

## Understanding the Gender Pensions Gap



## Chetan Jethwa - Policy Modeller, Pensions Policy Institute



Chetan Jethwa joined the PPI modelling team in April 2018 as a Policy Modeller. He is responsible for maintaining and developing PPI models as well as producing modelling results and undertaking analysis to feed into the PPI's research.

Chetan has a BSc in Actuarial Science from the London School of Economics.

### The Pensions Policy Institute (PPI)

The PPI is an educational, independent research organisation with a charitable objective to inform the policy debate on pensions and retirement income provision. The PPI's aim is to improve information and understanding about pensions and retirement provision through research and analysis, discussion and publication. It does not lobby for any particular issue or reform solution but works to make the pensions and retirement policy debate better informed.

Pensions affect everyone. But too few people understand them and what is needed for the provision of an adequate retirement income. The PPI wants to change that. We believe that better information and understanding will lead to a better policy framework and a better provision of retirement income for all. The PPI aims to be an authoritative voice on policy on pensions and the provision of retirement income in the UK.

The PPI has specific objectives to:

- Provide relevant and accessible information on the extent and nature of retirement provision
- Contribute fact-based analysis and commentary to the policy-making process
- Extend and encourage research and debate on policy on pensions and retirement provision
- Be a helpful sounding board for providers, policy makers and opinion formers
- Inform the public debate on policy on pensions and retirement provision.

We believe that the PPI is unique in the study of pensions and retirement provision, as it is:

- Independent, with no political bias or vested interest
- Led by experts focused on pensions and retirement provision
- Considering the whole pension framework: state, private, and the interaction between them
- Pursuing both academically rigorous analysis and practical policy commentary
- Taking a long-term perspective on policy outcomes on pensions and retirement income
- Encouraging dialogue and debate with multiple constituencies



A research report by Chetan Jethwa, Policy Modeller

Published by the Pensions Policy Institute

© July 2019

ISBN 978-1-906284-82-4

[www.pensionspolicyinstitute.org.uk](http://www.pensionspolicyinstitute.org.uk)

# Understanding the gender pensions gap: report sponsored by NOW: Pensions

---

Executive Summary .....	1
Introduction.....	3
Chapter one: Understanding the scale of the gender pension gap .....	4
Chapter two: The impact of alternative policy strategies .....	15
Conclusion .....	21
Appendix one: Chart data .....	22
Appendix two: Tables.....	30
Appendix three: Overview of the model .....	44
References .....	46
Acknowledgements and Contact Details.....	47

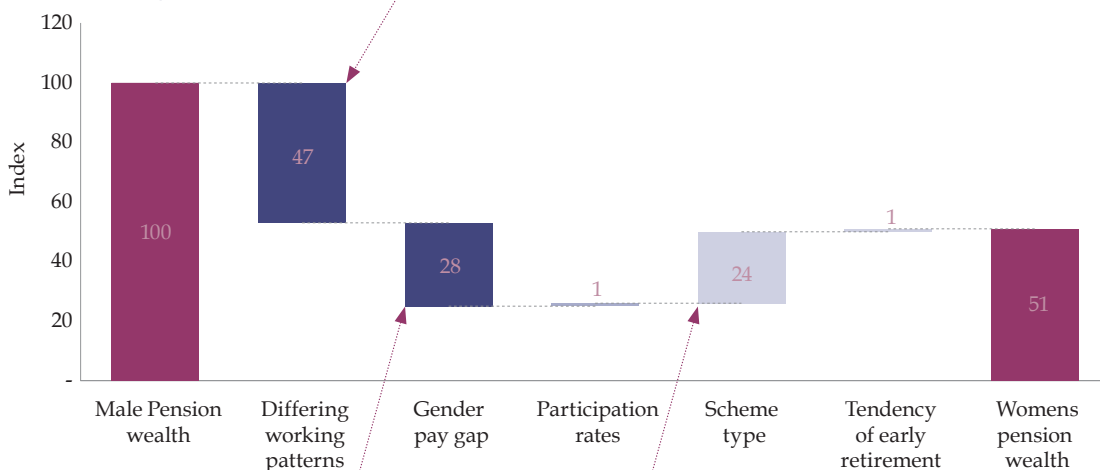
# Executive Summary

**This report focuses on the pension savings gap between men and women; the major contributing factors to this difference, an analysis of the reasons**

**why such factors cause differences in the amount contributed into a pension and explores the impact a range of potential policies have on bridging the gap.**

Women taking time away from work, generally to look after family, is the biggest factor in the women's pension gap. Women are more likely to take breaks in their career paths to raise children or care for relatives.

**The different factors contributing to the difference in pension wealth (by their late 50s) and their magnitudes**



Source: WAS Wave 5 and PPI modelling

Women currently on average earn approximately 18% less compared to their male counterparts.<sup>1</sup> Over an individual's working life, the pay differential could contribute to a reduction of pension wealth of 28% of those approaching retirement.

Women with pensions are more likely than men to have saved in a Defined Benefit (DB) pension arrangement. A higher proportion of women are in current workplace DB schemes. This is due to a larger proportion of females working in the public sector, which generally provides a DB pension arrangement.

1. ONS (2018a)

Working women in their 30s are more likely than men to participate in workplace pensions. Between ages of 30 to 40, participation rates are higher for women than men. At later ages, men's participation rates exceed those of women. Over a working life, differences in participation rates have a small impact on pension wealth by retirement.

Currently, there are 50% more women than men heading towards retirement without any private pension savings. 1.2 million women in their 50s have no private pension wealth and hence will rely on the State Pension system and their partner to provide a retirement income. This represents approximately 5% of all women.

In their early 60s the median private pension wealth of women is one third of men's private pension wealth. By retirement, women would have approximately accrued £51,000, whilst men would have about £157,000 of pension wealth. This is a result of all of the contributing factors discussed in this report.

The State Pension gap has been cut by over 70% with the new State Pension. Women's weekly State Pension income has increased from £126.37 to £143.76. The reduction in the pensions gap is partially due to women having paid the 'married woman's stamp' under the pre-2016 State Pension system (if they chose to before 1978). Less women also had enough additional State Pension (aSP) to bring their total State Pension income above the new State Pension (nSP) level.

To draw the same pension income throughout their retirement, women would need to have saved around 5% - 7% more than men by retirement age to allow for living longer. Women generally live on average 3.7 years longer than men meaning their pension pots would need to last longer (unless they buy an annuity as gender differences in annuity rates are banned by EU regulation). Hence in order to draw the same pension income as men, women would need more pension wealth by retirement.

A policy targeted at people not in paid work could reduce the gender pension gap. This is because a greater proportion of women take time out compared to men. Policies such as the family carer top-up could therefore reduce the pensions gap.

For men and women, contributing from the first pound rather than on a band of earnings can result in more pension savings. Since this policy equates to a fixed amount of additional wealth per annum and women's pension wealth is generally lower, the policy would have a greater proportional impact on women than men. However, men are more likely to work full-time without a career break and so the policy would have a greater absolute impact on men than women.

1.2 million women (in relationships) with dependent children are currently looking after their family and are missing out on automatic enrolment pension contributions.

This proportion of women are therefore not in paid employment and hence are not receiving contributions to their pensions under automatic enrolment. An additional 1.4 million mothers with dependent children who are employed do not earn above the £10000 threshold to qualify for automatic enrolment contributions.

A family carer top-up could make up half the pension saving missed by taking time away from paid work to care (e.g. children or elderly parents). Based on the policy explored in the report, it is not sufficient enough to match those who do not take time out. However, it does reduce the gender pensions gap by as much as 28% since more women qualify to receive this benefit compared to men (1.5 million women compared to 150,000 men).

The alternative policies explored may also help reduce a gap opening in younger generations rather than close an existing gap for older generations. This is particularly apparent in the family carer top-up policy where the same policy would provide a 20% increase in pension wealth to older generations as opposed to a 50% increase to younger generations. Older individuals have already taken time out before these proposed policies would have come into effect and so partially miss out on the benefits.

# Introduction

**A gender pension gap exists in the UK, driven by pay differentials and exacerbated by the fact that women are more likely to take career breaks to care for children or elderly relatives, and by the design factors of the current pension system. This gap is both recognised and mitigated in some form by different bodies, however the gap persists and has ramifications for the fairness of retirement for half of the population.**

This gap is recognised by the parties involved in UK pension provision:

- The State who mitigate the impact of women taking time out of work to raise children by crediting ‘qualifying years’ towards the State Pension;
- Policymakers recognising the effect of automatic enrolment:  
*Workplace pension participation among eligible men and women has been equalised.<sup>2</sup>*
- Pension providers recognising the differences within their scheme members, for example:  
*65-year-old women have, on average, £40,332 saved in their pension fund versus £50,514 for men of the same age.<sup>3</sup>*

The pension gap is the result of persistent factors stemming from labour-market traits associated with lower levels of State Pension entitlement and private pension savings.<sup>4</sup> Analysis of

historical labour market participation has shown only one in five women worked mostly full-time between the ages 16 to 54. Women were more likely to be mostly out of the labour market or a family carer (30%) or to have a work history characterised by combinations of paid employment and family care (34%).<sup>5</sup>

The structure of automatic enrolment can also contribute to the gender pensions gap since automatic enrolment is based on an individual’s pay and men generally earn more than women.

Approaches to be able to manage this pension gap have included suggestions such as a higher savings rate of 12% as well as maintaining employer contributions in times of financial hardship.<sup>6</sup>

The Pensions Policy Institute (PPI) was sponsored by NOW: Pensions to undertake the scale of the current gender pension gap and model the potential impact of a number of policy options in order to understand whether these policies could potentially close the gender pension gap.

Chapter one explores the extent of the pension gap and the main factors driving the difference and their relative importance.

Chapter two analyses four possible policy alternatives, to understand how they may impact the pension gap and an estimation of the cost of implementation.

2. DWP (2017a)  
3. Now: Pensions  
4. PPI (2016c)  
5. WHERL (2017)  
6. Scottish Widows (2018)

# Chapter one: Understanding the scale of the gender pension gap

---

**This chapter quantifies the factors underlying the gender pensions gap and explains why these factors contribute to the gap. The State Pension system is also analysed to assess the Government's contribution to the gender pensions gap.**

## Why does the gender pensions gap matter?

The introduction of automatic enrolment in October 2012, which requires both employees and employers to contribute in a workplace pension scheme, has fundamentally changed participation rates.

Approximately 70% of annuities bought are single life annuities (offering no benefit for a surviving partner).<sup>7</sup> A drawdown approach to retirement income can result in any remaining pension saving being transferred to a surviving partner, however there are considerably more risks associated with this approach. This means that men and women are increasingly likely to need to rely on their individual pension savings to provide a sustainable post-retirement income.

This is despite the fact that two-thirds of pensioners are married and therefore income received is spent at a household level. Individuals may need more support to consider the implication of the distribution of household pension wealth in circumstances where couples are separated (either through divorce or death of a partner).<sup>8</sup>

Women live on average 3.7 years longer than men.<sup>9</sup> At State Pension age in 2018 (65 years old for both men and women) women have a life expectancy around 2 years and 2 months longer than men and will, on average, need to ensure that they can sustain their retirement income for a greater length of time. This means that for a given rate of drawdown, the chance of exhausting the pension is higher for women than men (Chart 1.1).

At an initial drawdown rate of 3.5% of the pension pot, increasing with the Consumer Price Index (CPI), a woman has nearly a third higher chance of exhausting their pension pot within their future lifetime (5.6% vs 4.3%). To account for this a woman would need a pension pot around 5% higher than a man to sustain the same amount of income.

---

7. Association of British Insurers (2018)

8. PPI (2016a)

9. Office for National Statistics (2018b)



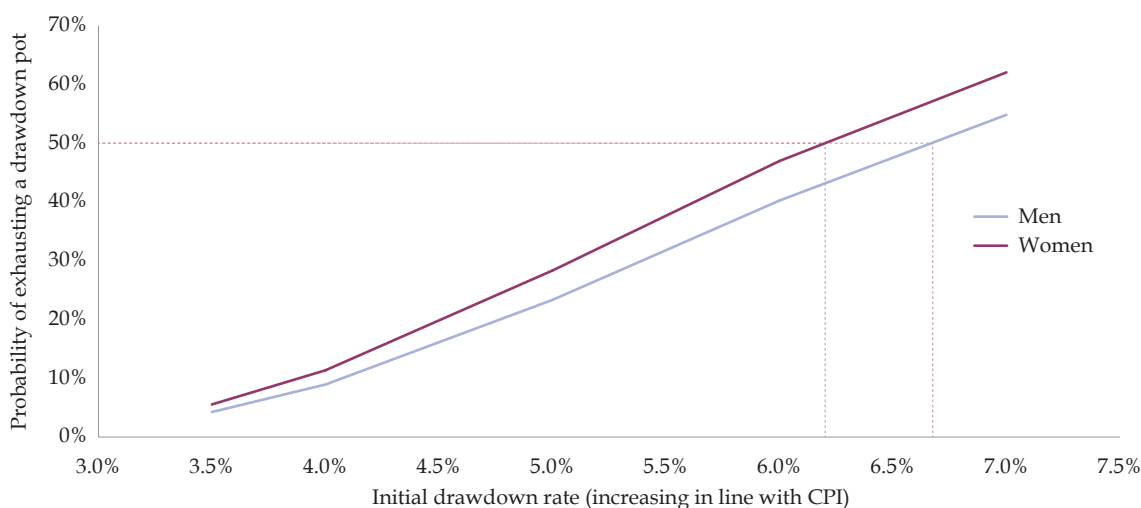
For higher drawdown rates (6%-7%) of the initial pot, the chance of exhausting a pot is around 50:50. For a woman to close the longevity risk gap they would need a pension pot over 7% higher than a man.

Longevity can depend on factors such as the location an individual lives in, the type of employment (e.g. office work or manual labour) and the amount of wealth attributed to the individual. These factors can change the size of the longevity risk gap and hence the size of the pension pot required for a comfortable standard of living post-retirement.

**Chart 1.1: The longevity risk gender gap**

**To draw the same pension income, women would need to save around 5%-7% more than men by retirement to allow for living longer**

The probability of exhausting a drawdown pot within the lifetime of a man and woman



Freedom and Choice, introduced in April 2015, allows people to access their retirement income in different ways. Spending patterns of men and women therefore can play a part in the overall retirement income available for the individual. However, if individuals make sub-optimal decisions about how to access their retirement savings this could negatively impact them.

Women’s pension wealth is 51% of men’s pension wealth by their late 50s (Chart 1.2). A pension wealth index is used which is based upon mean pension wealth in the male and female populations (baseline being male pension wealth). The factors leading to the gap have been assessed for their relative magnitude compared to the baseline. The combination of these factors account for the lower pension wealth of women.

