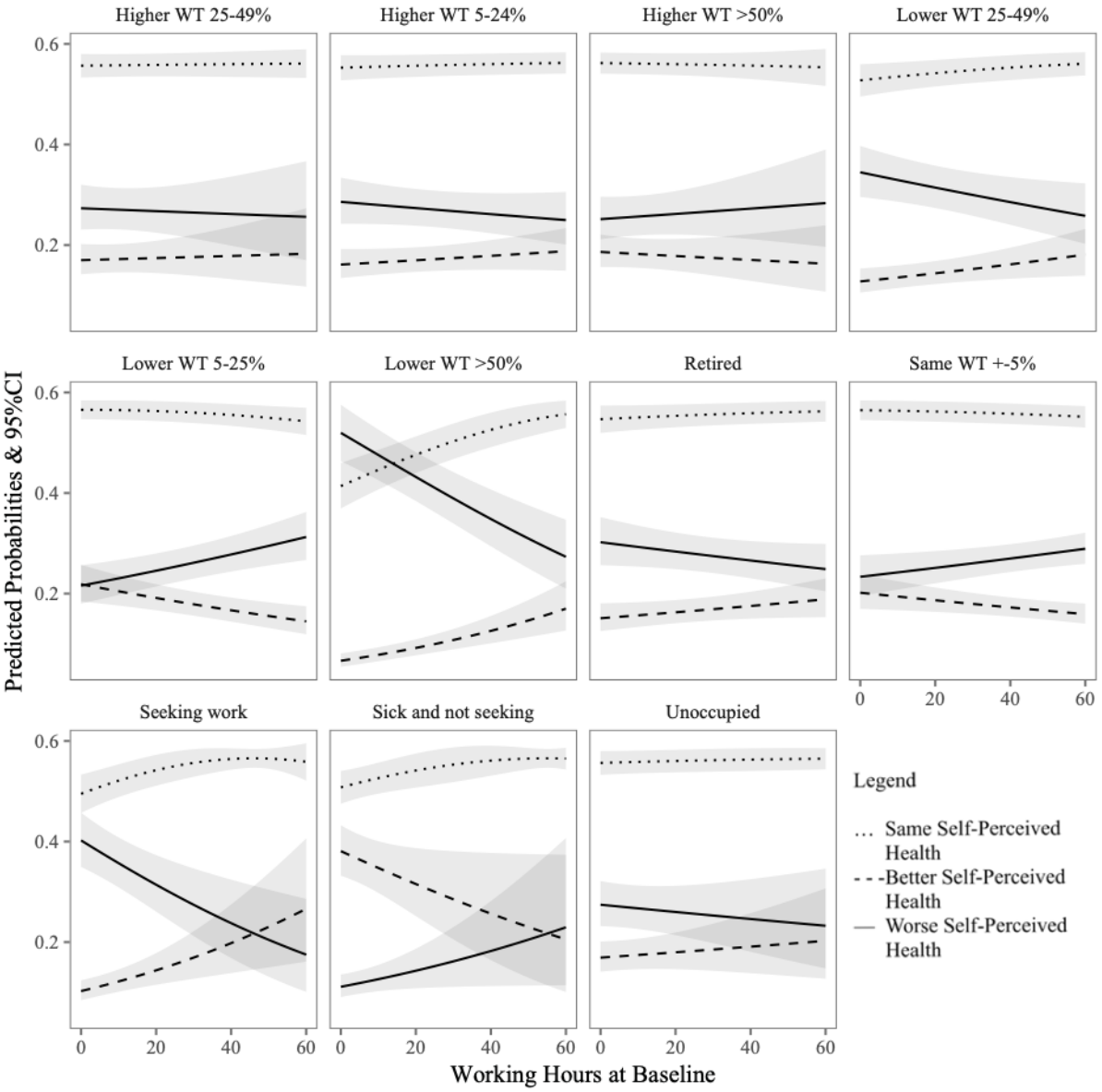
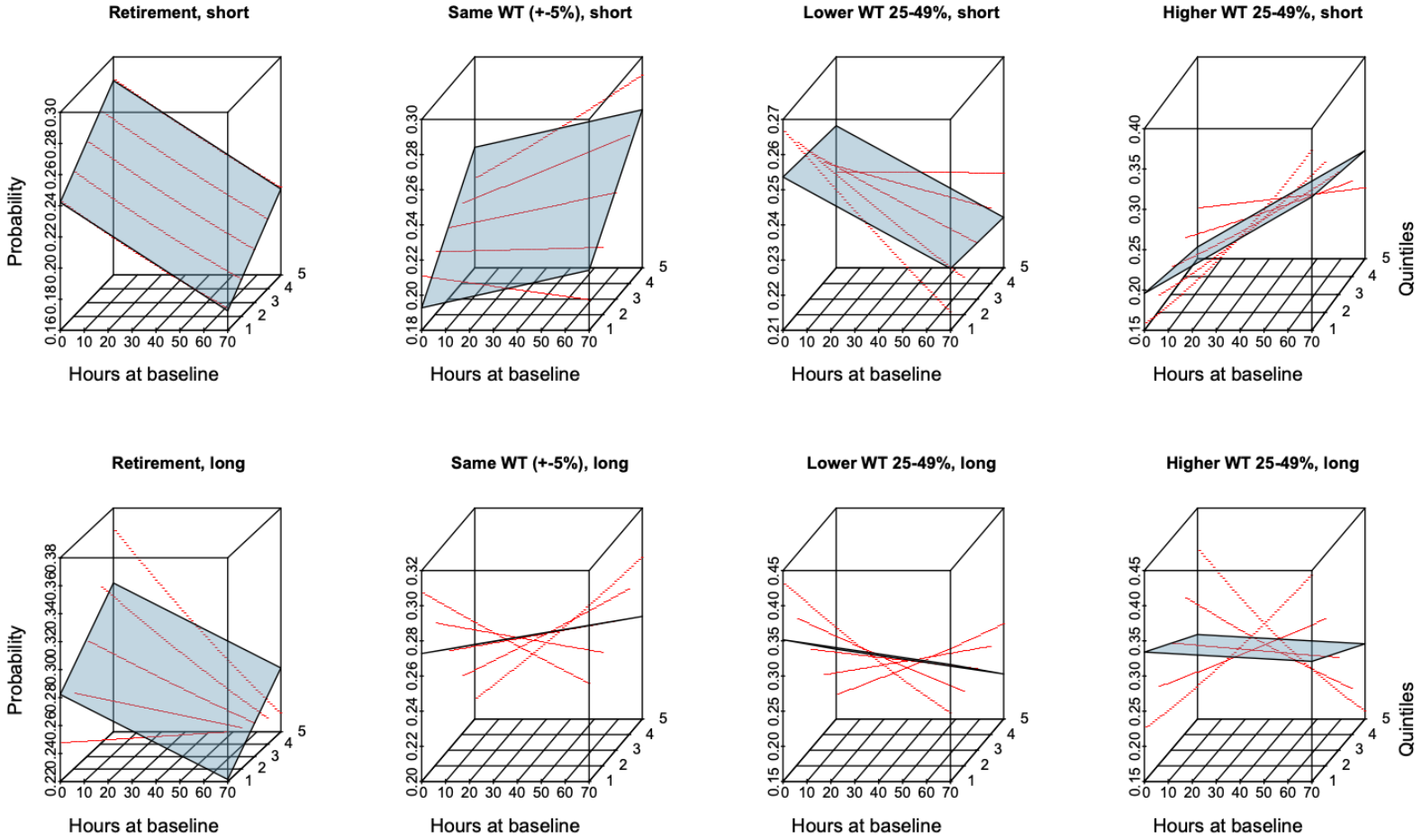


Figure 4. Model III.1&2 - 3-ways interaction effect



Conflicts of interest

Conflict of Interest: The author declares that he has no conflict of interest.

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