Institute for Fiscal Studies

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Working paper

The effect of increasing the female state pension age and the interactions with labour market histories

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Abstract:

We examine the impact of increasing the state pension age (SPA) for women in the UK from age 60 to 66 on income, expenditure, and wellbeing, exploiting the staggered implementation of the reform using a difference-in-difference methodology. We identify a key heterogeneity in effects based on women's labour market histories. We find that raising the female SPA has a disproportionately negative effect on women who were already out of employment in their late 50s who are poorer on a range of dimensions. This group of women do not return to employment when the state pension age rises, instead facing significant falls in income. Despite this, their reported expenditure on a basket of mostly essential items remains unchanged. However, there is evidence of decreased participation in leisure activities. Life satisfaction worsens when the SPA rises, particularly for women who were out of paid work in their late 50s.

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1. Introduction

As life expectancy at older ages increase public pension systems come under pressure. In response, many governments have opted to raise the age(s) at which individuals become eligible for pension benefits (called "state pension age" (SPA) in the UK). Raising pension eligibility ages can help ease the fiscal burden in two ways. First, it reduces government expenditure by delaying payment of the state pension paid to affected cohorts. Second, as shown by a substantive body of literature, raising the state pension age leads to some individuals delaying their retirement, thereby improving government finances through raising tax revenues.

However, increasing the SPA (or equivalents in other countries) does not come without a cost. Those below the new, higher, eligibility age face a temporary reduction in income as they lose entitlement to the state pension until they reach their new SPA. Crucially, this reduction in income is disproportionately concentrated amongst lower-income individuals who rely more heavily on state resources (Cribb and Emmerson 2019). However, income is only a proxy, or a partial determinant, of individual's material standard of living. The extent to which a reduction in income affects people's standard of living will depend on a number of factors. Older individuals are more likely to have liquid savings (Boileau et al 2023; Kaplan et al 2014), to be outright owner occupiers and to have a partner, making it less clear how a temporary delay in state pension income translates into reduced consumption and other measures of living standards.

This paper examines the effect of increasing the SPA on income, expenditure, and wellbeing by leveraging 10 years of state pension reforms in the UK. These reforms, which gradually increased the SPA of women from 60 to 66 between 2010 and 2020, generate exogenous variation in the age at which women reached SPA based only on their date of birth. We exploit this reform using a difference-in-difference methodology and modern staggered treatment estimators to identify the causal impact of increasing the SPA on a range of outcomes.

A central focus of paper and key contribution of this paper is differences in outcomes by whether the affected women were in paid work in their late 50s. We show that those not in paid work in their late

50s are, on average, poorer on multiple dimensions and likely to be more reliant on state support. Moreover, we show that women who left paid work in their late 50s do not return to employment when the state pension age rises. For these women, the SPA rise creates an income effect, with no offsetting employment response, allowing us to isolate cleanly the extent to which the increase in the SPA leads to changes to wellbeing through the income channel.

We find that increasing the female state pension age reduces the net income of the women who remain below the SPA as a result of this reform, by £48 a week on average. The change in income is substantially larger for women who are out of work in their late 50s (£81 per week) – this is a group who do not return to employment as a result of the reform and so cannot use earnings to offset the loss of state pension income. Despite a large and significant change in income, we find no evidence for a change in reported expenditure on essential goods and services, even among those who have left paid work in their late 50s. However, we find evidence that participation in leisure activities falls when the SPA rises.

We measure the effect of increasing the SPA on wellbeing through an individual's life satisfaction score. We find that life satisfaction worsens when the SPA rises, by around 0.25 points on a 10-point scale (which has an average of 7.5 before state pension age pre-reform). The fall in life satisfaction is concentrated amongst the group of women who are already out of employment in their late 50s (0.38 points worsening, compared to a baseline average of 7.0). The reduction in life satisfaction score for this group is equivalent to the change in life satisfaction from moving down from the average for the second quartile of the distribution to the average for the bottom quartile of the wealth distribution. Given that this is a group of women who do not change in employment in response to the reform, the income channel is key in explaining why wellbeing worsens when the SPA is increased.

Our paper adds to the literature in three ways. First, on the effects of increases in pension ages going beyond estimating the impacts on employment, with a key focus on heterogeneity in effects by labour market status in late 50s. In particular, while various papers find a negative effect on incomes when pension eligibility ages rise (e.g. Cribb and Emmerson 2019), there is less evidence on how

consumption decisions are affected. Etgeton, Fischer and Ye (2021) find that a 1999 German reform which increased pension ages led to an increase in leisure spending, but no change in overall expenditure. Second, by examining how a rise in SPA affects expenditure, as well as both expenditure and consumption measures of leisure separately. Third, on the effects of a rise in SPA on health and wellbeing. In existing studies on the effect of a rise in SPA on mental health and wellbeing, the results show that SPA rise has either a negative or no impact on depressive scores and life satisfaction (Della Giusta and Longhi, 2021, and Carrino, Glaser and Avedano, 2020, find negative effects; Amin-Smith and Crawford, 2018, do not find significant effects). These mixed results may be due to the different channels at play, and we contribute to this literature by separating the income channel by focussing on those already out of paid work in their late 50s.

The rest of the paper is set out as follows. Section 2 details the UK state pension context, particularly the SPA reform we exploit. Section 3 and 4 discuss the data used and the methodology employed respectively. Section 5 discusses the results and Section 6 concludes.

2. Policy background

The state pension age is the first age at which an individual can start claiming the state pension in the UK. Whilst it is possible to defer receipt of the state pension, in return for an actuarially adjusted increase, in practice few individuals choose to do this.[2] The SPA was set at 60 for women and 65 for men for many decades until April 2010. The 1995 Pensions Act legislated a gradual increase in the female SPA from 60 to 65 over the course of a decade, starting from April 2010 (affecting all women born after April 1950) and raising the state pension age by 1 month every 2 months. Subsequently, the 2011 Pensions Act accelerated the increase in the SPA for women from 63 to 65 between 2016 and 2018, and further increased the SPA for men and women from 65 to 66, between 2018 and 2020. Figure 1 shows the SPA by date of birth for women born since January 1950. The distinct sawtooth pattern arises from the fact that women born in a given month are allocated a single ‘state pension

[2] 95% of individuals will receive the state pension within two months of reaching their SPA (Crawford and Tetlow, 2010).