**The magnitude of the gap**

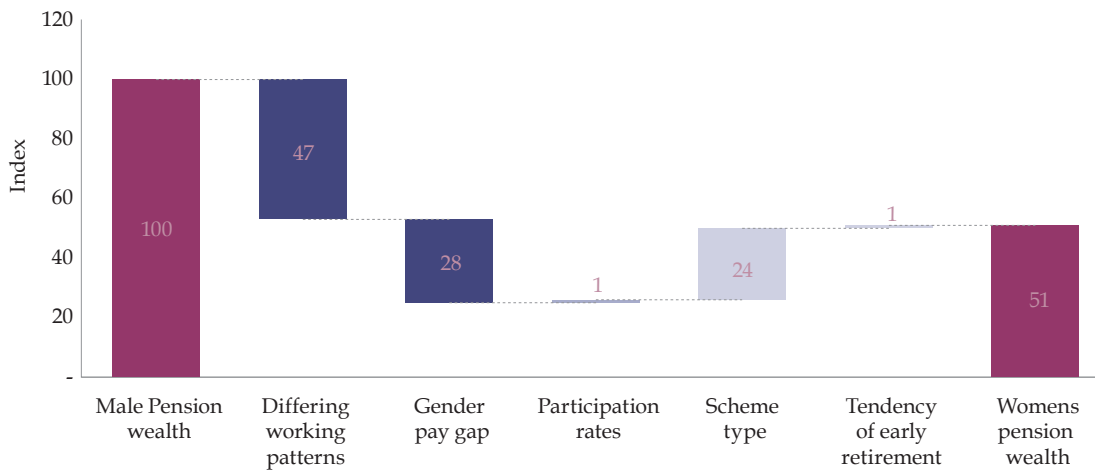
By retirement age, the median pension wealth of women is about a third of men’s pension wealth (Chart 1.3). This stems from a number of factors acting throughout working life. These factors include:

- Working patterns
- Salary
- Participation rates
- Scheme type
- Tendency for early retirement (timing of withdrawal)

Chart 1.2: Breakdown of an individual’s pension wealth with the magnitude of each factor contributing to the difference

**Waterfall chart of individuals in their late 50s**

The different factors contributing to the difference in pension wealth (by their late 50s) and their magnitudes



Source: WAS Wave 5 and PPI modelling

**Differing working patterns** of men and women accounts for the largest part of this gap. Because women are more likely to take time off work or reduce their hours to be able to take on caring responsibilities, pension wealth is reduced by around 47%.

The impact of the **gender pay gap** over the course of the working life will reduce contribution amounts and pension accruals further, cutting pension wealth by approximately 28%.

**Participation rates** for men and women differ throughout their working lives and also depend upon a number of social factors such as attitudes to saving or household responsibilities within families. Employed women generally have a higher participation rate in their 30s and early 40s than men.

The **scheme type** that employees participate in results in a higher rate of pension accrual for women who are more likely than men to participate in a DB workplace pension scheme. This is as a result of a higher proportion of women working in the public sector which generally offers a DB pension scheme.

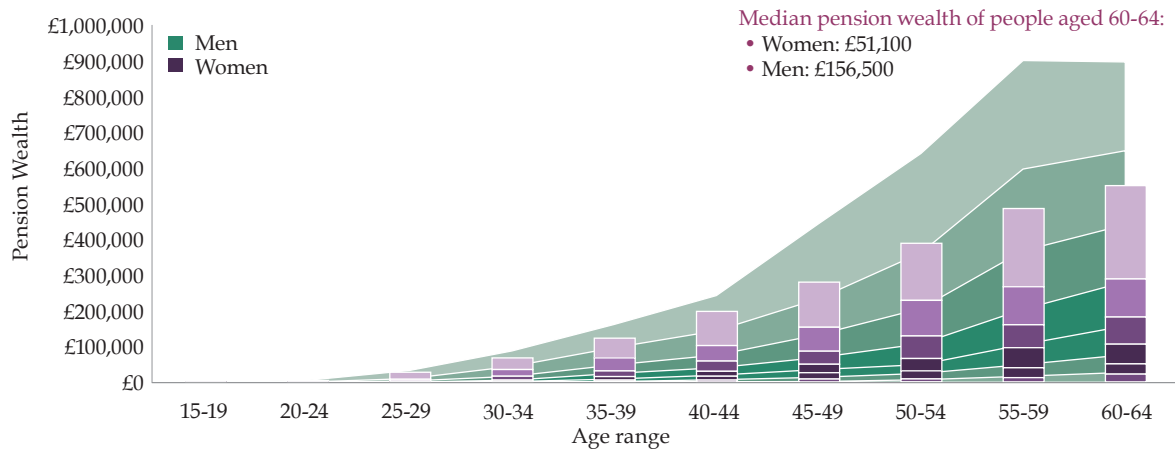
Men are more likely to have pension in payment (**higher tendency to retire early**) and begin **withdrawal of pension wealth** sooner. This may be due to men and women taking different approaches to finances. Women with partners could be more likely to take a gendered approach to finances as a result of the differences in allocation of financial roles within households. However the impact is small and with limited data available which reflects the impact of the equalisation of pension ages this part of the picture may evolve.

At all ages women have accrued less pension savings than men. The median pension wealth for women is around 30% lower than men’s by their late 40s. This gap amounts to £10,000, which is set to grow to around £67,000 for those aged in their late 50s. The rate of pension accumulation is lower for women which is linked to existing pension wealth and active membership rates of contribution and accrual. By their 60s, the median women’s pension wealth is £51,100, whilst men’s pension wealth is near £156,500 (Chart 1.3).

**Chart 1.3: The distribution of pension wealth**

**In their early 60s the median private pension wealth of women is 1/3 of men’s private pension wealth**

The variation of pension wealth by age and gender, split into deciles



Source: WAS Wave 5

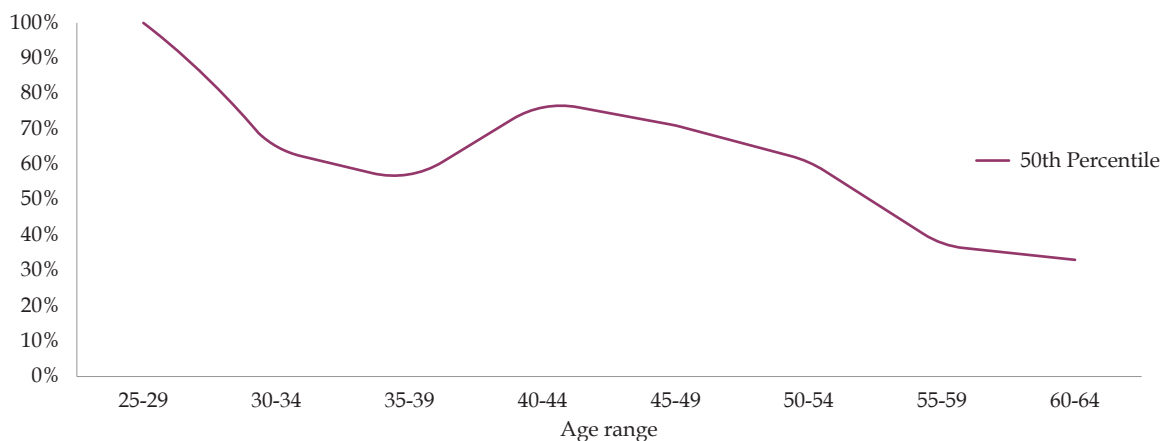
The damage to women’s pension wealth is done whilst in their 30s. This is the general age where women are likely to take time off caring for children/families and therefore do not accrue as much pension wealth compared to men. The

proportion of women’s pension wealth to men’s pension wealth does increase in their 40s due to those returning to work and hence, once again, contributing to their pension pot (Chart 1.4).

**Chart 1.4: The difference in pension wealth between men and women**

**Women’s pension wealth suffers the most in their 30s**

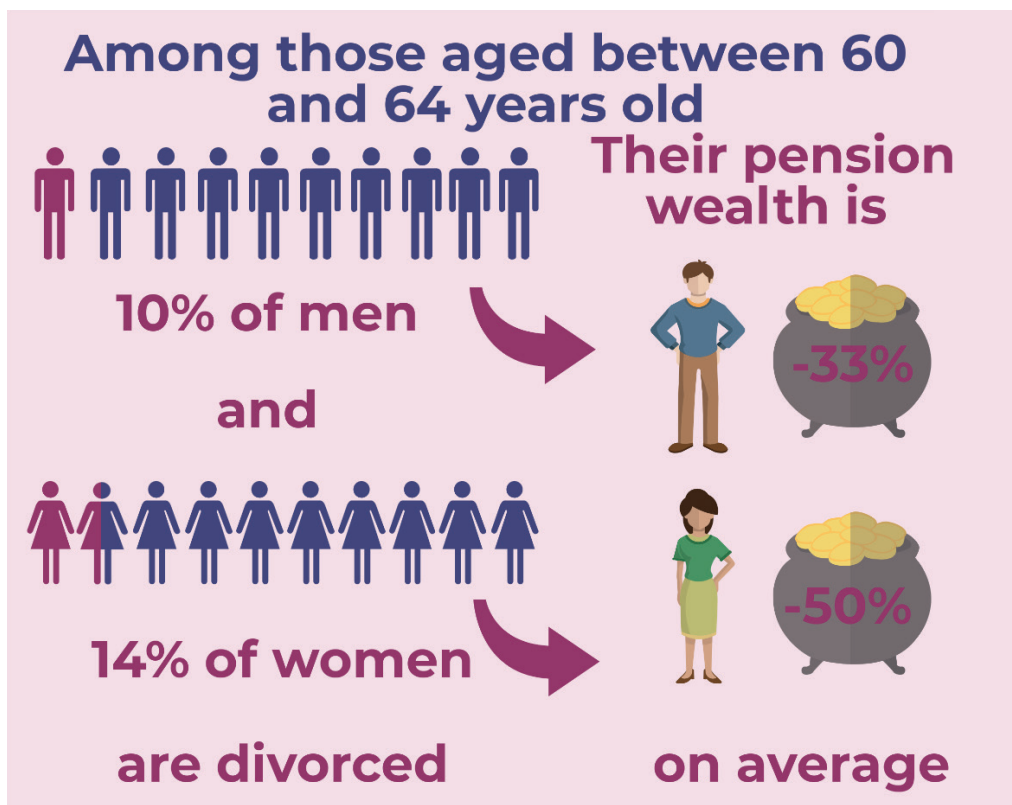
Women’s pension wealth as a proportion of men’s pension wealth for median earners



Source: WAS Waves 5

Approximately 10% of men and 14% of women in their early 60s are divorced. The median pension wealth of divorced men and women by retirement is £103,500 and £26,100 respectively. These figures compared to the population indicate a pension wealth reduction of a third for men but a half for women, signifying a

greater impact of divorce for women than men.<sup>10</sup> With 71% of couples not considering pensions during divorce proceedings, the impact divorce has on an individual's pension wealth would seem to be unseen by those involved and on an individual basis. The overall impact can vary as a result of divorce settlement terms.<sup>11</sup>



Those approaching retirement without any private pension wealth are unlikely to have a retirement income of £15,000 per annum, which is considered a minimum amount required to achieve a comfortable standard of living, though some people would require more.<sup>12</sup>

The split of younger adults without any pension wealth is reasonably even between men and women. However, at older ages (late 50s and 60s) women account for over 60% of those without any pension wealth. When looking at those who are aged 50-59 years old, there are approximately 1.2 million women and 800,000 men heading towards retirement without any private pension wealth (4.6% of women and 3.2% of men) (Chart 1.5).

These individuals will have to rely on the State Pension system and other sources of income and support and may not achieve a comfortable standard of living in retirement.

Older individuals with no private pension wealth prior to automatic enrolment will have accrued a negligible amount before retirement through automatic enrolment contributions. This would likely not be enough for a comfortable standard of living after retirement.

10. PPI analysis on the Wealth and Assets Survey wave 5 (WAS)

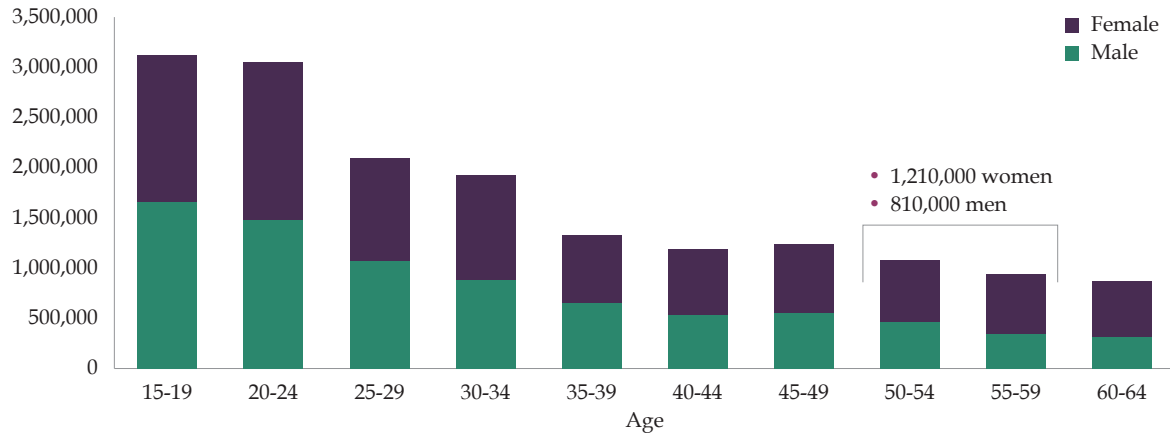
11. Scottish Widows (2017)

12. PPI (2018)

Chart 1.5: The split of those without pension wealth

**There are 50% more women than men heading towards retirement without any private pension saving**

The number of individuals without any pension wealth



Source: WAS Wave 5

**The impact of working patterns by gender**

The proportion of men and women who are in employment (including self-employment) shows a significant gender gap. This gap primarily consists of women who are inactive in the labour market and are looking after the family/home. This gender division is particularly apparent in couples (those who are married, co-habiting or in a civil partnership) since women tend to be the primary carers to children (Chart 1.6).

While only a couple of percent of men may withdraw from the labour market for such reasons, up to 20% of women in their 30s are

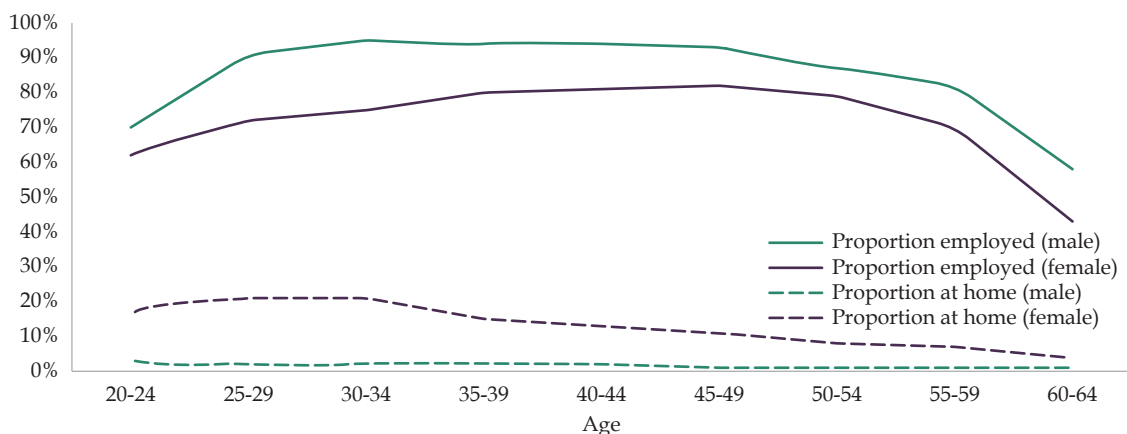
looking after family or the home rather than participating in the labour market. By being outside of employment they miss out on the opportunity of accruing pension wealth in a workplace pension scheme. This accounts for 1.2 million mothers (in relationships) with dependent children who miss out on the automatic enrolment pension contributions they could be eligible for, if they were in employment.

When considering mothers who have dependent children but also work, an additional 1.4 million mothers earn less than £10,000. These women do not meet the minimum earnings threshold to qualify for automatic enrolment contributions.

Chart 1.6: The economic activity of married men and women

**Higher proportion of women in relationships are looking after their family and therefore miss out on automatic enrolment pension contributions**

The proportion employed or looking after family (couples)



Source: WAS Wave 5

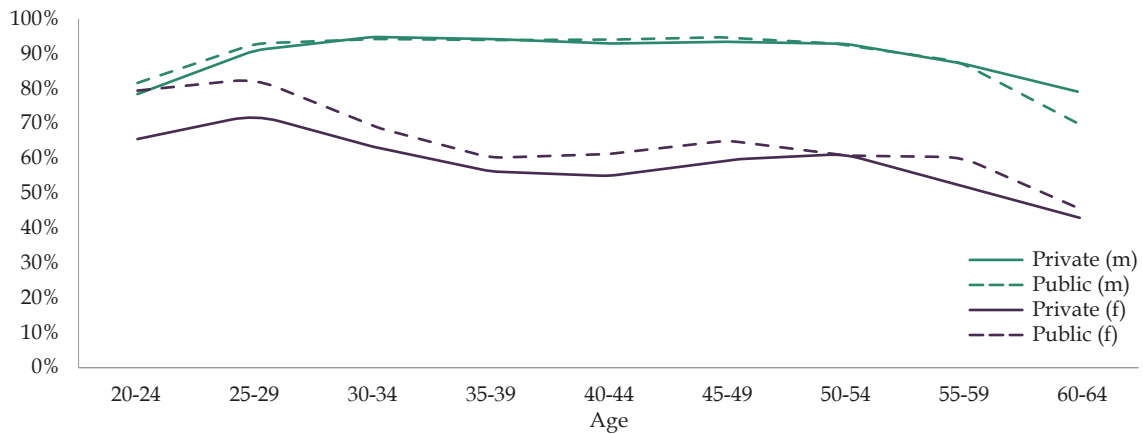
In both the private and public sector, a higher proportion of men work full-time than women at all ages. Less than two-thirds of employed women in any age group from their early 30s work full-time (Chart 1.7). This could indicate women reducing their hours

to be able to maintain caring responsibilities. Reduced hours result in reduced pay and lower pension contributions. In the case of automatic enrolment pension schemes this is likely to reduce women's pay below the automatic enrolment trigger threshold (£10,000 per year).

Chart 1.7: Proportion of men and women in full-time work in each sector

**A higher proportion of men work full-time than women**

Working hours of men and women in the public and private sector. The chart shows the proportion of employees working full-time



Source: LFS April 2018 - June 2018

Employment income is a driver of pension saving in workplace pension schemes. It is therefore necessary to quantify the distribution of incomes by gender to highlight the gender pay gap.

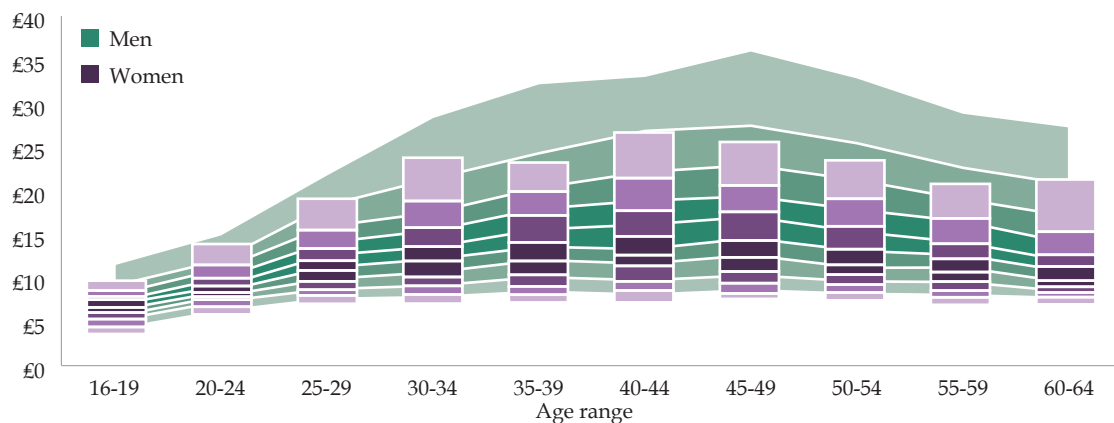
The average earnings for women is approximately 18% lower than men's. This average increases to about 23% lower than

men's hourly rate for those above 35 years old. However, an individual's salary is heavily weighted on the number of hours they work and since women are more likely to work part-time compared to men, the pay differential between men and women increases (Chart 1.8).

Chart 1.8: Hourly earnings of men and women

**Women currently on average earn approximately 18% less compared to their male counterparts**

The distribution of full-time equivalent hourly earnings for men and women, split into deciles



Source: LFS July - September 2018

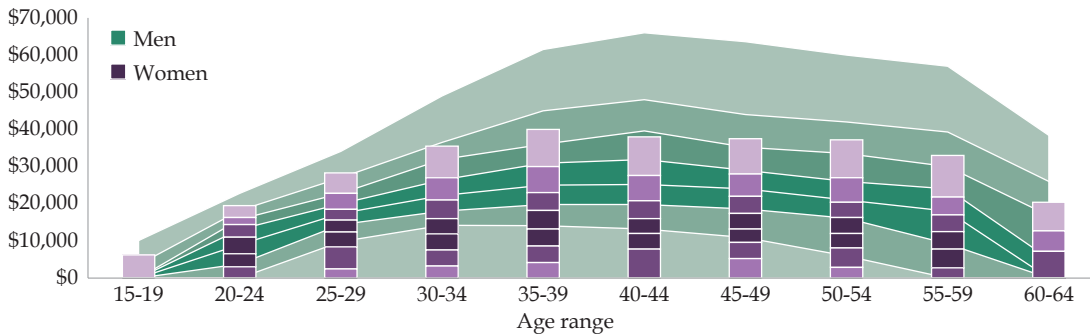
The annual pay gap is exacerbated by men having higher participation rates than women in employment and with men more likely to be working full-time compared to women, skewing the distribution of earnings. This reduces the size of the low-income tail of the distribution,

resulting in men in the lower part of their income distribution making on average higher pension contributions (in nominal terms) than women at an equivalent point in their income distribution, assuming access to equivalent workplace pension schemes (Chart 1.9).

**Chart 1.9: The distribution of earnings between genders**

**Men earn more than women on average at all ages**

The variation of earned income by age and gender, split into deciles



Source: WAS Waves 5

The median earnings for women is about 30% less than that of a male’s median earnings in their 20s. The pay gap then increases to over 50% of that of a male’s median earnings once in their 30s to retirement. The size of this gap is partly due to the differences in the contracted hours between men and women.

means of the opportunity to engage in more generous pension schemes. The public sector and certain industries tend to offer membership of Defined Benefit (DB) pension schemes which are more favourable than Defined Contribution (DC) schemes. The proportion of women employed in the public sector (versus the private sector) is approximately double the proportion of men across most ages (Chart 1.10). The more generous pension provision available to these women, on average, will help close the gender pension gap.

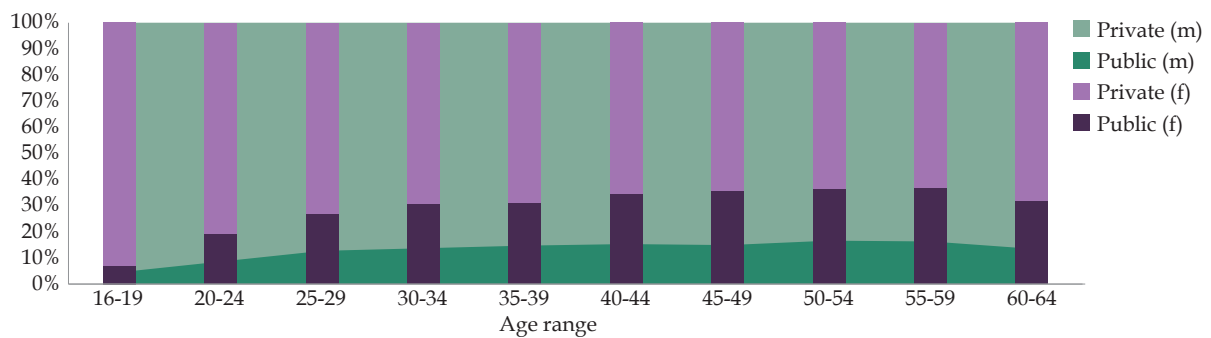
**Participation in DB and DC workplace pension schemes**

There is a difference in employment rates of men and women between sectors and employers, causing further gender divisions by

**Chart 1.10: Split in public and private sector**

**A higher proportion of women work in the public sector**

Proportion of employees who work in the private or public sector



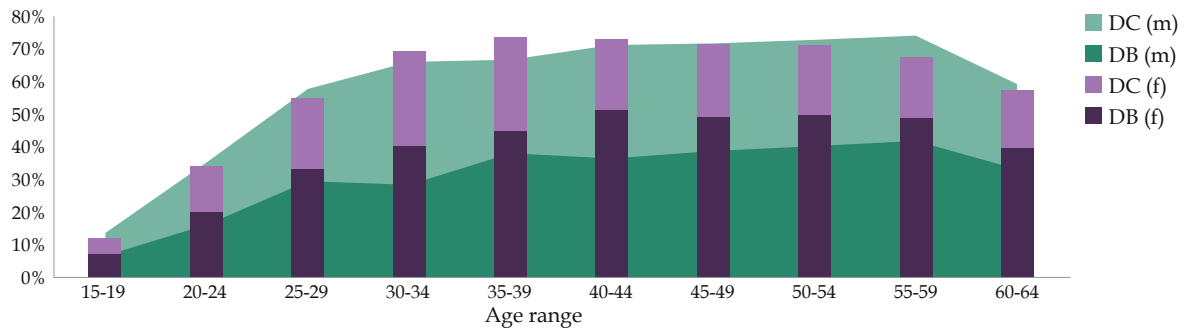
Source: LFS April 2018 – June 2018

This difference in the nature of employment results in women being more likely to be an active member of a DB pension scheme than men (Chart 1.11).

On its own this would naturally lead to women having a higher rate of private pension wealth accumulation than men. However, factors such as working patterns outweigh the advantage of having a more generous pension scheme.

**Chart 1.11: The breakdown of workplace pension scheme participation by scheme type – DB vs DC**  
**Female participation of Defined Benefit schemes**

Proportion of employees who are current members of a workplace pension scheme by scheme type



Source: WAS Waves 5

Women are less likely to participate in workplace pension schemes. Across working ages, another 350,000 women would need to be brought into workplace pensions to achieve an equivalent participation rate to men. This is generally a result of women being less likely to be in employment with access to a workplace pension scheme.

- This is reversed with employed men being more likely than women to participate in workplace pensions in their 50s.
- At the peak age of caring for children/families, those women who are employed are more likely to participate in workplace pension schemes.

There is a more complex picture when age and other social factors are considered (Chart 1.12):

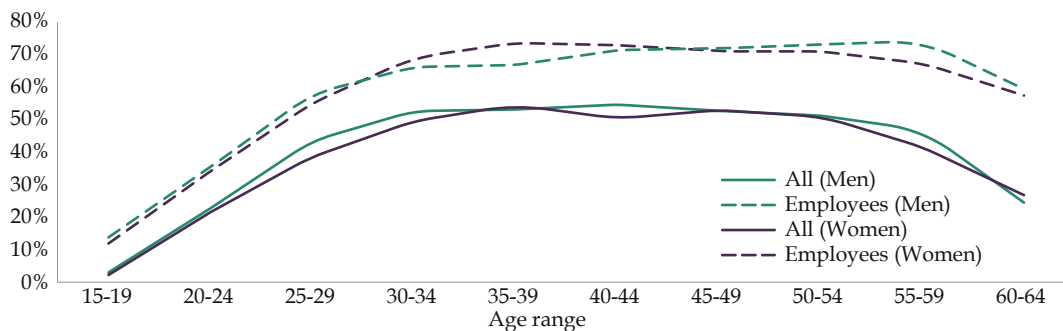
When comparing participation rates from 10 years ago, the same pattern emerged therefore suggesting that women are more likely to participate in an workplace pension scheme at this particular age range (in their 30s and 40s).<sup>13</sup>

- Of those who are employed, women generally have a higher participation rate than men in their 30s and early 40s.

**Chart 1.12: Participation rates in workplace pension schemes**

**Working women in their 30s are more likely than men to participate in workplace pensions**

Proportion of individuals who are current members of a workplace pension scheme



Source: WAS Wave 5

13. PPI analysis on the Wealth and Assets Survey wave 1 (WAS)



### The State Pension system

The introduction of the new State Pension (nSP) has been a step in reducing the pension gap between men and women.

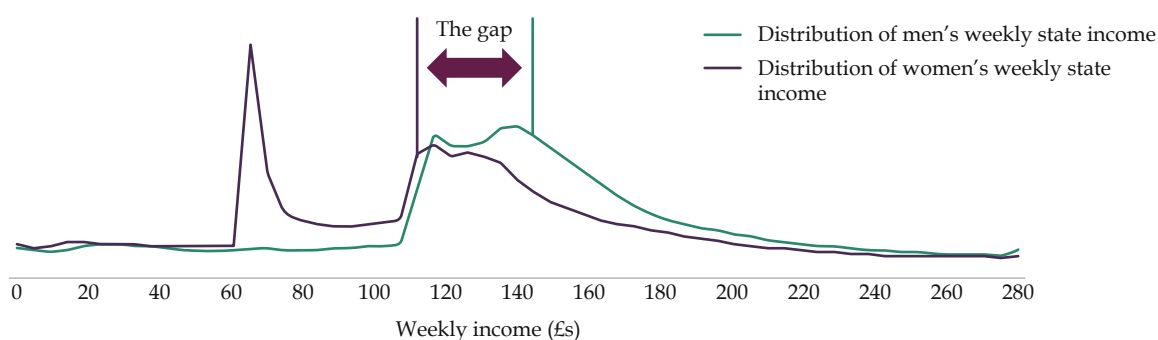
Introducing the nSP has had a dramatic effect on the distribution of State Pension income for women. Of those women who passed State Pension age (SPa) prior to the introduction of nSP, less than one in four had enough

entitlement to additional State Pension (aSP) to bring their total State Pension income above the level of the nSP. Some women have a lower State Pension as a result of women paying reduced National Insurance (NI) contributions for a reduced benefit ('married woman's stamp'<sup>14</sup>). As a result, the mean weekly income received by women was about £30 less than a men's State Pension income under the pre-2016 State Pension system (Chart 1.13).

Chart 1.13: The pre-2016 State Pension system pension gap

#### Pre-2016 State Pension system included women who received lower State Pension income

The distribution of income from pre-2016 State Pension with averages for each gender highlighted



Source: DWP Stat-Xplore, Feb '18 data

However, the old State Pension system does offer inheritable rights to widows and widowers which may have resulted in an increase in State Pension incomes in the future for some women.

The introduction of the new State Pension has resulted in nearly 40% of women receiving at least as much as the full nSP, with most others having an income at least equal to the basic State Pension (bSP). The State Pension gap has been cut by over 70% with the nSP with the mean State income for women increasing from £126.37 to £143.76 per week, while for men the mean State income has stayed about the same (£154.20 to £151.95 per week).