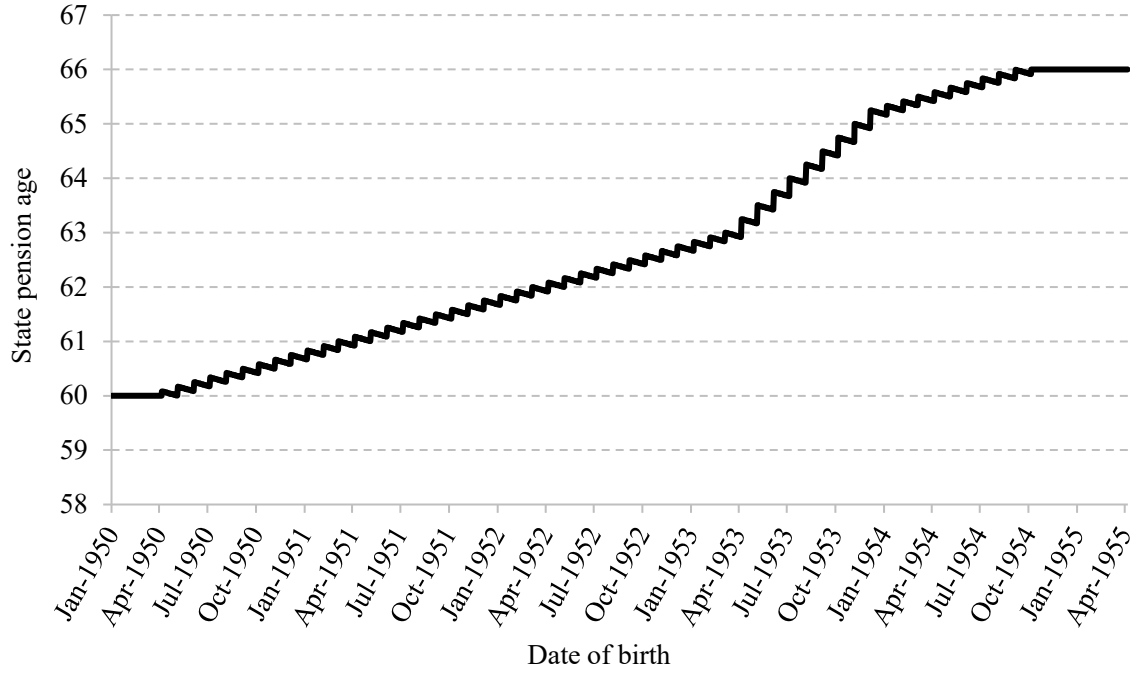
date' rather than a SPA, which meant that the date at which women could claim the state pension increased by either two or four months every month.

Although the SPA increased, it did not affect the age at which private pensions could be drawn. The minimum age at which individuals could typically withdraw funds from a private pension remained at 55 throughout the period we analyse. Similarly, the normal pension ages for public and private sector defined benefit occupational pension schemes for the birth cohorts that we consider were not affected by the rise in SPA. Therefore, our analysis isolates the effects of age of access to the state pension – and in practice of receipt of state pension income – on our outcomes of interest.

The state pension itself has also been the subject of reform over the 2010s. Prior to April 2016, the UK state pension was made up of two parts: the basic state pension and an additional entitlement linked to past earnings. Entitlement to the basic state pension was based on the number of years of contributions made, and periods with certain caring responsibilities, during working life, but not based on the level of contributions. The earnings-related element was positively linked to earnings over an individual's working life. However, it was quite common for employees to 'contract out' of this additional element in return for a reduction in payroll taxes during working life, and instead build up a private pension. In 2024–25 prices, the basic state pension was worth approximately £7,500 to £8,000 per year between 2010–11 and 2015–16 for someone with 30 qualifying years (the number of years needed to qualify for a full basic state pension during this period).

Individuals who reach the state pension age after 5 April 2016 can instead qualify for the new state pension. This is a flat-rate amount, worth around £11,500 per year in 2024–25 for someone with 35 years of contributions (which is now the number of years required to qualify for a full award).

Figure 1. State pension age for women, by date of birth



Note: This figure shows the UK SPA for women by date of birth, for those born between 1 January 1950 and 6 April 1955. The reason that the SPA increases in a "sawtooth" pattern, rather than a smooth line or a "step" pattern, is that women born in a given month are allocated a single "state pension date" at which they are eligible for a state pension. Therefore, those born later in the month can have a slightly lower SPA than those born earlier in the month.

At the SPA, in addition to becoming eligible for the state pension, household income can change due to differences in the pensioner tax and benefit system compared to that of working age adults. On the tax side, pensioners are not liable to pay employee National Insurance contributions (a payroll tax), which all other things equal, increases take home pay of those still in paid work and thus household income. On the benefit side, when an individual (man or woman) reaches the female SPA, they are no longer eligible for working-age benefits, instead they can receive pension credit if their incomes and assets are sufficiently low. Pension credit is substantially more generous than working-age means tested benefits; a single pensioner claiming it would receive more than double the basic means-tested financial support of individuals below SPA (Cribb, Emmerson, Karjalainen, 2024).[3] Moreover, pension credit comes with less 'conditionality' compared to some means-tested working age benefits

[3] Prior to May 2019, couples became eligible for pension credit when the older member of a couple reached the (female) state pension age. From May 2019 onwards, couples only became eligible for pension credit when the *younger* member of a couple reached state pension age.

as there are no requirements for recipients to seek paid work. Although the state pension itself is not earnings related, it is taxable and can reduce entitlement to means-tested pensioner benefits.

3. Data

Our main data source is the English Longitudinal Study of Ageing (ELSA; see Steptoe et al 2013). This is a longitudinal study of people over the age of 50 in England. Interviews occur biennially. We use data from the period 2008–10 (wave 4) to 2018–19 (wave 9). There are key advantages of using ELSA over other longitudinal household surveys. ELSA contains a relatively large sample size of individuals around the SPA alongside rich information on a variety of measures of health and wellbeing, incomes, wealth, expenditure, employment and other demographics. Furthermore ELSA contains data on the exact date of birth of individuals which is important for our identification as we will be using this to ascertain precisely when an individual reaches their SPA.

In addition to ELSA, we will also employ the Annual Population Survey (APS) in order to estimate the effect of increasing the SPA on life satisfaction. We use APS for this part of the analysis, as ELSA only contains life satisfaction data from 2012–13 onwards and only in the "self-completion" questionnaire which has lower response rates. The APS is a longitudinal household survey, with data covering the whole of the UK. It has a much larger sample size than ELSA but mainly contains information on labour market outcomes, health and individual demographics as well as life satisfaction. Therefore, it is unsuitable for the majority of outcomes examined in this study.

The first outcome we analyse is employment; ELSA contains information on whether the individual is currently in paid work and details on the type of work including whether they are in full or part time work, and when the individual left their last job. Using these, we construct a variable indicating whether or not a person was in paid work at age 58.[4] ELSA also has measures of income both at the

[4] This is straightforward task when we observe the individual at age 58. However, we do not always observe people at age 58 because ELSA is biennial and some people only joined the sample after age 58. For those individuals we use information from other waves on when they left their last job to determine whether they were in paid work at age 58. If we have no other information available for the individuals, we use assume that those who were observed working after age 58 were also working at age 58, and those observed to stop work between age 57 and 59 were not working at age 58.

individual level and total income at the family level – where a family is defined as an individual and their partner (or just the individual if they have no partner). Individual income includes income coming from employment, self-employment, private pensions, state pensions and state benefits. Family income includes these same components as well as income from assets.

ELSA contains questions on household expenditure on a range of non-durable goods and services, covering mostly essential, frequently consumed, items. Respondents are asked how much their household spent on these categories in a usual week (in the case of food inside the home), the last four weeks (for food outside the home, leisure, clothing), or in their last bill (for gas and electricity[5]). Comparing to a UK household survey that aims to capture all expenditure through spending diaries, we find that in total, the components of expenditure in ELSA make up approximately 37% of total expenditure. The main missing components of expenditure not captured by ELSA are transport, packaged holidays and furniture/other equipment.[6] ELSA also contains information on transfers made to people and organisations outside the household over the preceding 4 week period.

In addition to expenditure on leisure activities, ELSA also asks participants about leisure participation by asking whether they regularly attend five types of leisure activities. Two out of the five questions relate to cultural activities: going to an art gallery or museum and going to a theatre concert or opera. The remaining three questions relate to being a member of clubs and classes: a sports club, gym or exercise club, a social club, or education, arts or music groups or evening classes. We define an individual as engaging in a particular leisure activity if they have taken part at least once every few months over the past year.

Data on life satisfaction in both ELSA and the APS is collected by asking individuals the question: 'Overall, how satisfied are you with your life nowadays?'. Respondents rate their life satisfaction on a scale of 0-10 with 0 indicating that they don't feel satisfied at all and 10 indicting they felt very satisfied with their life. In our results we confirm that the distribution of the life satisfaction score for

[5] Gas and electricity also includes spending on oil, paraffin, coal and wood for the home.
[6] Based on the average total expenditure of 55-70 year olds in the Living Costs and Food Survey (LCFS) 2018/19.

our whole sample in ELSA and APS is comparable. This is a standard measure of wellbeing both in academic literature (see Frijters and Krekel, 2021) and that used by the UK government to measure wellbeing (HM Treasury, 2021) when evaluating the effects of public policies.

To measure depressive symptoms we use the eight-item Centre for Epidemiological Studies Depression Scale (CES-D). This scale is constructed by asking individuals about how often they experienced eight potential depressive symptoms in the past week.[7] A score of 0 indicates the individual experienced none of the depressive symptoms 'much of the time' in the past week, and 8 indicates they all occurred 'much of the time' in the past week.

The CASP-19 quality of life scale measures quality of life using 19 questions which broadly fit into four dimensions: control, autonomy, self-realisation and pleasure. CASP-19 is coded on a Likert scale with each of the 19 questions scoring between 0 and 3, thus the final score is on a scale from 0 to 57, where a higher score indicates a higher quality of life (Hyde et al., 2003). We pay particular attention to one of the CASP-19 items – 'Money doesn't prevent me from doing the things I want' – which we use to capture financial constraints. Specifically we construct a dummy variable that takes value 1 if the individual responds 'often' or 'sometimes' to this question, implying that they are not facing money troubles. We also construct a separate 'CASP-18' score similar to the standard CASP-19 score, but without the money troubles question, therefore, this new CASP-18 measure will be on a scale from 0-54.

We use wave 4 to wave 9 of ELSA which covers the period 2008–09 to 2018–19. The state pension age was 60 at the start of this period and just over 65 by the end. Our sample of women are those aged 58 to 64 (inclusive), of which ELSA contains 7,803 in total. We are particularly interested in the effects of increasing the SPA on those who were not in paid work at age 58, in our sample there are 2,806 such observations.

[7] Feeling depressed, feeling everything they did was an effort, feeling their sleep was restless, feeling they were happy, feeling lonely, enjoying life much of the time, feeling sad and feeling that they could not get going.

To estimate the effect of the SPA on life satisfaction precisely we use data from the APS for the period 2013Q1 (when life satisfaction data starts to be collected in the APS) to 2021Q2. At the start of this period the SPA was just over 61 years and at the end of this period it had risen to 66. The major benefit of the APS is the much larger sample size, our total sample of women aged between 58 and 65 contains 48,830 observations and the sub-group of women who were not in paid work at age 58 contains 15,424 observations.

Table 1: Summary statistics by employment status at age 58

	Mean amongst ELSA sample		
	All	Out of work at 58	In work at 58
Net weekly income of individual, £	255.30	169.60	303.30
Net weekly income including partner, £	646.10	555.10	697.50
Has a spouse/partner	0.760	0.739	0.772
Limiting health condition	0.298	0.460	0.206
Degree or other HE	0.306	0.267	0.327
Secondary education	0.350	0.316	0.369
No qualifications	0.345	0.417	0.304
Owner occupier	0.852	0.785	0.890
Renter	0.148	0.215	0.110
Observations	7,803	2,806	4,997
Weighted % of sample	100%	36.4%	63.6%

Note: The sample is defined as women aged between 58 and 64 in the period 2008Q2-2019Q1. Incomes are given in £ per week, in 2018/19 prices. Individual income includes that from: employment, self-employment, private pension, state pension, state benefits. Income including partner also includes asset income. Incomes are winsorized to the 99th percentile

Table 1 shows the background characteristics of women in the ELSA sample, split by employment status at age 58. For women in our sample, mean net individual income is £255 a week. Mean family net income (including partner) is on average £646 a week, more than double average individual income. The majority (76%) of the women in our sample have a spouse or cohabiting partner and most (85%) are owner occupiers. Women who are out of work at 58 have lower individual and family

income, are slightly less likely to have a partner, more likely to have no educational qualifications, and more likely to be a renter.

4. Methodology

We employ a difference-in-difference methodology to estimate the impact of increasing the female SPA from 60 to 65 on income, expenditure, and wellbeing.[8] Increasing the state pension age means that people have to wait longer to reach the SPA. Our treatment variable is therefore a dummy variables for being over the SPA, which is a deterministic function of an individual's date of birth and the date on which they were interviewed, and this is separately identifiable from age because of the reform which increased the state pension age gradually for each successive month of birth after those born in March 1950.

A number of papers have been published highlighting issues when using two-way fixed effects to estimate the effect of staggered treatment where treatment effects may be heterogeneous in the dimension over which the treatment is rolled out (see e.g. Baker et al., 2022). Given possible treatment effect heterogeneity in our setting we use the estimator proposed by Borusyak, Jaravel and Spiess (2024; henceforth "BJS"), to estimate the effect of being above the SPA on different outcomes. The BJS estimator is used to estimate the causal effect of a binary treatment when the roll out of treatment in staggered and there are potential heterogenous treatment effects.