The impact upon the distribution of men's incomes is to start reducing the proportion of men receiving more than the level of the nSP as the transitional arrangements wane. There is a second peak of income around the level of the bSP resulting from those who have contracted out for a significant proportion of their working lives. It should be noted that these men do not lose out on this income, as it will instead be paid from a different source, their workplace pension.

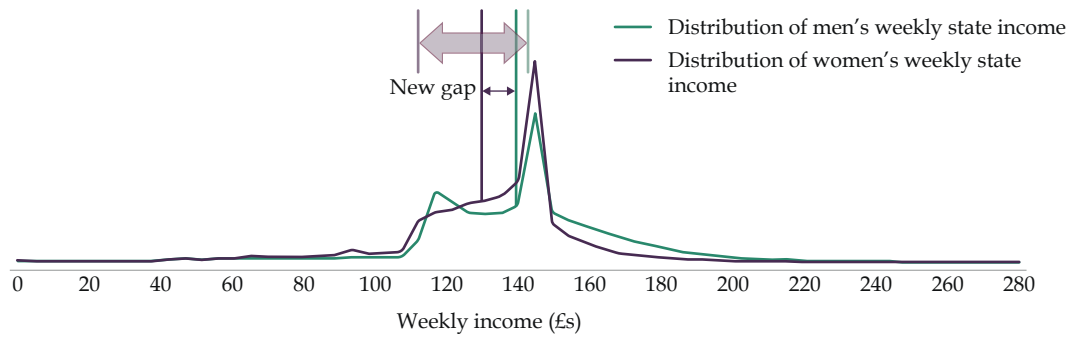
Clearly the nSP has been more beneficial for the distribution of women's State Pension income relative to men's to date (Chart 1.14).

14. Until April 1977, married women could choose to pay a reduced rate of National Insurance to receive a lower amount of basic State Pension (bSP)

Chart 1.14: The new State Pension system pension gap

**The State Pension gap has been cut by over 70% with the new State Pension**

The distribution of income from the new State Pension with averages for each gender highlighted



Source: DWP Stat-Xplore, Feb '18 data

The benefits paid from the nSP system will decrease for both men and women once transitional arrangements fade. The proportion of those reaching SPa receiving a higher State Pension than they would have done under the

old system will fall from about three-quarters to around two-thirds of pensioners by 2040. This will decrease further to just over half by 2050.<sup>15</sup>

15. DWP (2016)

## Chapter two: The impact of alternative policy strategies

**This chapter analyses the implications of implementing the four alternative policies described in Table 2.1 under the current economic environment. An assessment of each policy's costs and their effectiveness in reducing the gender pensions gap is included in this chapter.**

### Alternative policies

The alternative policies considered in this chapter are consistent with the current pensions debate and are analysed to understand how they may impact the current gender pensions gap (Table 2.1). All of the policies would affect automatic enrolment contributions and the overall pension wealth at retirement. Hence this will affect the adequacy of a male's and female's retirement income.

These policies need to be assessed not only on their effectiveness on closing the gap, but also the cost and who bears this burden.

Table 2.1: The four alternative policy strategies in greater detail

Alternative policies	Description
Family carer top-up	While on maternity pay: employer contributions remain on pensionable salary before; employee contribution is based upon the National Living Wage (NLW); While out of work and caring: benefit paid as pension contributions based upon automatic enrolment minimums upon NLW, payable alongside National Insurance (NI) credits towards the State Pension; While in part-time work to accommodate caring: a top-up benefit paid to ensure a minimum contribution equal with being out of work and receiving the benefit above
Higher contributions	An increase to the current automatic enrolment minimum contributions from 8% to 12% from 2025 (8% employee contribution, 4% employer contribution)
Contributions from the first pound	Removal of the lower bound of band earnings on automatic enrolment contributions from 2025
Flat rate of tax relief (30%)	An increase to the flat rate of tax relief from 20% to 30%

### Key results

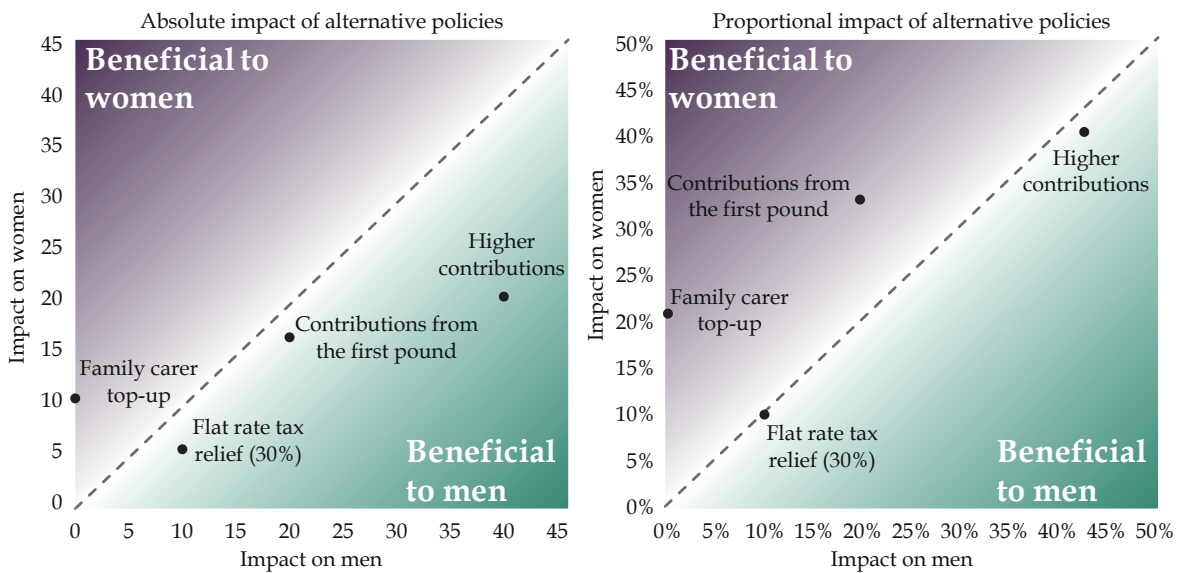
The policies interact with pay levels and working patterns to affect men and women differently. A policy may boost women’s pensions, yet not fully close the pension gap as it may also benefit men to a degree.

1. **Family carer top-up:** boosts the pension wealth of people who take time away from work to care, boosting women’s pension outcomes by over 20%.
2. **Higher contributions:** this raises contribution amounts proportionately which benefits men more in absolute terms.
3. **Contributions from the first pound:** for any individual earning at least the trigger amount their pension contributions increase by the same amount. Men gain a greater absolute impact as they are more likely to be employed and able to benefit from the policy. However the benefit to women represents a higher proportion of their projected pension wealth.
4. **Flat rate of tax relief:** the impact is proportional to the amount of contributions, and so men benefit by a greater absolute amount by being paid more (Chart 2.1).

Chart 2.1: The impact of each alternative policy strategy

A policy targeted at people away from work is capable of reducing the gender pension gap

Shows the absolute and proportional impact of all alternative policy strategies on men and women’s pension pots



Policy impact is based upon the scale of change to an automatic enrolment pot at retirement, based upon median pay levels and allowing for representative life courses of men and women. Those policies in the Purple region benefit women more than men whilst those in the green region benefit men more than women.

These charts weigh up the benefits received by men and women (currently aged 22) subject to automatic enrolment DC pension schemes through different alternative policy strategies. It is expressed as:

- The absolute impact a policy has upon projected total pension wealth. This is indexed with projected male pension wealth = 100. On this scale women are projected to have 51% of men’s pension wealth under current policies.

- The proportionate impact of policies upon total pension wealth.

Although chart 2.1 does outline the impact on total pension wealth for men and women, it does not take into account the likely cost of implementing these policies, which can vary between policies as realised later in this chapter.

### Family carer top-up

The family carer top-up can close around half of the pension wealth gap created by taking time out of work to care for family. However it does not contribute to closing the part of the pension gap derived from the pay gap.

The policy works by effectively applying a floor of £820 per year (in current earnings terms) to contributions while caring. These contributions would need to be paid as a benefit alongside child benefit and credit towards State Pension qualifying years. Approximately 1.5 million women with dependent children were not working to look after family / the home and a further 400,000 women were either looking after other family members or were housewives.<sup>16</sup> This would lead to an indicative annual liability between £1.2 billion and £1.6 billion per year to the government with a cost dependent upon take up. When compared to the cost of registered pension scheme tax relief of

£38.6 billion,<sup>17</sup> the cost of the policy is up to around 4% of this amount. This figure however represents relief not received by the government whilst the cost of the family carer top-up represents the additional amount spent by the government.

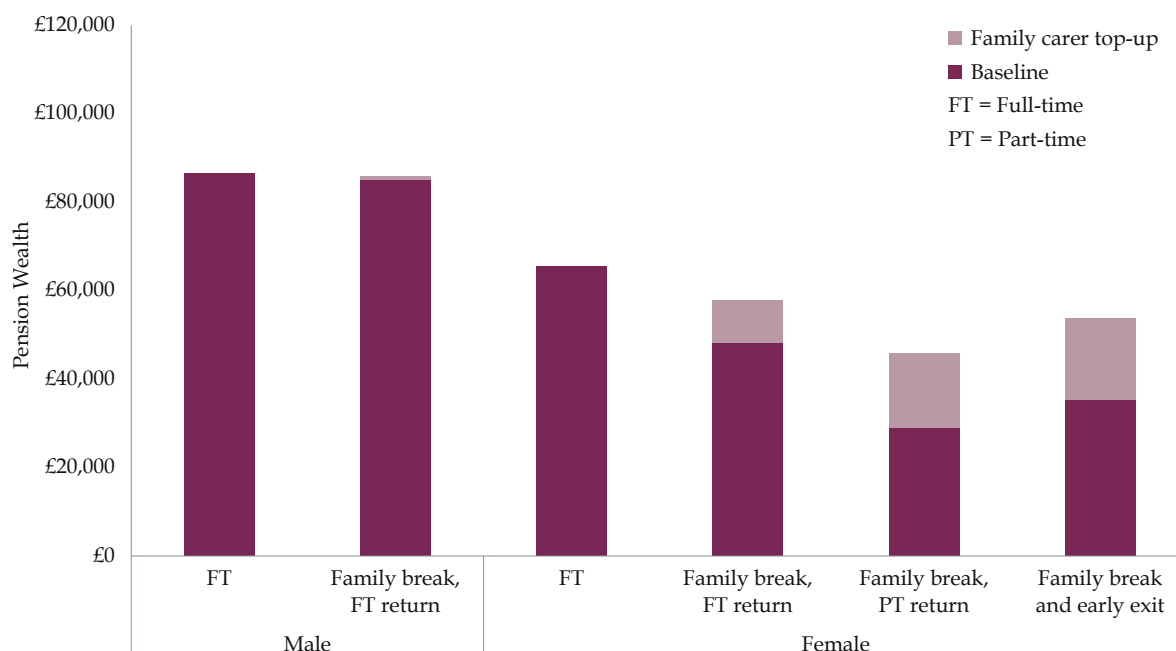
The longer an individual is in receipt of these top-ups the greater the impact it has upon their total pension savings. Automatic enrolment top-up increases the overall pension fund for those individuals who take a family break with a full-time return by approximately 20%. This is lower compared to the increase to those who take a family break and return part-time or leave the labour market early (approximately 50%) (Chart 2.2).

Older individuals may not benefit from the policy as much as younger individuals. They would have missed out, having already returned to work after a break to care since the family carer top-up began when they were 35 years old.

Chart 2.2: The impact of the family carer top-up policy

#### The boost to pension savings from a family carer top-up

Projected automatic enrolment pension pot at retirement (2018 earnings terms) for younger individuals with a family carer top-up



Similarly there are approximately 150,000 men with dependent children who are not working to look after the family/home and approximately another 100,000 without dependent children who could stand to benefit from such a policy, increasing the cost of the policy by £125 million to £200 million.

The family carer top-up focuses on those who are taking time out to care. This would benefit women and reduce the pensions gap between men and women (Chart 2.1).

16. PPI analysis on the Wealth and Assets Survey wave 5 (WAS)

17. HMRC (2018)

### Higher contributions

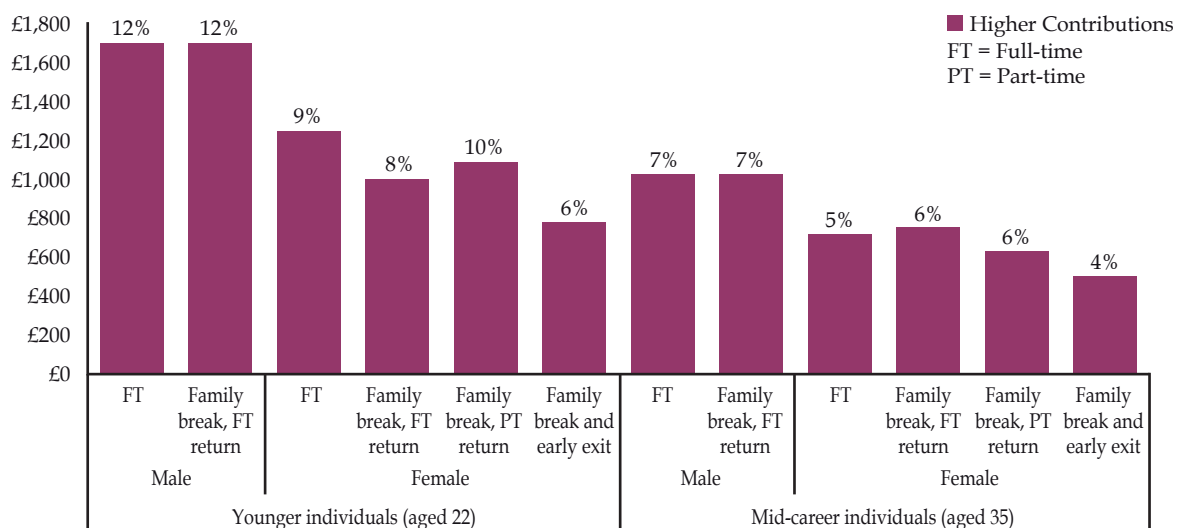
The higher contributions of 12% on band earnings (8% of employee contributions and 4% of employer contributions) has the most significant effect on men and women’s pension wealth and could increase financial resilience for all in retirement. However, since this

policy benefits men more than women, it does not reduce the gender pensions gap (instead it actually increases the gap). Men are more likely to be working rather than taking time out for caring reasons and therefore experience a greater impact from increased contribution levels (Chart 2.3).

Chart 2.3: The impact of higher contributions on retirement income

#### How a higher contribution policy may increase retirement income

The increase in annual retirement income (before tax, 2018 earnings terms) resulting from an increased contribution rate of 12%



At the current contribution rate of 8%, contributions from an individual with relevant earnings would deliver around half the level of savings needed to deliver adequate retirement incomes for most individuals.<sup>18</sup> The higher minimum contribution policy does increase the adequacy of retirement income further. However, employees could potentially anchor onto the higher contribution amount, believing that the higher contribution rate would lead to an adequate pension wealth by retirement.

An increase of contribution rate from 8% to 12% will result in additional contributions from employees and employers of £5.6 billion per annum.<sup>19</sup> Most of this cost would need to be borne by employers and employees, and so would be cheaper for the Government, although there would be a cost due the increased tax relief. This could put more strain on employers through employment costs and will also affect the take-home pay of men and women. This presents a risk of higher opt out rates since employees

may not value or be able to afford the larger proportion of their salary that has been allocated to retirement. This concern has also been recognised in the Automatic Enrolment Review 2017, when considering gradual contribution rate increases. The risk could be mitigated by introducing measures which ensure their salary does not decrease in nominal terms.