Denoting the potential outcome of individual, i, of age a, cohort c, and observed in period t who is never treated by: $y_{iact}(0)$, the causal effect of treatment for this woman is then:

$\tau_{iact} = \mathbb{E}[y_{iact} - y_{iact}(0)]$. The overall treatment effect is, therefore, the average of all these observation-level treatment effects for women over the SPA. The BJS estimator can be represented by an imputation procedure. In the first step, the entire set of untreated observations (those below the

[8] The majority of our results use ELSA data which covers the period over which the SPA was 60 to 65. The APS data, used for analysing life satisfaction, contains more recent years and so will cover the period over which the SPA was 61-66

SPA) are used to estimate the relationship between the outcome variable and age, time and a variety of control variables. This is represented by the following equation

$$\mathbb{E}[y_{iact}(0)] = \alpha + \gamma_t + \theta_a + X_{iact}\delta \quad (1)$$

where γ_t and θ_a are age and time-period fixed effects, measured in years and quarters. X_{iact} are the set of control variables which include: relationship status, education, housing tenure and geography, as well as partners' age and education for those with a partner.[9] The parameters α, γ_t, θ_a and δ are estimated in the first step using OLS on the sample of all untreated observations.

In the second step, the parameters estimated in the first step are used to predict a counterfactual outcome for each of the treated observations. The treatment effect for each treated observation is the difference between the actual outcome and the simulated counterfactual. In this step, $y_{iact}(0)$ is estimated as $\hat{y}_{iact}(0) = \hat{\alpha} + \hat{\gamma}_t + \hat{\theta}_a + X_{iact}\hat{\delta}$ for all treated observations. This means that the individual treatment effects are estimated as $\hat{\tau}_{iact} = y_{iact} - \hat{y}_{iact}(0)$. The overall average treatment effect is the average of all the individual simulated treatment effects across all the treated observations. In our setting, we estimate the treatment effects from the quarter the respondent reaches the state pension age, to 4 years and 3 quarters after[10], and these are weighted based on the cell size of the relevant treated observations in each period. We follow the methodology outlined in BJS to calculate standard errors clustered at the month-of-birth level.

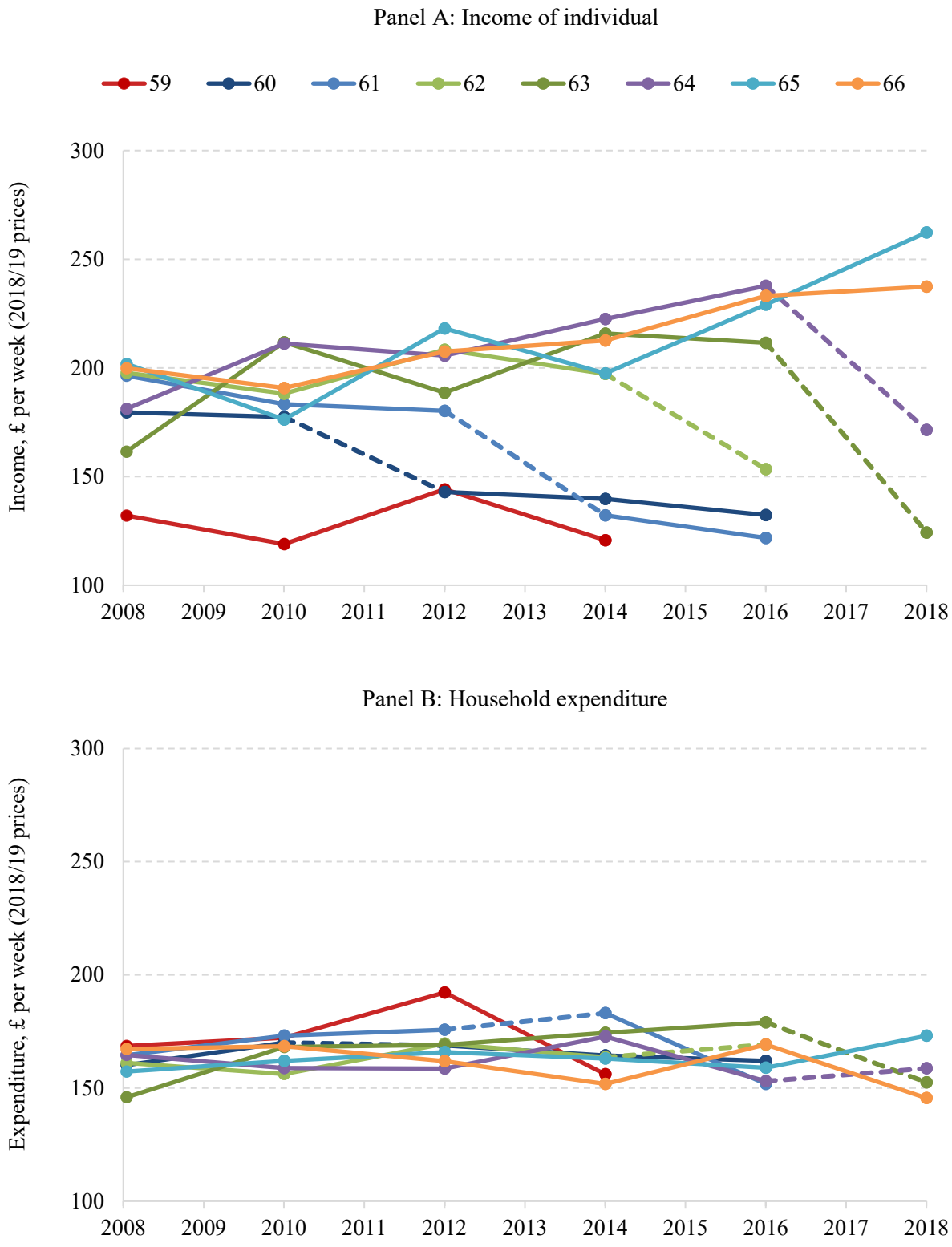
Two key assumptions must be satisfied in order for the causal effect of being above the SPA to be identified using a BJS estimator. First is a (generalised) parallel trends assumption common to difference-in-difference estimators; it must be the case that treated and untreated observations would have had the same expected counterfactual had treatment not occurred. This means that Equation (1)

[9] Specifically, we include: a dummy for whether an individual has a partner, two dummies for education level (completing secondary education, having a degree/equivalent qualifications compared to a baseline of no qualifications), a dummy for whether the individual owns the home they live in, eight dummies for regions of England, with the North East as the baseline, dummies for partner's age in 5 year bands, and two dummies for partner's education (defined in the same way as own education).

[10] This is the longest distance from reaching the SPA we observe given our sample definition that excludes those aged 65 or above: to estimate this treatment effect the treated group are those who reached the SPA at age 60 (and some months) and are observed just before age 65.

holds for all i and t. Secondly, there must be no anticipation effects, which means $y_{iact} = y_{iact}(0)$ for all untreated observations.

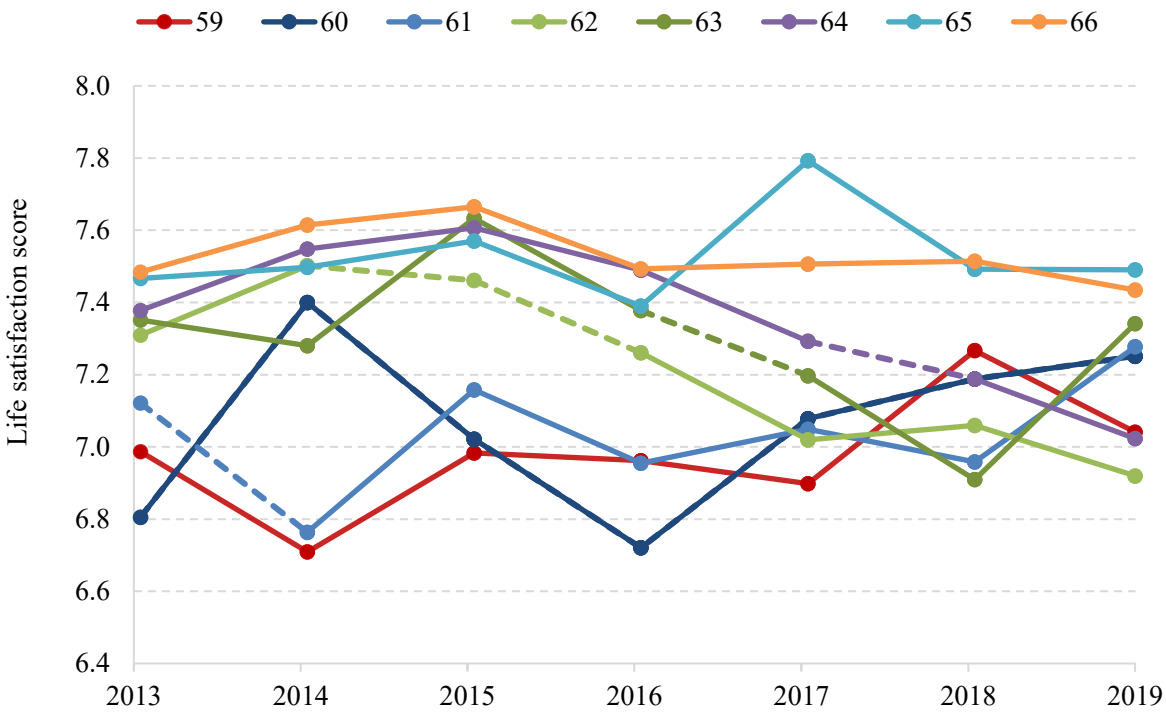
Figure 2: Mean income and expenditure of women out of work at age 58



Note: The lines are dashed from the last year in which all women of that age were over the SPA until the first year in which all women of that age were under the SPA. Incomes and expenditure are given in £ per week, in 2018–19 prices. Incomes and expenditure are winsorized to the 95th percentile. Some data points are omitted due to small sample size.

Figure 2 and 3 provide indicative evidence that the common trends assumption is plausible, whilst also graphically illustrating the effect of the rising SPA on our main outcomes of interest. Figure 2 shows average income and expenditure by age between 2008 and 2018, while Figure 3 shows the average life satisfaction score by age group over the period 2013 to 2019. In both cases dashed lines indicate the period when the SPA is rising for that age group. Both figures show that outside of these periods when the SPA is changing for each age group, the three outcomes are evolving in a similar manner. During the period over which the SPA is changing, Figure 2 indicates a marked fall in income but comparatively no change in expenditure. Moreover, Figure 3 indicates that life satisfaction falls over the periods the state pension age is rising.

Figure 3: Mean life satisfaction score of women out of work at age 58



Note: The lines are dashed from the last year in which all women of that age were over the SPA until the first year in which all women of that age were under the SPA. Life satisfaction score is on a scale from 0-10, with 0 indicating the individual did not feel satisfied at all yesterday, and 10 indicating they felt very satisfied.

5. Results

The impact of being above the SPA on employment and income, estimated using the BJS estimator, is shown in Table 3. We find statistically significant evidence that being over the SPA reduces the likelihood of being employed. Our estimates suggest a 10.9 ppt decrease in the probability of being in paid work above the SPA compared to an average employment rate of 64.1% amongst women just below the state pension age. This means that when the state pension age *increases*, employment rates also *increase* as the effect of the policy is to delay treatment (being above the SPA). These results are comparable to estimates in existing literature; Cribb and Emmerson (2019) find an increase in employment by 9.8 ppt from being below the SPA and Coile et al. (2025) find a 9.3 ppt rise.

The overall increase in employment rate when the SPA rises is driven entirely by women who were still in paid work in their late 50s (measured at age 58). Table 2 shows that there is no statistically significant effect on employment among women who are out of paid work at 58, indicating that these women do not return to work when the SPA rises. Just over half, 5.7 ppts, of the increase in the total employment rate of the entire sample is attributed to an increase in full time employment. For women who had already left employment at 58, there is no change in the likelihood of being in full time employment, consistent with the findings for the change in overall employment for this group.

Table 2: Effect of reaching SPA on employment, income and expenditure

		Effect of being over SPA	Standard error	Mean at age 59	Observations
All					
	In paid work	-0.109***	(0.028)	0.641	7,281
	In full time work	-0.057**	(0.023)	0.240	7,090
	Income of individual	47.70***	(13.10)	253.30	7,258
	Income including partner	43.60*	(23.70)	625.00	7,257
Out of work at 58					
	In paid work	0.012	(0.028)	0.032	2,611
	In full time work	-0.007	(0.011)	0.004	2,600
	Income of individual	81.10***	(17.10)	147.00	2,600
	Income including partner	97.00**	(43.20)	500.90	2,600
In work at 58					
	In paid work	-0.163***	(0.022)	0.955	4,580
	In full time work	-0.074**	(0.032)	0.367	4,400
	Income of individual	42.20***	(14.40)	307.70	4,568
	Income including partner	5.60	(29.80)	689.10	4,567

Note: ***, ** and * denote that the effect if significantly different from zero at the 1%, 5% and 10% levels, respectively. Incomes are given in £ per week, in 2018/19 prices. Individual income includes that from: employment, self-employment, private pension, state pension, and other state benefits. Income including partner additionally includes asset income (interest/dividends). Incomes are winsorized at the 99th percentile.