#### Contributions from the first pound

Contributions from the first pound increases contributions by the same amount for any individual earning at least the trigger amount (currently £10,000 per annum).

Using earnings levels of men and women from chart 1.9, the effective contribution rate of men and women is calculated with the lower band of £6,032 applied on automatic enrolment contributions. Removing the lower band means that these contribution rates are all raised to 8% with those on lower pay having a greater increase in effective contribution rate (Table 2.2).

18. DWP (2017a)

19. PPI modelling on the Wealth and Assets Survey wave 5 (WAS)

Women generally earn less than men, so they proportionately increase contributions by more than men. However, more men meet the automatic enrolment eligibility criteria

so there is a greater absolute impact on men's pension outcomes (Chart 2.1: The impact of each alternative policy strategy).

Table 2.2: The impact of contributing from the first pound to men and women at different earning levels

Contribution rates based upon 8% of band salary										
Salary levels										
Age	Men (percentiles)					Women (percentiles)				
	10 <sup>th</sup>	30 <sup>th</sup>	50 <sup>th</sup>	70 <sup>th</sup>	90 <sup>th</sup>	10 <sup>th</sup>	30 <sup>th</sup>	50 <sup>th</sup>	70 <sup>th</sup>	90 <sup>th</sup>
20-24				4.9%	5.9%				4.6%	5.5%
25-29			5.2%	5.9%	6.6%			4.1%	5.4%	6.3%
30-34		4.6%	5.8%	6.5%	7.0%			3.9%	5.7%	6.6%
35-39		4.6%	6.1%	6.7%	7.2%			4.3%	5.9%	6.8%
40-44		4.3%	6.1%	6.8%	7.3%			4.0%	5.7%	6.7%
45-49		3.6%	6.0%	6.6%	7.2%			4.3%	5.8%	6.7%
50-54			5.7%	6.6%	7.2%			4.0%	5.6%	6.7%
55-59			5.3%	6.4%	7.2%				5.2%	6.5%

*The intensity of the green indicates the proportionate change received when removing the lower band. The values in this table represent the effective contribution rate with the lower band. By removing this band the effective contribution rate will be 8%.*

Removing the lower earnings limit incentivises those with multiple jobs to opt-in to a workplace pension since employers would contribute from the first pound. This incentive equates to an increase in pension wealth at retirement by 140%.<sup>20</sup> It would also simplify pension contribution calculations.<sup>21</sup> The total contributions made by employees and employers would increase by £2.6 billion due to the removal of the lower limit.<sup>22</sup>

### Flat rate of tax relief

A flat rate of tax relief of 30% is close to cost neutral when compared to the current system.<sup>23</sup> However, automatic enrolment has fundamentally altered the income distribution of pension savers. This means that a flat rate which is cost neutral to the current system would be reduced in future years by around two percentage points.

In this analysis, it is assumed that the flat rate of tax relief is applied on employer and employee contributions.

This change leads to an aggregate increase in pension wealth at retirement for median earners of £6,000 on average (in current earning terms). This however masks the differing impact on men and women with different lifecourses.

Most scheme members will be making pension contributions while paying a marginal rate of income tax of 20%. Applying a flat rate of tax relief at 30% will boost the amount of money contributed to a pension for the same cost to the employee. The contribution is effectively raised by 10% when the 30% tax relief is applied on both employee and employer contributions. The gain is lower (6.25%) if only the 20% rate of tax relief on employee contributions is replaced by 30% tax relief (Chart 2.4).

Higher earning individuals may pay higher rate income tax for a portion of their working life. Under the current system they will receive tax relief at different rates at different times. If the tax relief system is replaced with a flat rate of 30% they stand to benefit in some years and lose out in the years they have a marginal tax rate at the higher rate.

A flat rate of tax relief would allow taxpayers to receive the additional contributions directly into their pension fund and without needing to request tax relief. This therefore avoids the net pay tax anomaly where generally lower earners miss out.

20. PPI (2016a)

21. DWP (2017a)

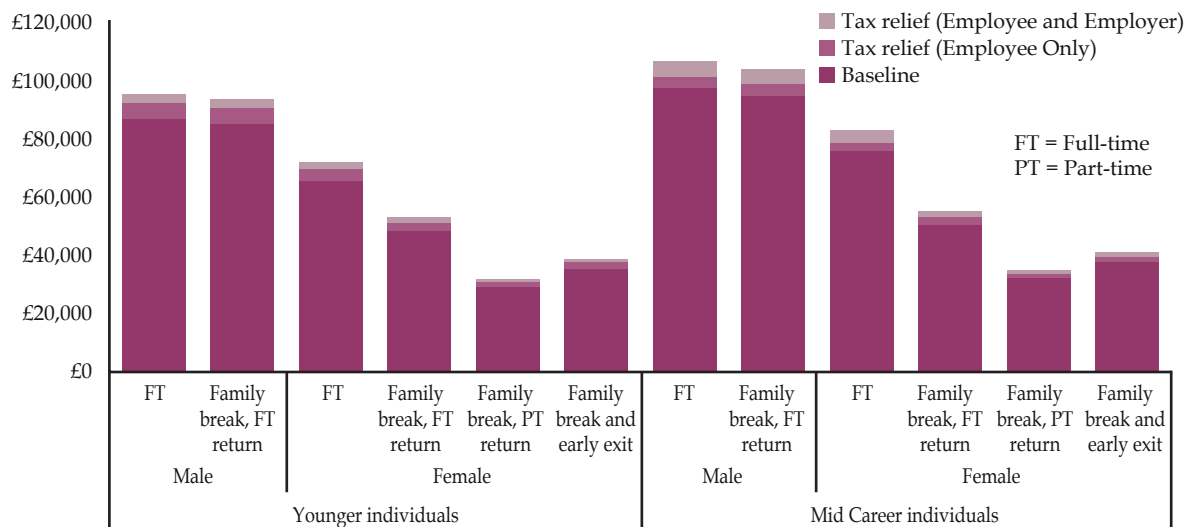
22. DWP (2017b)

23. PPI (2016b)

Chart 2.4: The impact of increasing the flat rate of tax relief

The effect of a flat rate of tax relief on median earners

Projected automatic enrolment pension pot at retirement (2018 earnings terms) with a higher rate of tax relief (30%)



A 90<sup>th</sup> percentile earning male, aged 22 (younger individual), who works full-time will lose out by more than 8% of their pension wealth by retirement. Younger individuals who have spent a large proportion of time caring or working part-time, (and does not qualify as a higher tax payer during this time period) could lose about 4% of their pension wealth. Similar conclusions are drawn from mid-career individuals (Individual modelling results: Table A7).

Men generally lose out more than women since they would pay the higher rate of tax earlier in their career and hence benefit in fewer years than women.

Implementing a flat rate of tax relief of 30% gives an additional benefit for those on lower incomes to save more in a pension scheme. This conversely leads to lower relief for higher income earners currently receiving tax relief at 40%.

Although additional incentives to save are present for lower income individuals, they may not realise this enticement since their basis of saving in a pension is whether they can afford to, not whether if there are tax benefits associated to pension contributions.<sup>24</sup> However

these individuals will still see a boost to their savings, even if they did not save more after the policy has been implemented.

Overall, the cost of implementing a flat rate of tax relief of 30% would be approximately £2.2 billion in current earnings terms.<sup>25</sup> This is equivalent to an additional 6% of the total cost of tax relief (the cost of registered pension scheme tax relief is £38.6 billion<sup>26</sup>).

The flat rate of tax relief could apply to employee contributions only. This however could lead to additional problems:

- This leads to a situation whereby contributions could be made by basic rate tax-paying employees in place of their employers and claim the higher rate of relief. This may not be compliant with automatic enrolment with a minimum employer contribution being mandated.
- Equally, a higher rate tax payer could make contributions through salary sacrifice and still effectively obtain tax relief at 40%.

Ideally, this would need to be applied across both employer and employee contributions. This would impact the tax position of companies with relief potentially needing to be offset against corporation tax for employers.

24. OECD (2018)  
 25. PPI (2016b)  
 26. HMRC (2018)



# Conclusion

Considering alternative policies highlights the issue of how far a pensions gap could be addressed and who would be likely to bear the costs of implementing them.

Analysis shows that a pension gap between men and women does exist with women only having approximately a third of the private pension wealth of men by retirement age (Chart 1.3). The alternative policies explored help address the gap arising for younger generations, rather than close the existing gap for older generations. Further refinements to these policies would therefore be needed in order to see how much further the pension gap could be reduced.

As women’s pension wealth is typically lower than that for men, treating their individual pension wealth as a household pension wealth

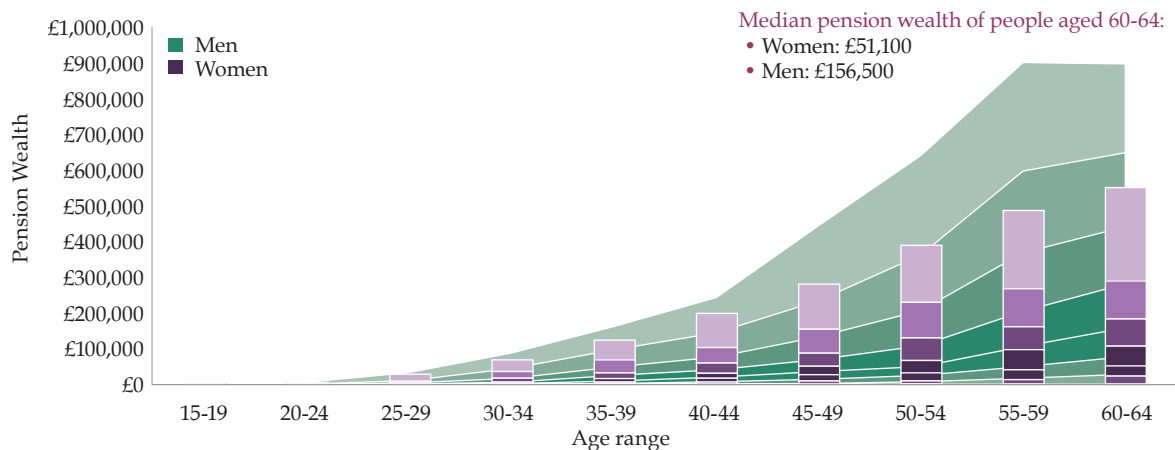
shields women from some of the negative impacts (such as pay and differing working patterns) towards women’s pension wealth. However, some complications do arise when considering finances at household level, such as the impact of the death of the partner or divorce on individual pension wealth.

In the future, a potential avenue of research could be to look into consumption patterns and its effect on the accumulation of individual pension wealth. It is expected that consumption patterns would differ between genders, especially for those who are in a relationship and co-habit since spending occurs on a household basis. It is also expected that there would also be variations in pension wealth for those separated or divorced.

Chart 1.3: The distribution of pension wealth

**In their early 60s the median private pension wealth of women is 1/3 of men’s private pension wealth**

The variation of pension wealth by age and gender, split into deciles



Source: WAS Wave 5

# Appendix one: Chart data

The tables below provide the data used to produce the charts present in this report.

## Chart data 1.1: The longevity risk gender gap

The probability of exhausting a drawdown pot within the lifetime of a man and woman.

Drawdown rate	3.50%	4%	5%	6%	7%
Man	4.26%	8.94%	23.33%	40.23%	54.82%
Woman	5.55%	11.36%	28.33%	46.96%	62.04%

## Chart data 1.2: Waterfall chart of individuals in their late 50s

Shows the different factors contributing to the difference in pension wealth and their magnitudes.

	Pot size	Difference	Tracking1	Tracking2
Male Pension wealth	100	-	100	100
Differing working patterns	53	47	100	53
Gender pay gap	25	28	25	53
Participation rates	25	1	25	26
Scheme type	26	24	50	26
Tendency of early retirement	50	1	50	51
Womens pension wealth	51	-	51	51

Chart data 1.3: The distribution of pension wealth

The breakdown of individual pension wealth (split into deciles) by five year age bands and gender. All values are in pounds.

Age range	Men								
	10%	20%	30%	40%	50%	60%	70%	80%	90%
15-19	-	-	-	-	-	-	-	-	-
20-24	-	-	-	-	-	-	-	500	5,415
25-29	-	-	-	-	-	500	3,564	10,033	33,322
30-34	-	-	-	100	1,800	6,232	17,067	45,147	89,473
35-39	-	-	-	1,595	9,028	24,670	48,205	97,155	163,455
40-44	-	-	1,000	7,281	20,000	41,257	77,399	146,000	245,727
45-49	-	-	2,346	14,562	36,200	69,935	135,000	237,216	450,112
50-54	-	-	7,000	25,410	50,785	109,332	209,262	367,070	649,217
55-59	-	1,036	17,062	50,000	106,984	206,688	373,069	605,398	913,501
60-64	-	407	24,725	75,000	156,454	280,992	442,884	652,970	904,782

Age range	Women								
	10%	20%	30%	40%	50%	60%	70%	80%	90%
15-19	-	-	-	-	-	-	-	-	-
20-24	-	-	-	-	-	-	-	124	4,462
25-29	-	-	-	-	-	300	2,700	8,068	27,616
30-34	-	-	-	-	1,160	5,240	16,000	35,000	67,653
35-39	-	-	-	1,000	4,967	15,000	31,000	67,675	123,275
40-44	-	-	-	5,000	15,675	30,000	58,959	103,154	200,000
45-49	-	-	17	7,627	25,669	50,000	86,908	154,704	282,536
50-54	-	-	300	8,000	30,824	65,670	130,000	230,804	392,582
55-59	-	-	-	12,000	40,000	97,393	161,850	269,326	491,367
60-64	-	-	-	21,720	51,116	106,738	183,974	292,187	556,938

Chart data 1.4: The difference in pension wealth between men and women

Women's pension wealth as a proportion of men's pension wealth for median earners.

Age range	Women								
	10%	20%	30%	40%	50%	60%	70%	80%	90%
15-19	100%	100%	100%	100%	100%	100%	100%	100%	100%
20-24	100%	100%	100%	100%	100%	100%	100%	25%	82%
25-29	100%	100%	100%	100%	100%	60%	76%	80%	83%
30-34	100%	100%	100%	0%	64%	84%	94%	78%	76%
35-39	100%	100%	100%	63%	55%	61%	64%	70%	75%
40-44	100%	100%	0%	69%	78%	73%	76%	71%	81%
45-49	100%	100%	1%	52%	71%	71%	64%	65%	63%
50-54	100%	100%	4%	31%	61%	60%	62%	63%	60%
55-59	100%	0%	0%	24%	37%	47%	43%	44%	54%
60-64	100%	0%	0%	29%	33%	38%	42%	45%	62%

**Chart data 1.5: The split of those without pension wealth**  
The number of individuals without any pension wealth.

Age range	Men	Women	% who are women
15-19	1,663,076	1,459,583	46.74%
20-24	1,484,969	1,568,446	51.37%
25-29	1,072,599	1,018,611	48.71%
30-34	885,825	1,039,318	53.99%
35-39	655,004	668,047	50.49%
40-44	539,128	650,579	54.68%
45-49	560,625	679,805	54.80%
50-54	465,342	617,230	57.02%
55-59	345,046	592,839	63.21%
60-64	317,496	557,541	63.72%

**Chart data 1.6: The economic activity of married men and women**  
The proportion employed or looking after family (couples).