In terms of income, our results show that being above the SPA increases income by around £48 per week, compared to an average income of £253 just before SPA. The effect on income is markedly larger, almost double, if the individual had already left employment by their late 50s; women out of paid work by age 58 on average see their income boosted by £81 more per week as a result of reaching the SPA. Taken in conjunction with the fact that this group have a comparatively lower average income, £147 per week (before reaching the SPA), this means women who left employment early face a relatively larger percentage increase in income as a result of reaching the SPA, as well as a larger level increase. Our results also show that being above the SPA increases income not only at the individual level, but also at the family level for women who had left paid work earlier. Table 2 shows that women who had left paid work by 58 receive a family income of £98 more per week as a

result of reaching the SPA.[11] This suggests that there are large increases in net incomes, both at an individual level and at a family level, from reaching the SPA.

Table 3 reports the effect of being over SPA on household expenditure. As noted in section 3, ELSA captures around 40% of expenditure for people around SPA, predominantly spending on "essentials". Our results show no evidence of a change in total expenditure around SPA, despite a relatively large change in income. The results are also similar for both those women who were in paid work at age 58 and those who had left employment by that point.

The unresponsiveness of this measure of reported expenditure is not driven by counterbalancing changes in individual components of spending. Across the components captured in ELSA, we find little evidence of significant changes. Although the effect of being above SPA on food in home and fuel and energy is statistically significant at the 10% level, the magnitude is small in comparison to the pre-retirement average expenditure on these respective components and to the change in individual income around SPA. For women who left work at 58, there is a modest but statistically significant reduction, at the 5% level, in fuel and energy expenditure from being over the SPA.[12] Overall, the results suggest that the expenditures we consider are largely unresponsive to the SPA.

An explanation for why total expenditure, and its components, do not change upon reaching SPA could be due to consumption smoothing whereby individuals adjust expenditure upon learning about an upcoming change to their SPA – perhaps when it is first announced – rather than at the SPA boundary itself. Alternatively, the expenditure categories captured in ELSA cover just over a third of overall expenditure for this age group, and focus predominately essential items, which may be less responsive to income changes.

[11] Table 2 shows the change in family income is estimated with a large standard error, this is being driven by a set of individuals with high total family income. Table A.1 shows the effect on family income with an alternative method of cleaning where the top 1% are dropped. This top 1% seems to be a major driver of the difference between the change in individual income and change in family income in Table 2 - dropping this high income group leads to an estimate of the change in family income closer to the change in individual income.
[12] It is possible that this is due to less time spent inside the home; results on consumption of leisure activities in Table 4 suggests that this group of women spend more time outside of the home after reaching SPA.

Table 3: Effect of reaching female state pension age on components of expenditure

		Effect of being over SPA	Standard error	Mean at age 59	Observations
All					
	Expenditure	-5.20	(5.10)	179.50	6,988
	Food in home	-4.70*	(2.50)	85.70	7,250
	Food out	-0.40	(1.00)	16.90	7,260
	Clothing	0.50	(1.70)	24.20	7,241
	Fuel and energy	-1.70*	(0.90)	28.50	7,029
	Leisure activities	1.10	(1.40)	22.20	7,251
Out of work at 58					
	Expenditure	-6.10	(6.60)	161.40	2,501
	Food in home	-4.30	(4.00)	84.50	2,602
	Food out	-0.80	(1.60)	13.00	2,606
	Clothing	1.40	(2.70)	17.50	2,596
	Fuel and energy	-3.50**	(1.60)	27.50	2,517
	Leisure activities	0.90	(2.30)	18.20	2,604
In work at 58					
	Expenditure	-3.10	(6.50)	188.70	4,404
	Food in home	-4.10	(3.10)	86.40	4,560
	Food out	0.10	(1.10)	18.80	4,565
	Clothing	0.60	(2.40)	27.60	4,557
	Fuel and energy	-1.30	(1.10)	29.00	4,428
	Leisure activities	0.80	(1.80)	24.30	4,558

Note: ***, ** and * denote that the effect if significantly different from zero at the 1%, 5% and 10% levels, respectively. Expenditure is given in £ per week, in 2018/19 prices and is measured over the preceding 4 week period. 'Gas and electricity' also include spending on oil, paraffin, coal and wood for the home. Expenditure is winsorized to the 99th percentile.

Whilst we find little evidence of any effect on our measure of expenditure, there is evidence that people are reducing consumption in other ways such as their participation in leisure activities. Table 4 shows the effect of being above the SPA on various leisure activities. Across all women, consumption of leisure activities increases once women pass the SPA; women are between 4 and 6 ppt more likely to visit attractions or be a member of various clubs and classes. This is a substantial increase compared to average pre-SPA participate rates. Increased social participation, through taking part in leisure activities outside of the home, can improve mental health and wellbeing through a reduction in stress and an increased sense of purpose particularly in older adults (Townsend, 2019; Pynnönen, Kokko, and Rantanen, 2024).

The increase in undertaking of leisure participation is statistically significant for both sub-groups as well as for the entire sample. Notably, among women not in paid work at 58 reaching the SPA leads to a relatively large increase in the likelihood of visiting attractions such as museums and art galleries or going to concerts, theatre or opera compared to a low pre-SPA attendance rate of 17% for both sets of activities.

We have shown that being above SPA does not affect leisure expenditure but does lead to women taking part in leisure activities more often. These, perhaps contradictory, results could be explained in two ways. Firstly, although our measure of leisure expenditure has some overlap with the activities listed in Table 4 (leisure expenditure includes the price of a cinema and theatre tickets and the cost of subscriptions to sports and social clubs), the time period over which leisure activities are measured for expenditure and participation purposes is different. Expenditure is measured over the preceding 4 week period whilst participation is measured over the preceding year, and an individual is said to participate in a social activity if they engage more than once every few months. This means it is plausible that our measures of leisure consumption can pick up changes in activity outside of the time frame expenditure is measured over and thus can explain the difference in results between these two measures. It could also be that the mix of activities, rather than overall spending on them, is changing for those above the SPA – we may capture increase in participation in the activities captured here, but not the decrease in some other leisure activities.

Table 4: Effect of reaching female state pension age on consumption of leisure activities

		Effect of being over SPA	Standard error	Mean at age 59	Observations
All					
	Goes to an art gallery or museum	0.048**	(0.023)	0.181	6,183
	Goes to theatre, concert or opera	0.061**	(0.026)	0.237	6,321
	Member of a sports club, gym or exercise class	0.029	(0.026)	0.255	6,260
	Member of a social club	0.058***	(0.020)	0.104	6,260
	Member of an education, arts or music groups or evening classes	0.041*	(0.022)	0.134	6,260

	Any of these	0.077***	(0.025)	0.530	5,938
Out of work at 58					
	Goes to an art gallery or museum	0.082**	(0.035)	0.168	2,183
	Goes to theatre, concert or opera	0.078**	(0.039)	0.174	2,222
	Member of a sports club, gym or exercise class	0.016	(0.043)	0.225	2,204
	Member of a social club	0.013	(0.035)	0.096	2,204
	Member of an education, arts or music groups or evening classes	0.025	(0.035)	0.140	2,204
	Any of these	0.092*	(0.049)	0.498	2,072
In work at 58					
	Goes to an art gallery or museum	0.052*	(0.028)	0.188	3,931
	Goes to theatre, concert or opera	0.058*	(0.033)	0.269	4,030
	Member of a sports club, gym or exercise class	0.035	(0.033)	0.270	3,987
	Member of a social club	0.083***	(0.021)	0.107	3,987
	Member of an education, arts or music groups or evening classes	0.057*	(0.030)	0.131	3,987
	Any of these	0.076***	(0.029)	0.547	3,798

Note: ***, ** and * denote that the effect if significantly different from zero at the 1%, 5% and 10% levels, respectively. An individual is said to go to a particular place or event if they have gone more than once every few months in the past year.

Another potential reason why we observe no change in leisure spending but a significant change in leisure consumption may be because activities become cheaper upon reaching SPA. For one, individuals may have more free time meaning they can shop around more for deals and get a lower price. This, in turn, could plausibly lead to an increase in leisure consumption without a similar increase in leisure expenditure. Alternatively, it could be because of discounts on ticket prices for pensioners. However, this is unlikely to play an important part in the UK context; the majority of discounts for older adults are not tied to the SPA itself, but rather to a fixed age requirement, typically age 60, these will not affect the effects we identify.[13]

Given that the fall in income induced by a higher SPA does not seem to affect spending on most essentials, individuals must be adjusting in other ways. In the appendix, Table A.2, we include results for the change in likelihood of making a transfer to someone outside of the home upon passing the SPA. For our main sub-group of interest, women not in paid work at age 58, there is no significant

[13] One exception to this rule is bus travel, which becomes free (outside of London) at SPA, however, we do not believe these are driving the changes in leisure expenditure we identify.

change in the likelihood of making a transfer. However for women who were in paid work at 58 we find a significant increase in the probability of making a transfer as a result of reaching the SPA. This suggests that women in work at 58, a group of perhaps more affluent women, have a higher marginal propensity to make a transfer from additional income. This idea is in line with Boileau and Sturrock (2023) who find that wealthier individuals are more likely to make a transfer. We find that the increase in likelihood of making a transfer after reaching the SPA is driven entirely by an increase in likelihood to make a transfer to a charity, with no evidence of increased transfers to children, grandchildren, relatives or friends. These additional transfers are small with women who were in paid work at 58 more likely, as a result of reaching SPA, to make a transfer of over £5 a week but not a transfer of over £20 a week.

Mental health and wellbeing

Our results have shown that, overall, once women pass the SPA they are less likely to be employed, have higher net incomes and are more likely to participate in social activities. While higher income and increased social participation may improve wellbeing, the expected effect of leaving paid work on mental health and wellbeing is theoretically ambiguous: leaving paid work may lead to a loss of purpose and structure which could have a negative impact on mental health and wellbeing, or it could improve wellbeing through reducing stress.

To understand the effect being above the SPA has on mental health, we look at the effect on reported depressive symptoms. Results are shown in Table 5. We create a depressive score that tabulates how many of the eight depressive symptoms an individual experienced much of the time in the past week, with the score increasing by one for each depressive symptom that is recorded. We find a positive, but not statistically significant, coefficient on depressive symptoms above SPA. These results are consistent with those found by Amin-Smith and Crawford (2018) who also do not find a statistically significant effect of the SPA on depressive symptoms.

When split by prior labour market status, we find no significant effect of a higher SPA on depressive symptoms of women who had already left paid work by age 58. However, we see a small increase in

depressive symptoms (significant at the 10% level) amongst those who were in paid work at 58 – the effect is small, equivalent to fewer than one-in-six of those who are in work at 58 reporting one additional depressive symptom. These results suggest that the income channel alone is not necessarily a key driver of depressive symptoms for older women. Instead, it appears that the combination of income loss and withdrawal from employment may be more important for this mental health outcome.[14]

Table 5: Effect of being over the female state pension age on depressive score

	Effect of being over SPA	Standard error	Mean at age 59	Observations
All	0.070	(0.081)	3.218	7,281
Out of work at 58	-0.163	(0.177)	3.535	2,611
In work at 58	0.144*	(0.078)	3.054	4,580

Note: ***, ** and * denote that the effect if significantly different from zero at the 1%, 5% and 10% levels, respectively. Depressive symptoms score is on a scale from 0-8, with 0 indicating the individual experienced none of the depressive symptoms 'much of the time' in the past week, and 8 indicating they all occurred 'much of the time' in the past week.

We also look at how being above the SPA affects wellbeing. We measure wellbeing through a self-reported life satisfaction score, measured on a 0-10 scale, with higher values indicating greater satisfaction. Table 6 presents these results. The first row of results is based on the ELSA dataset, this shows that across our entire sample, the life satisfaction score improves by 0.320 once women pass the SPA.

We also estimate the effect on wellbeing using data from the APS as it gives us more statistical power than ELSA. Life satisfaction is measured using the same question and scale in APS and ELSA, Table 6 gives further evidence that these scores are comparable. In both samples we see a similar mean life satisfaction at age 59 for the whole sample and provide a similar estimate of an increase in life

[14] We also examine whether the increase in SPA affects physical health, particularly, we look at physical health measured through difficulties associated with performing activities of daily living (ADLs) or instrumental activities of daily living (IADLs) above the SPA. We don't find any significant evidence that this is affected by a rise in the SPA.

satisfaction score[15] – the APS data estimates an increase in life satisfaction by 0.247 above SPA compared to 0.320 in ELSA.

There is insufficient power in the ELSA dataset to split the life satisfaction effects by whether women have left employment by age 58. We therefore turn to the APS, and find that women who left work by 58 have a larger improvement in life satisfaction once they pass SPA that those who were still in paid work at age 58. The increase is significant and large, and is equivalent to the increase in life satisfaction from moving from moving down from the average for the second quartile of the distribution to the average for the bottom quartile of the wealth distribution .[16]

We also identify a positive, although not statistically significant, coefficient on a quality of life score (CASP-19 score) above the SPA (results are presented in Appendix Table A.4). This could indicate that CASP-19 captures something about wellbeing that is closer to life satisfaction, and indeed one of the CASP-19 questions is whether you feel satisfied with your life. For women not in paid in work at 58 there is a 9.8 ppt increase in the proportion of women no longer reporting that they are experiencing money troubles (one of the CASP components) above the SPA, and this is statistically significant at the 10% level. This, again, indicates the importance of the income channel through which a change in SPA affects the wellbeing of women who are out of work at 58.