Labour market participation	Men		Women	
	In employment	Inactive Looking after the family/home	In employment	Inactive Looking after the family/home
Age range				
15-19	28%	0%	47%	20%
20-24	70%	3%	62%	17%
25-29	91%	2%	72%	21%
30-34	95%	2%	75%	21%
35-39	94%	2%	80%	15%
40-44	94%	2%	81%	13%
45-49	93%	1%	82%	11%
50-54	87%	1%	79%	8%
55-59	82%	1%	70%	7%
60-64	58%	1%	43%	4%

**Chart data 1.7: Proportion of men and women in full-time work**  
Proportion of employees working full-time by sector.

Age range	Private (men)	Public (men)	Private (female)	Public (female)
16-19	40.1%	72.5%	25.2%	47.6%
20-24	78.5%	81.7%	65.6%	79.5%
25-29	91.1%	93.0%	72.6%	82.9%
30-34	94.9%	94.4%	63.4%	69.2%
35-39	94.3%	93.9%	56.3%	60.2%
40-44	93.0%	94.1%	55.0%	61.3%
45-49	93.5%	94.8%	59.7%	65.2%
50-54	93.0%	93.1%	61.0%	61.3%
55-59	87.3%	87.7%	52.1%	60.4%
60-64	79.2%	69.8%	43.0%	45.6%

Chart data 1.8: Hourly earnings of men and women

The distribution of full-time equivalent hourly earnings for men and women. All values are in pounds.

Age range	Men								
	10%	20%	30%	40%	50%	60%	70%	80%	90%
16-19	4.00	1.00	0.50	0.66	0.67	0.36	0.81	1.00	2.50
20-24	6.08	1.12	0.61	0.51	0.59	0.93	1.08	0.98	3.00
25-29	7.49	1.12	1.17	1.33	1.39	1.45	1.84	2.40	3.58
30-34	7.70	1.31	1.52	1.50	1.42	1.87	2.05	3.89	7.08
35-39	8.33	1.67	1.94	1.52	1.99	2.36	2.39	3.96	8.05
40-44	7.97	1.65	1.92	1.66	2.80	2.75	3.29	4.68	6.34
45-49	8.48	1.72	2.30	1.94	2.45	2.34	3.57	4.52	8.65
50-54	8.08	1.42	1.55	1.95	2.18	2.53	3.39	4.22	7.57
55-59	7.92	1.50	1.67	1.41	1.45	2.40	2.55	3.60	6.34
60-64	7.58	0.75	1.02	1.23	1.20	2.06	3.10	3.66	6.67

Age range	Women								
	10%	20%	30%	40%	50%	60%	70%	80%	90%
16-19	3.50	0.83	0.92	0.75	0.60	0.90	0.38	0.68	1.15
20-24	5.78	0.90	0.82	0.35	0.48	0.76	0.91	1.54	2.43
25-29	7.00	1.00	0.66	0.97	1.27	1.13	1.42	2.14	3.64
30-34	7.02	1.09	1.00	1.03	1.86	1.67	2.20	3.10	5.03
35-39	7.16	0.92	0.97	1.34	1.61	2.16	3.14	2.76	3.38
40-44	7.19	1.38	1.06	1.80	1.25	2.18	2.98	3.79	5.30
45-49	7.57	0.66	1.19	1.35	1.65	1.96	3.33	3.07	5.05
50-54	7.42	0.91	0.92	1.16	1.14	1.82	2.66	3.20	4.47
55-59	6.88	0.90	0.78	1.04	1.11	1.54	1.75	2.95	4.01
60-64	6.96	0.84	0.53	0.67	0.71	1.65	1.36	2.68	6.07

Chart data 1.9: The distribution of earnings between genders

The variation of earned income by age and gender. All values are in pounds.

Age range	Men								
	10%	20%	30%	40%	50%	60%	70%	80%	90%
15-19	-	-	-	-	-	-	-	3,600	10,100
20-24	-	-	-	3,800	9,000	13,100	15,800	18,200	22,800
25-29	-	-	9,800	14,400	17,400	20,000	22,800	27,000	34,100
30-34	-	360	14,200	18,000	22,200	26,400	31,900	36,500	49,000
35-39	-	-	14,100	19,800	25,000	30,900	36,000	45,000	61,500
40-44	-	-	13,200	19,800	25,200	31,900	39,600	48,000	66,000
45-49	-	-	10,900	18,600	24,000	29,000	35,200	44,000	63,600
50-54	-	-	5,940	16,100	21,000	26,000	33,500	42,000	60,000
55-59	-	-	-	9,220	18,000	24,000	30,000	39,300	57,000
60-64	-	-	-	-	-	5,200	16,800	26,000	38,400

Age range	Women								
	10%	20%	30%	40%	50%	60%	70%	80%	90%
15-19	-	-	-	-	-	-	-	-	6,240
20-24	-	-	-	3,040	6,550	11,000	14,400	16,300	19,500
25-29	-	-	2,460	8,400	12,400	15,600	18,500	22,800	28,300
30-34	-	-	3,250	7,560	11,900	16,000	21,000	27,000	35,500
35-39	-	-	4,180	8,630	13,200	18,200	23,000	30,000	40,000
40-44	-	-	-	7,800	12,000	16,000	20,800	27,600	38,000
45-49	-	-	5,250	9,600	13,200	17,400	22,000	28,000	37,500
50-54	-	-	2,880	8,110	12,000	16,300	20,400	27,000	37,200
55-59	-	-	-	2,760	7,800	12,500	17,000	21,800	33,000
60-64	-	-	-	-	-	-	7,200	12,700	20,400

Chart data 1.10: Split in public and private sector

Proportion of employees who work in the private or public sector.

Age range	Public (men)	Private (men)	Public (female)	Private (female)
16-19	4.5%	95.5%	6.9%	93.1%
20-24	8.6%	91.4%	19.0%	81.0%
25-29	12.7%	87.3%	26.7%	73.3%
30-34	13.7%	86.3%	30.5%	69.5%
35-39	14.7%	85.3%	30.9%	69.1%
40-44	15.3%	84.7%	34.4%	65.6%
45-49	14.9%	85.1%	35.3%	64.7%
50-54	16.6%	83.4%	36.3%	63.7%
55-59	16.3%	83.7%	36.5%	63.5%
60-64	13.5%	86.5%	31.7%	68.3%

Chart data 1.11: Female participation of Defined Benefit schemes

Proportion of employees who are current members of a workplace pension scheme by scheme type.

Age range	DB (men)	DC (men)	DB (female)	DC (female)
15-19	6.7%	7.0%	7.3%	4.6%
20-24	16.2%	19.2%	20.2%	13.9%
25-29	29.6%	28.4%	33.2%	21.9%
30-34	28.5%	37.8%	40.3%	28.9%
35-39	38.2%	28.8%	44.9%	28.8%
40-44	36.6%	34.9%	51.2%	21.8%
45-49	38.9%	33.1%	49.2%	22.1%
50-54	40.4%	32.7%	49.8%	21.4%
55-59	42.0%	32.4%	48.7%	18.7%
60-64	33.3%	26.2%	39.5%	18.0%

Chart data 1.12: Participation rates in workplace pension schemes

Proportion of individuals who are current members of a workplace pension scheme.

Age range	Men		Women	
	Participation of population	Participation of employees	Participation of population	Participation of employees
15-19	3.0%	13.8%	2.2%	11.9%
20-24	22.7%	35.4%	21.5%	34.1%
25-29	43.5%	58.0%	38.7%	55.1%
30-34	52.7%	66.3%	49.6%	69.2%
35-39	53.2%	66.9%	54.6%	73.7%
40-44	54.7%	71.5%	50.4%	73.0%
45-49	52.8%	72.0%	53.0%	71.2%
50-54	51.3%	73.2%	50.9%	71.1%
55-59	46.9%	74.3%	41.6%	67.3%
60-64	24.5%	59.5%	26.8%	57.5%
Below SPa	32.0%	63.3%	31.7%	63.8%

Chart data 1.13 and 1.14: The distribution of State Pension income, women and men  
The distribution of income from the new State Pension and from pre-2016 State Pension.

Gender	Women			Men			Total		
	New State Pension	Pre-2016 State Pension	Total	New State Pension	Pre-2016 State Pension	Total	New State Pension	Pre-2016 State Pension	Total
5 or less	0.2%	0.7%	0.7%	0.1%	0.5%	0.4%	0.1%	0.6%	0.6%
5 < x ≤ 10	0.1%	0.5%	0.5%	0.1%	0.4%	0.4%	0.1%	0.5%	0.4%
10 < x ≤ 15	0.1%	0.6%	0.6%	0.1%	0.3%	0.3%	0.1%	0.5%	0.5%
15 < x ≤ 20	0.1%	0.8%	0.8%	0.1%	0.4%	0.4%	0.1%	0.6%	0.6%
20 < x ≤ 25	0.1%	0.8%	0.8%	0.1%	0.6%	0.6%	0.1%	0.7%	0.7%
25 < x ≤ 30	0.1%	0.7%	0.7%	0.1%	0.7%	0.6%	0.1%	0.7%	0.6%
30 < x ≤ 35	0.1%	0.7%	0.7%	0.1%	0.7%	0.6%	0.1%	0.7%	0.6%
35 < x ≤ 40	0.1%	0.7%	0.7%	0.1%	0.6%	0.6%	0.1%	0.7%	0.6%
40 < x ≤ 45	0.1%	0.6%	0.6%	0.1%	0.6%	0.5%	0.1%	0.6%	0.6%
45 < x ≤ 50	0.3%	0.6%	0.6%	0.3%	0.5%	0.5%	0.3%	0.5%	0.5%
50 < x ≤ 55	0.4%	0.6%	0.6%	0.4%	0.4%	0.4%	0.4%	0.5%	0.5%
55 < x ≤ 60	0.3%	0.6%	0.6%	0.3%	0.4%	0.4%	0.3%	0.5%	0.5%
60 < x ≤ 65	0.4%	0.6%	0.6%	0.4%	0.4%	0.4%	0.4%	0.5%	0.5%
65 < x ≤ 70	0.4%	0.6%	0.6%	0.4%	0.4%	0.4%	0.4%	0.5%	0.5%
70 < x ≤ 75	0.7%	10.8%	10.6%	0.4%	0.5%	0.5%	0.4%	6.4%	6.1%
75 < x ≤ 80	0.6%	4.3%	4.2%	0.4%	0.5%	0.4%	0.4%	2.7%	2.5%
80 < x ≤ 85	0.6%	2.2%	2.2%	0.4%	0.4%	0.4%	0.4%	1.5%	1.4%
85 < x ≤ 90	0.6%	1.9%	1.9%	0.4%	0.4%	0.4%	0.4%	1.3%	1.2%
90 < x ≤ 95	0.7%	1.7%	1.7%	0.4%	0.4%	0.4%	0.4%	1.2%	1.1%
95 < x ≤ 100	0.8%	1.6%	1.6%	0.4%	0.5%	0.5%	0.5%	1.1%	1.1%
100 < x ≤ 105	1.4%	1.6%	1.6%	0.5%	0.5%	0.5%	0.7%	1.1%	1.1%
105 < x ≤ 110	1.0%	1.7%	1.7%	0.5%	0.6%	0.5%	0.6%	1.2%	1.2%
110 < x ≤ 115	1.1%	1.8%	1.8%	0.5%	0.6%	0.6%	0.6%	1.3%	1.3%
115 < x ≤ 120	1.2%	1.9%	1.9%	0.5%	0.7%	0.7%	0.6%	1.4%	1.4%
120 < x ≤ 125	4.9%	5.2%	5.2%	2.6%	3.4%	3.3%	3.1%	4.4%	4.3%
125 < x ≤ 130	5.9%	5.7%	5.7%	8.5%	6.2%	6.5%	8.0%	5.9%	6.0%
130 < x ≤ 135	6.2%	5.1%	5.1%	7.2%	5.6%	5.8%	7.0%	5.3%	5.4%
135 < x ≤ 140	7.0%	5.3%	5.3%	5.8%	5.6%	5.7%	6.0%	5.4%	5.5%
140 < x ≤ 145	7.3%	5.1%	5.2%	5.7%	5.8%	5.8%	6.0%	5.4%	5.5%
145 < x ≤ 150	7.8%	4.8%	4.9%	5.8%	6.5%	6.5%	6.2%	5.6%	5.6%
150 < x ≤ 155	9.7%	3.9%	4.0%	6.8%	6.6%	6.7%	7.4%	5.1%	5.2%
155 < x ≤ 160	23.9%	3.3%	3.7%	17.7%	6.1%	7.3%	18.9%	4.5%	5.3%
160 < x ≤ 165	4.6%	2.8%	2.9%	5.9%	5.5%	5.6%	5.6%	4.0%	4.1%
165 < x ≤ 170	3.1%	2.5%	2.5%	5.0%	4.9%	4.9%	4.7%	3.5%	3.6%
170 < x ≤ 175	2.3%	2.2%	2.2%	4.3%	4.3%	4.3%	3.9%	3.1%	3.1%
175 < x ≤ 180	1.6%	1.9%	1.9%	3.7%	3.7%	3.7%	3.3%	2.7%	2.7%
180 < x ≤ 185	1.0%	1.7%	1.7%	3.0%	3.1%	3.1%	2.6%	2.3%	2.3%
185 < x ≤ 190	0.8%	1.6%	1.6%	2.4%	2.6%	2.6%	2.1%	2.0%	2.0%
190 < x ≤ 195	0.6%	1.4%	1.4%	2.0%	2.2%	2.2%	1.7%	1.8%	1.8%
195 < x ≤ 200	0.4%	1.3%	1.3%	1.5%	1.9%	1.9%	1.3%	1.6%	1.5%
200 < x ≤ 205	0.3%	1.1%	1.1%	1.1%	1.7%	1.7%	1.0%	1.4%	1.4%
205 < x ≤ 210	0.3%	1.0%	1.0%	0.9%	1.5%	1.4%	0.8%	1.2%	1.2%
210 < x ≤ 215	0.2%	0.9%	0.9%	0.7%	1.4%	1.3%	0.6%	1.1%	1.1%
215 < x ≤ 220	0.1%	0.7%	0.7%	0.5%	1.2%	1.1%	0.4%	0.9%	0.9%
220 < x ≤ 225	0.1%	0.6%	0.6%	0.4%	1.1%	1.0%	0.4%	0.8%	0.8%
225 < x ≤ 230	0.1%	0.5%	0.5%	0.3%	0.9%	0.9%	0.3%	0.7%	0.7%
230 < x ≤ 235	0.1%	0.5%	0.4%	0.3%	0.8%	0.8%	0.2%	0.6%	0.6%

Gender	Women			Men			Total		
	New State Pension	Pre-2016 State Pension	Total	New State Pension	Pre-2016 State Pension	Total	New State Pension	Pre-2016 State Pension	Total
235 < x ≤ 240	0.0%	0.4%	0.4%	0.2%	0.7%	0.7%	0.2%	0.5%	0.5%
240 < x ≤ 245	0.0%	0.3%	0.3%	0.2%	0.6%	0.6%	0.1%	0.5%	0.4%
245 < x ≤ 250	0.0%	0.3%	0.2%	0.1%	0.6%	0.5%	0.1%	0.4%	0.4%
250 < x ≤ 255	0.0%	0.2%	0.2%	0.1%	0.5%	0.5%	0.1%	0.3%	0.3%
255 < x ≤ 260	0.0%	0.2%	0.2%	0.1%	0.4%	0.4%	0.1%	0.3%	0.3%
260 < x ≤ 265	0.0%	0.1%	0.1%	0.1%	0.4%	0.3%	0.1%	0.2%	0.2%
265 < x ≤ 270	0.0%	0.1%	0.1%	0.0%	0.3%	0.3%	0.0%	0.2%	0.2%
270 < x ≤ 275	0.0%	0.1%	0.1%	0.0%	0.3%	0.3%	0.0%	0.2%	0.2%
275 < x ≤ 280	0.0%	0.1%	0.1%	0.0%	0.2%	0.2%	0.0%	0.2%	0.1%
280 < x ≤ 285	0.0%	0.1%	0.1%	0.0%	0.2%	0.2%	0.0%	0.1%	0.1%
285 < x ≤ 290	0.0%	0.1%	0.1%	0.0%	0.2%	0.2%	0.0%	0.1%	0.1%
290 < x ≤ 295	0.0%	0.1%	0.1%	0.0%	0.2%	0.1%	0.0%	0.1%	0.1%
295 < x ≤ 300	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.0%	0.1%	0.1%
more than 300	0.0%	0.1%	0.1%	0.0%	0.4%	0.4%	0.0%	0.3%	0.2%

Chart data 2.1: Impact of alternative policy strategies

Shows the absolute and proportionate impact of all alternative policy strategies.

Alternative Policies	Index (M)	Index (F)
Higher contributions	43	20
Contributions from the first pound	20	16
Flat rate tax relief (30%)	10	5
Family carer top-up	0	10
Alternative Policies	Proportion of wealth (M)	Proportion of wealth (F)
Higher contributions	42.7%	40.3%
Contributions from the first pound	19.7%	33.0%
Flat rate tax relief (30%)	9.9%	9.8%
Family carer top-up	0.0%	20.7%

Chart data 2.2: The boost to pension savings from a family carer top-up

Projected automatic enrolment pension pot at retirement (2018 earnings terms) for younger individuals with a family carer top-up. All values are in pounds.

		Baseline	Family carer top-up
Male	Full-time	86,607	0
	Family break, FT return	84,844	1,037
Female	Full-time	65,440	0
	Family break, FT return	48,087	9,858
	Family break, PT return	28,926	16,859
	Family break and early exit	35,273	18,368



Chart data 2.3: How alternative policies may increase retirement income

The increase in annual retirement income (before tax, 2018 earnings terms) resulting from the modelled policies. All values are in pounds.

			Total income (Baseline)	Family carer top-up	Flat rate tax relief (30%)	Contributions from the first pound	Higher Contributions	Higher contributions + from first pound	Family carer top-up %	Flat rate tax relief (30%) %	Contributions from the first pound %	Higher Contributions %	Higher contributions + from first pound %
Younger individual (aged 22)	Male	Full-time	14,407	0	242	800	1,702	2,902	0%	2%	6%	12%	20%
		Family break, FT return	14,327	47	237	800	1,702	2,902	0%	2%	6%	12%	20%
	Female	Full-time	13,451	0	182	800	1,249	2,449	0%	1%	6%	9%	18%
		Family break, FT return	12,668	445	133	651	1,002	1,978	4%	1%	5%	8%	16%
		Family break, PT return	11,228	1336	552	1,035	1,089	1,846	12%	5%	9%	10%	16%
		Family break and early exit	12,023	896	114	491	780	1,417	7%	1%	4%	6%	12%
Mid-career individual (aged 35)	Male	Full-time	14,563	0	172	492	1,029	2,175	0%	1%	3%	7%	15%
		Family break, FT return	14,445	0	172	492	1,029	2,175	0%	1%	3%	7%	15%
	Female	Full-time	13,590	0	122	492	720	1,812	0%	1%	4%	5%	13%
		Family break, FT return	12,409	0	143	527	755	1,493	0%	1%	4%	6%	12%
		Family break, PT return	11,436	426	79	579	632	1,456	4%	1%	5%	6%	13%
		Family break and early exit	11,727	453	101	312	506	966	4%	1%	3%	4%	8%

Chart data 2.4: The effect of a flat rate of tax relief on median earners

Projected automatic enrolment pension pot at retirement (2018 earnings terms) with a higher rate of tax relief (30%). All values are in pounds.

			Baseline	Tax relief (Employee Only)	Tax relief (Employee and Employer)
Younger individuals	Male	Full-time	86,607	5,358	3,214
		Family break, FT return	84,844	5,247	3,148
	Female	Full-time	65,440	4,038	2,423
		Family break, FT return	48,087	2,954	1,772
		Family break, PT return	28,926	1,756	1,054
		Family break and early exit	35,273	2,153	1,292
Mid-Career individuals	Male	Full-time	97,101	3,789	5,614
		Family break, FT return	94,500	3,789	5,355
	Female	Full-time	75,594	2,693	4,602
		Family break, FT return	50,284	2,693	2,070
		Family break, PT return	32,012	1,484	1,579
		Family break and early exit	37,470	1,893	1,590

# Appendix two: Tables

The tables below provide additional context and support to the key results stated in the previous chapters.

## Data analysis

Table A1: The split of the well pensioned

The split of the top decile of people by pension wealth. All figures are in pounds.

Age range	Men	Women	% who are women
15-19	50,326	35,213	41.17%
20-24	207,265	189,672	47.78%
25-29	228,443	152,487	40.03%
30-34	279,929	194,173	40.96%
35-39	245,469	149,721	37.89%
40-44	242,032	175,582	42.04%
45-49	300,427	150,046	33.31%
50-54	305,053	137,991	31.15%
55-59	285,561	97,809	25.51%
60-64	252,399	88,532	25.97%

Table A2: The gap in workplace pension scheme participation

The difference in number of women in workplace pensions compared to male participation.

Age range	Whole population	Employees
15-19	-13,257	-5,177
20-24	-25,102	-16,897
25-29	-86,221	-38,061
30-34	-75,654	50,505
35-39	26,157	96,943
40-44	-90,519	21,234
45-49	4,496	-12,448
50-54	-10,186	-32,124
55-59	-101,926	-83,172
60-64	20,922	-8,394
Total	-351,289	-27,590

Table A3: Full-time employees who are current DB scheme members

Number of full-time employees who are current members of a DB scheme.

Age range	FT (men)	Other (men)	FT (female)	Other (female)
15-19	17,310	8,104	10,503	9,323
20-24	144,590	58,762	157,941	95,893
25-29	372,097	65,679	331,175	92,854
30-34	473,721	37,106	456,254	245,250
35-39	532,159	45,027	405,845	241,143
40-44	522,205	35,518	450,634	284,771
45-49	563,532	54,334	533,514	294,826
50-54	577,339	27,282	529,481	263,644
55-59	442,918	42,550	381,437	195,037
60-64	187,228	35,606	94,634	71,198

Table A4: Full-time employees who are current DC scheme members

Number of full-time employees who are current members of a DC scheme.

Age range	FT (male)	Other (male)	FT (female)	Other (female)
15-19	22,501	4,173	8,148	4,211
20-24	187,794	53,518	140,152	34,741
25-29	351,105	73,568	216,655	63,460
30-34	617,867	62,649	322,709	187,366
35-39	436,272	20,307	278,663	142,231
40-44	553,437	18,733	199,710	134,600
45-49	516,776	37,079	273,739	124,576
50-54	490,038	27,248	243,483	113,998
55-59	352,270	34,163	169,863	77,909
60-64	158,517	21,230	51,394	27,934

Table A5: The breakdown of pension wealth

Split of pension wealth for the middle quintile by age and gender. All figures are in pounds.

Age range	Men			Women			Proportion of wealth that is associated with current workplace scheme		Women as a proportion of male totals		Increase above those 5 years younger			
	Current workplace scheme	Retained DB	Retained / other DC / in payment	Current workplace scheme	Retained DB	Retained / other DC / in payment	Men	Women	Current workplace scheme	Total	Men	Women	Men	Women
15-19	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20-24	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25-29	115	-	5	112	-	8	96%	93%	97%	100%	-	-	-	-
30-34	1,276	170	354	1,160	100	290	71%	75%	91%	86%	1,680	1,430	1400%	1192%
35-39	5,137	770	3,121	3,145	391	1,464	57%	63%	61%	55%	7,228	3,450	402%	223%
40-44	9,914	2,398	7,688	8,208	2,282	4,929	50%	53%	83%	77%	10,972	10,419	122%	208%
45-49	13,630	3,637	18,934	14,370	3,598	7,700	38%	56%	105%	71%	16,200	10,250	81%	66%
50-54	17,559	8,067	25,160	14,487	5,985	10,352	35%	47%	83%	61%	14,585	5,155	40%	20%
55-59	38,047	19,553	49,746	17,118	7,758	15,049	35%	43%	45%	37%	56,561	9,101	111%	30%
60-64	30,492	14,864	111,098	10,787	3,669	36,561	19%	21%	35%	33%	49,108	11,092	46%	28%

Table A6: The relationship of wealth, participation and marital status

Pension wealth and workplace scheme membership by marital status. All figures are in pounds.

Age range	Median pension wealth						Membership of an workplace scheme					
	Men			Women			Men			Women		
	Married	Single	Divorced	Married	Single	Divorced	Married	Single	Divorced	Married	Single	Divorced
15-19	-	-	-	-	-	-	0%	3%	-	0%	2%	-
20-24	-	-	-	-	-	-	41%	21%	-	29%	20%	-
25-29	100	-	-	-	-	-	53%	39%	-	40%	37%	-
30-34	3,500	-	-	2,213	-	-	59%	39%	-	52%	42%	-
35-39	13,000	-	2,209	7,362	600	1,800	57%	37%	42%	57%	42%	49%
40-44	26,709	3,000	2,191	18,762	5,000	3,800	58%	43%	35%	53%	42%	44%
45-49	42,000	20,000	5,000	30,000	6,000	33,174	55%	45%	43%	54%	49%	49%
50-54	63,917	18,416	41,089	32,000	16,623	28,205	54%	38%	47%	52%	37%	53%
55-59	122,311	59,924	61,165	42,250	44,703	24,730	50%	31%	39%	42%	40%	44%
60-64	180,000	137,367	103,524	55,849	18,194	26,137	27%	18%	14%	28%	17%	23%

Table A7: The pension wealth of workplace pension members

Pension wealth by marital status for those with a current workplace scheme. All figures are in pounds.

Age range	Median pension wealth					
	Men			Women		
	Married	Single	Divorced	Married	Single	Divorced
15-19	-	990	-	-	250	-
20-24	2,700	3,000	-	5,070	3,422	-
25-29	9,000	8,039	-	11,264	5,462	-
30-34	19,000	12,995	-	22,489	10,892	-
35-39	51,126	30,922	418,221	35,297	22,123	15,601
40-44	71,000	69,468	58,172	57,000	54,547	65,000
45-49	133,503	110,177	50,202	89,865	43,571	91,723
50-54	205,268	96,000	98,000	126,372	173,052	67,000
55-59	275,000	235,025	162,422	150,000	157,368	171,676
60-64	276,658	448,081	255,258	145,234	10,000	124,547

Table A8: The distribution of married people's pension wealth

The variation of married people's pension wealth by age and gender and the proportion employed or looking after family. All figures are in pounds.

Age range Percentile points	Men								
	10%	20%	30%	40%	50%	60%	70%	80%	90%
15-19	-	-	-	-	-	-	-	-	-
20-24	-	-	-	-	-	300	2,000	5,829	13,475
25-29	-	-	-	-	100	2,000	6,000	17,909	51,996
30-34	-	-	-	750	3,500	10,300	24,287	56,259	100,000
35-39	-	-	100	3,150	13,000	32,456	59,698	102,108	181,021
40-44	-	-	2,342	12,377	26,709	50,000	88,966	160,003	265,308
45-49	-	-	4,060	19,866	42,000	80,461	155,366	267,282	489,639
50-54	-	480	11,000	31,952	63,917	147,017	243,848	429,980	719,394
55-59	-	2,500	26,651	63,248	122,311	229,568	410,000	633,896	963,675
60-64	-	2,373	35,000	94,000	180,000	322,000	493,685	700,841	975,838

Age range Percentile points	Women								
	10%	20%	30%	40%	50%	60%	70%	80%	90%
15-19	-	-	-	-	-	-	-	-	-
20-24	-	-	-	-	-	-	2	3,000	10,674
25-29	-	-	-	-	-	720	4,000	4,962	32,351
30-34	-	-	-	29	2,213	7,600	20,000	39,770	68,632
35-39	-	-	-	2,000	7,362	19,770	39,058	76,088	132,000
40-44	-	-	1,000	6,913	18,762	33,198	68,508	112,283	213,053
45-49	-	-	1,381	11,000	30,000	56,975	96,288	164,991	295,563
50-54	-	-	2,000	9,000	32,000	67,774	133,831	250,882	424,325
55-59	-	-	10	15,000	42,250	95,367	159,275	257,951	466,488
60-64	-	-	-	24,000	55,849	103,619	158,587	280,714	514,252

Table A9: The effect of children on pension wealth

The effect on the pension wealth for men and women of having dependent children and whether they are looking after family. All figures are in pounds.

	Age range	Has dependent children	Has no dependent children	Proportion at home (With dependent children)	Proportion at home (No dependent children)
Male	15-19	0	0	0%	0%
	20-24	0	0	8%	0%
	25-29	0	1,750	4%	0%
	30-34	1,510	11,000	2%	0%
	35-39	14,483	9,713	2%	1%
	40-44	27,429	24,677	2%	1%
	45-49	43,600	37,513	1%	2%
	50-54	46,033	80,000	3%	1%
	55-59	92,082	129,999	2%	1%
	60-64	133,209	186,310	0%	1%
Female	15-19	0	0	100%	13%
	20-24	0	0	38%	1%
	25-29	0	1,086	36%	1%
	30-34	636	14,334	26%	2%
	35-39	6,868	11,804	17%	4%
	40-44	21,256	11,000	15%	5%
	45-49	36,307	19,969	13%	7%
	50-54	51,580	22,926	12%	7%
	55-59	52,172	42,250	8%	7%
	60-64	24,079	53,430	0%	7%

Table A10: The impact of separation pension wealth

Median pension wealth of divorcees compared to married individuals. All figures are in pounds.

Age range	Men		Women	
	Married	Divorced	Married	Divorced
35-39	13,000	2,209	7,362	1,800
40-44	26,709	2,191	18,762	3,800
45-49	42,000	5,000	30,000	33,174
50-54	63,917	41,089	32,000	28,205
55-59	122,311	61,165	42,250	24,730
60-64	180,000	103,524	55,849	26,137

**Table A11: Will private pension be the largest part of retirement income?**

Proportion of individuals who believe private pension income will be the largest part of their retirement income.