Table 6: Effect of reaching female state pension age on life satisfaction

	Effect of being over SPA	Standard error	Mean at age 59	N
All: ELSA	0.320*	(0.165)	7.249	3,869
All: APS	0.247***	(0.046)	7.470	48,830
Not in work at age 58: APS	0.376***	(0.107)	7.010	15,424
In work at age 58: APS	0.195***	(0.046)	7.690	33,112

Note: ***, ** and * denote that the effect if significantly different from zero at the 1%, 5% and 10% levels, respectively. Life satisfaction score is on a scale from 0-10, with 0 indicating the individual does not feel satisfied at all, and 10 indicating they feel very satisfied.

[15] Some small differences may be expected due to the fact that the APS and ELSA samples capture slightly different age groups.
[16] See Table A.3

6. Conclusion

Many governments have turned to increasing their equivalents of the SPA as a means to ease the fiscal burden of an ageing population. While increasing the SPA can help reduce government social security spending and encourage later retirement, it also has significant distributional consequences, especially as lower-income individuals typically rely more heavily on the state pension. Understanding the full range of effects that the SPA has is essential in order to evaluate fully the costs and benefits of a policy of increasing it.

Our study leverages ten years of UK pension reforms to examine the causal impact of increasing the SPA on various economic outcomes and general wellbeing. We find that the reform disproportionately affects women who were already out of the labour force in their late 50s, as they experience a significant decline in income without an accompanying increase in employment. Whilst the lower income does not translate to lower expenditure, it is associated fall in social participation for this group of women. Increasing the SPA leads to a fall in wellbeing, as measured through life satisfaction. The change in life satisfaction when the SPA rises is particularly large for women who have left employment early, equating to the change in wellbeing experienced by moving from the second to the lowest quartile of wealth.

Our findings highlight the need for policymakers to consider the heterogeneous impact of raising the SPA on individuals in these poorer groups carefully. Whilst raising the SPA yields fiscal savings, our results indicate that there is a case for providing additional targeted support to mitigate the adverse impacts on those most disproportionately affected by the reform.

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8. Appendix

Table A.1: Effect of reaching female state pension age on income including partner

		Effect of being over state pension age	Standard error	Mean At age 59	Observations
All					
	Income including partner (winsorized)	43.60*	(23.70)	625.00	7,257
	Income including partner (top 1% dropped)	32.00	(20.40)	597.20	7,166
Out of work at 58					
	Income including partner (winsorized)	97.00**	(43.20)	500.90	2,600
	Income including partner (top 1% dropped)	90.10***	(30.60)	464.60	2,574
In work at 58					
	Income including partner (winsorized)	5.60	(29.80)	689.10	4,567
	Income including partner (top 1% dropped)	4.00	(25.60)	665.60	4,503

9. Note: ***, ** and * denote that the effect if significantly different from zero at the 1%, 5% and 10% levels, respectively. Incomes are given in £ per week, in 2018/19 prices. Income includes that from: employment, self-employment, private pensions, state pensions, state benefits and asset income. Winsorized income is done at the 99th percentile.

Table A.2: Effect of reaching female state pension age on making transfers

	Effect on making transfers	Effect of being over SPA	Standard error	Mean at age 59	Observations
All					
	Any in past 4 weeks	0.065**	(0.027)	0.613	7,281
	To a charity in past 4 weeks	0.072**	(0.029)	0.468	7,266
	To a non-charity in past 4 weeks	-0.006	(0.016)	0.142	7,266
	More than £5 a week	0.036	(0.023)	0.429	7,281
	More than £20 a week	0.023	(0.023)	0.190	7,281
Out of work at 58					
	Any in past 4 weeks	0.046	(0.047)	0.542	2,611
	To a charity in past 4 weeks	0.043	(0.049)	0.417	2,604
	To a non-charity in past 4 weeks	0.009	(0.033)	0.121	2,604
	More than £5 a week	-0.007	(0.045)	0.397	2,611
	More than £20 a week	0.019	(0.035)	0.155	2,611
In work at 58					
	Any in past 4 weeks	0.069*	(0.035)	0.649	4,580
	To a charity in past 4 weeks	0.076**	(0.036)	0.494	4,572
	To a non-charity in past 4 weeks	-0.008	(0.021)	0.153	4,572
	More than £5 a week	0.064**	(0.032)	0.446	4,580
	More than £20 a week	0.030	(0.030)	0.207	4,580

Note: ***, ** and * denote that the effect if significantly different from zero at the 1%, 5% and 10% levels, respectively.

Table A.3: Multivariate OLS Regression of Life Satisfaction (on a 0-10 scale) on a set of dependent variables, for people aged 55 to 75 in ELSA

	Life satisfaction
Female	0.088***
	(0.031)
Any Children	0.061
	(0.044)
Age	0.391***
	(0.063)
Age^2	-0.003***
	(0.0004)
Long term health problem	-1.067***
	(0.033)
Wealth Q2	0.395***
	(0.043)
Wealth Q3	0.580***
	(0.044)
Wealth Q4	0.765***
	(0.045)
Has a degree	-0.051
	(0.036)
Has secondary education or equivalent	-0.119***
	(0.037)
Partner	0.820***
	(0.037)
In paid work	0.125***
	(0.041)
In full time work	-0.016
	(0.051)
Constant	-8.919***
	(2.527)
Observations	21,113
R-squared	0.127
Year dummies	Yes

Notes: Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1. Wealth quartiles are compared to poorest quartile, education groups (has a degree, has secondary education or equivalent) are compared to having no qualifications. Results shown for individuals aged 55-75.

Table A.4: Effect of reaching female state pension age on quality of life

		Effect of being over SPA	Standard error	Mean at age 59	Observations
All					
	CASP-19 score	0.839	(0.551)	41.885	6,304
	Money doesn't prevent me from doing what I want	0.021	(0.029)	0.521	6,315
	'CASP-18' score	0.768	(0.521)	40.294	6,514
Out of work at 58					
	CASP-19 score	1.506	(1.003)	39.831	2,205
	Money doesn't prevent me from doing what I want	0.098*	(0.054)	0.501	2,210
	'CASP-18' score	1.295	(0.953)	38.277	2,306
In work at 58					
	CASP-19 score	0.802	(0.634)	42.934	4,034
	Money doesn't prevent me from doing what I want	-0.005	(0.034)	0.532	4,040
	'CASP-18' score	0.770	(0.604)	41.327	4,138

Note: ***, ** and * denote that the effect if significantly different from zero at the 1%, 5% and 10% levels, respectively. CASP-19 score measure quality of life, it is on a scale from 0 to 57 with 0 indicating lowest quality of life and 57 indicating highest quality of life. 'CASP-18' is the CASP-19 score but without the question measuring money troubles