Gender	Men						Women					
Marital status	All	Married			Single	Divorced	All	Married			Single	Divorced
Dependent children	All	All	Yes	No	All	All	All	All	Yes	No	All	All
15-19												
20-24	9.6%	39.6%	32.3%	43.6%	8.8%		12.0%	9.7%	0.0%	22.8%	10.1%	
25-29	17.8%	32.7%	28.2%	40.2%	12.0%	0.0%	21.9%	22.9%	18.1%	33.0%	18.9%	18.0%
30-34	25.2%	30.3%	27.7%	39.1%	14.6%	58.5%	24.5%	25.6%	24.5%	31.7%	20.1%	12.6%
35-39	30.2%	32.4%	31.5%	38.1%	22.0%	41.9%	26.6%	28.7%	28.8%	28.2%	22.7%	22.3%
40-44	27.8%	29.9%	30.5%	26.6%	19.7%	12.8%	25.7%	25.5%	24.1%	31.6%	25.4%	30.4%
45-49	32.5%	35.1%	34.4%	36.4%	27.0%	25.5%	27.4%	27.7%	28.7%	26.5%	26.0%	25.7%
50-54	32.2%	34.6%	31.1%	36.9%	25.1%	38.9%	26.0%	24.5%	27.5%	23.4%	35.3%	25.8%
55-59	32.8%	35.2%	34.1%	35.5%	23.9%	23.1%	20.3%	18.4%	21.7%	18.1%	25.9%	25.4%
60-64	21.8%	22.1%	23.6%	22.0%	20.9%	18.5%	10.1%	9.1%	0.0%	9.2%	16.3%	10.8%

**Table A12: Will spousal support be the largest part of retirement income?**

Proportion of individuals who believe support from a spouse or partner will be the largest part of their retirement income.

Gender	Men						Women					
Marital status	All	Married			Single	Divorced	All	Married			Single	Divorced
Dependent children	All	All	Yes	No	All	All	All	All	Yes	No	All	All
15-19												
20-24	0.0%	0.0%	0.0%	0.0%	0.0%		0.5%	6.0%	10.4%	0.0%	0.3%	
25-29	0.1%	0.8%	0.0%	2.0%	0.0%	0.0%	1.2%	3.5%	4.5%	1.3%	0.0%	0.0%
30-34	0.8%	0.9%	1.1%	0.0%	1.4%	0.0%	3.3%	4.9%	5.1%	3.8%	0.0%	0.0%
35-39	0.1%	0.2%	0.1%	0.6%	0.0%	0.0%	3.5%	4.9%	4.7%	6.1%	1.0%	0.0%
40-44	0.3%	0.5%	0.4%	1.0%	0.0%	0.0%	3.6%	5.3%	5.0%	6.6%	0.0%	1.0%
45-49	0.5%	0.7%	0.7%	0.9%	0.0%	0.0%	3.5%	5.3%	5.3%	5.2%	0.0%	0.0%
50-54	0.5%	0.5%	0.8%	0.4%	0.0%	0.0%	3.1%	4.1%	4.6%	3.9%	0.0%	0.4%
55-59	0.3%	0.5%	0.6%	0.5%	0.0%	0.0%	3.3%	4.7%	5.0%	4.6%	0.0%	0.9%
60-64	0.1%	0.1%	0.0%	0.1%	0.0%	0.0%	1.8%	2.2%	18.9%	2.0%	3.3%	0.2%

**Table A13: Is spousal support expected to be a part of retirement income?**

Proportion of individuals who expect support from a spouse or partner as part of their retirement income.

<b>Gender</b>	<b>Women</b>					
<b>Marital status</b>	<b>All</b>	<b>Married</b>			<b>Single</b>	<b>Divorced</b>
<b>Dependent children</b>	<b>All</b>	<b>All</b>	<b>Yes</b>	<b>No</b>	<b>All</b>	<b>All</b>
15-19						
20-24	4.9%	7.9%	13.5%	0.0%	4.4%	
25-29	11.2%	16.6%	13.1%	25.1%	5.4%	0.0%
30-34	15.1%	19.5%	18.1%	28.3%	3.3%	0.0%
35-39	15.2%	18.3%	17.2%	25.3%	2.6%	7.5%
40-44	13.1%	17.4%	17.7%	16.1%	0.7%	2.7%
45-49	12.9%	17.3%	19.8%	13.8%	1.3%	4.7%
50-54	12.4%	16.9%	19.2%	16.0%	2.5%	3.6%
55-59	15.9%	22.4%	15.5%	23.0%	1.7%	2.7%
60-64	11.8%	17.5%	25.8%	17.3%	6.3%	2.9%

**Table A14: Dependent children impact pension scheme participation**

Proportion of employees who are current members of a workplace pension scheme with and without dependent children.

<b>Age range</b>	<b>Men, no dependent children</b>	<b>Women, no dependent children</b>	<b>Men, dependent children</b>	<b>Women, dependent children</b>
20-24	34.7%	33.0%	60.9%	47.9%
25-29	57.7%	58.7%	59.7%	47.4%
30-34	65.9%	76.8%	66.7%	65.5%
35-39	62.9%	77.5%	68.9%	72.5%
40-44	70.4%	72.0%	72.0%	73.3%
45-49	71.4%	69.2%	72.4%	73.2%
50-54	72.7%	71.2%	74.1%	70.9%
55-59	75.1%	67.5%	69.8%	65.1%
60-64	58.8%	53.5%	71.0%	84.2%



## Individual modelling results

Table A1. Lifecourse for males and females

<b>Male lifecourses</b>	<b>Proportion</b>
Full-time	45%
Unemployed mostly (Age 30 onwards)	4%
Full-time exit at age 49	12%
Full-time exit at age 60	30%
Late start age 23, exit at age 60	9%
<b>Female lifecourses</b>	<b>Proportion</b>
Full-time	27%
Unemployed mostly (Age 30 onwards)	17%
Full-time exit at age 49	7%
Caring for 16 years, part-time return	12%
Caring for 4 years, part-time return	13%
Caring for 10 years, return full-time	18%
Part-time from age 23	6%

The lifecourses modelled in table A1 were used in the PPI individual model to obtain the expected pension wealth for a male and a female.

Table A2: The build-up of pension savings for a full-time worker

The projected pension savings of men and women currently aged 22 and 35 in full-time employment (2018 earnings terms). All figures are in pounds.

Year	Man, currently aged 22	Woman, currently aged 22	Man, currently aged 35	Woman, currently aged 35
2018	-	-	28,395	25,448
2019	635	595	30,585	27,253
2020	1,765	1,639	33,724	29,767
2021	3,010	2,775	36,841	32,213
2022	4,375	4,010	40,002	34,675
2023	5,860	5,342	43,185	37,134
2024	7,462	6,767	46,383	39,585
2025	9,182	8,277	49,588	42,020
2026	11,018	9,867	52,790	44,432
2027	12,966	11,535	55,959	46,802
2028	15,023	13,277	59,085	49,123
2029	17,186	15,091	62,158	51,387
2030	19,417	16,923	65,172	53,589
2031	21,740	18,793	68,206	55,794
2032	24,157	20,702	71,250	58,010
2033	26,668	22,651	74,304	60,238
2034	29,274	24,639	77,369	62,476
2035	31,920	26,642	80,443	64,726
2036	34,606	28,661	83,529	66,987
2037	37,332	30,694	86,622	69,245
2038	40,099	32,744	89,724	71,499
2039	42,907	34,809	92,834	73,749
2040	45,733	36,876	95,953	75,996
2041	48,578	38,946	99,080	78,238
2042	51,442	41,018	102,189	80,483
2043	54,325	43,093	105,279	82,730
2044	57,226	45,171	108,350	84,980
2045	60,137	47,257	111,403	87,231
2046	63,055	49,353	114,436	89,486
2047	65,982	51,459	117,460	91,742
2048	68,918	53,574	120,475	94,001
2049	71,863	55,700	123,482	96,262
2050	74,815	57,820	126,480	98,526
2051	77,772	59,934	97,101	75,594
2052	80,737	62,043	91,929	71,567
2053	83,708	64,147	86,925	67,672
2054	86,685	66,245	82,084	63,904
2055	89,643	68,344	77,403	60,259
2056	92,580	70,443	72,876	56,735
2057	95,496	72,542	68,500	53,328
2058	98,392	74,642	64,270	50,035
2059	101,266	76,743	60,182	46,852
2060	104,130	78,844	56,231	43,777
2061	106,983	80,945	52,415	40,806
2062	109,825	83,047	48,730	37,937
2063	112,656	85,150	45,171	35,166
2064	86,607	65,440	41,735	32,491

Table A3: The impact of work profiles on retirement income

Weekly retirement income (2018 earnings terms) for different work profiles and replacement rates at retirement. All figures are in pounds.

			State Pension Income	Private Pension Income	Replacement rate
Younger individuals (aged 22)	Male	Full-time	194.53	88.44	60.51%
		Family break, FT return	194.53	86.64	60.12%
	Female	Full-time	194.53	66.82	69.71%
		Family break, FT return	194.53	49.10	64.99%
		Family break, PT return	194.53	29.54	59.77%
		Family break and early exit	194.53	36.02	50.25%
Mid-career individuals (aged 35)	Male	Full-time	186.00	99.44	61.04%
		Family break, FT return	186.00	96.78	60.47%
	Female	Full-time	186.00	77.42	70.26%
		Family break, FT return	186.00	51.50	63.35%
		Family break, PT return	186.00	32.78	58.36%
		Family break and early exit	186.00	38.37	48.90%

Table A4: The boost to pension savings from a family carer top-up

Projected automatic enrolment pension pot at retirement (2018 earnings terms) for mid-career individuals with a family carer top-up. All figures are in pounds.

		Baseline	Family carer top -up
Male	Full-time	97,101	0
	Family break, FT return	94,500	0
Female	Full-time	75,594	0
	Family break, FT return	50,284	0
	Family break, PT return	32,012	7,993
	Family break and early exit	37,470	8,509

Table A5: Pension contributions are increased with a family carer top-up

Mean annual pension contribution (2018 earnings terms) over future working ages (includes years of zero contribution). All figures are in pounds.

			Baseline	Including a family carer top-up
Younger individuals (aged 22)	Male	Full-time	1,913.76	1,913.76
		Family break, FT return	1,883.46	1,901.30
	Female	Full-time	1,427.60	1,427.60
		Family break, FT return	1,108.08	1,288.36
		Family break, PT return	691.23	1,023.97
		Family break and early exit	760.10	1,172.29
Mid-career individuals (aged 35)	Male	Full-time	2,030.72	2,030.72
		Family break, FT return	2,030.72	2,030.72
	Female	Full-time	1,443.08	1,443.08
		Family break, FT return	1,443.08	1,443.08
		Family break, PT return	845.79	1,073.05
		Family break and early exit	958.01	1,281.28

**Table A6: The boost to replacement rates from the alternative policies**  
The increase in replacement rates resulting from the modelled policies.

		Baseline replacement rate	Family carer top-up	Flat rate tax relief (30%)	Contributions from the first pound	Higher Contributions	Higher contributions + from first pound	Family carer top-up %	Flat rate tax relief (30%) %	Contributions from the first pound %	Higher Contributions %	Higher contributions + from first pound %	
Younger individuals (aged 22)	Male	Full-time	61%	62%	64%	69%	75%	0%	1%	4%	8%	14%	
		Family break, FT return	60%	60%	64%	68%	74%	0%	1%	4%	8%	14%	
		Female	70%	70%	75%	77%	84%	0%	1%	5%	8%	15%	
	Female	Family break, FT return	65%	68%	66%	69%	71%	77%	3%	1%	4%	6%	12%
		Family break, PT return	60%	64%	60%	63%	63%	67%	5%	0%	3%	3%	8%
		Family break and early exit	50%	54%	51%	52%	54%	57%	4%	0%	2%	4%	7%
Mid-career individuals (aged 35)	Male	Full-time	61%	62%	63%	66%	72%	0%	1%	2%	5%	11%	
		Family break, FT return	60%	61%	63%	65%	71%	0%	1%	2%	5%	11%	
		Female	70%	71%	73%	75%	81%	0%	1%	3%	4%	11%	
	Female	Family break, FT return	63%	63%	64%	68%	72%	0%	1%	3%	4%	9%	
		Family break, PT return	58%	61%	59%	62%	66%	66%	2%	0%	3%	3%	8%
		Family break and early exit	49%	51%	49%	50%	51%	53%	2%	0%	1%	2%	4%

Table A7: The effect of a flat rate of tax relief on higher rate tax payers

Projected automatic enrolment pension pot at retirement (2018 earnings terms) with a higher rate of tax relief (30%). All figures are in pounds.

			Tax relief (Employee and Employer)	Tax relief (Employee only)	Baseline
Younger individuals	Male	Full-time	129,697	3,948	6,580
		Family break, FT return	125,797	4,081	6,802
	Female	Full-time	127,590	3,230	5,384
		Family break, FT return	93,423	3,408	5,679
		Family break, PT return	65,655	1,055	1,758
		Family break and early exit	63,453	2,159	3,598
Mid- Career individuals	Male	Full-time	147,130	4,129	6,882
		Family break, FT return	142,118	4,299	7,179
	Female	Full-time	141,722	3,055	5,091
		Family break, FT return	96,292	3,243	5,404
		Family break, PT return	69,454	946	1,576
		Family break and early exit	66,322	1,994	3,323

## Waterfall charts

Table A1: Waterfall chart of individuals in their early 30s

Shows the different factors contributing to the difference in pension wealth and their magnitudes.

	Pot size	Difference	Tracking1	Tracking2
Male Pension wealth	100	-	100	100
Differing working patterns	71	29	100	71
Gender pay gap	58	13	58	71
Participation rates	56	2	58	56
Scheme type	56	18	74	56
Tendency of early retirement	74	-	74	74
Womens pension wealth	74	-	74	74

Table A2: Waterfall chart of individuals at SPa

Shows the different factors contributing to the difference in pension wealth and their magnitudes.

	Pot size	Family carer top-up	Higher contributions	Contributions from the first pound	Flat rate tax relief (30%)	Difference	Second order effect	Tracking1	Tracking2
<b>Male pension wealth</b>	100	-	-	-	-	-	-	100	-
Differing working patterns	71	-	-	-	-	29	-	100	71
Gender pay gap	49	-	-	-	-	22	-	49	71
<b>Womens pension wealth</b>	49	-	-	-	-	-	-	49	49
Higher contributions	49	-	-	-	-	16	11	77	49
Contributions from the first pound	77	-	-	-	-	13	9	77	100
Higher tax relief	100	-	-	-	-	4	3	107	100
Automatic enrolment top-up	107	-	-	-	-	8	6	107	121
<b>Women - All policies</b>	121	-	-	-	-	-	-	-	121
<b>Men - All policies</b>	100	-	43	20	10	-	16	-	-

# Appendix three: Overview of the model

## The Economic Scenario Generator

The PPI's Economic Scenario Generator (ESG) is used to produce randomly generated future economic scenarios based upon historical returns and an assumption of the median long-term rates of return. It was developed by the financial mathematics department at King's College London. It is used to test how the distribution of outcomes is influenced by the uncertainty of future economic assumptions.

### Key results

The model generates projected future inflation rates, and earnings growth

- Inflation rates
  - Future CPI increases and earnings inflation rates
- Investment returns
  - Returns are produced for the major asset classes of equity, cash and gilts

This produces nominal returns which can be combined to produce investment returns for a more complex portfolio.

## Application of output

The output of the ESG is a number of economic scenarios which are employed by the PPI's other models to analyse the distribution of impacts on a stochastic economic basis.

### Key data sources

The specification of the model is based upon historical information to determine a base volatility and future assumptions to determine a median future return:

- **Historical returns:** Historical yields and returns as well as inflation measures are used to determine the key attributes for the projected rates
- **Future returns:** Future returns are generally taken from the Office for Budget Responsibility (OBR) Economic and Fiscal Outlook (EFO) to ensure consistency with other assumptions used in the model for which the economic scenarios are being generated. Volatility can also be scaled against historical levels.



### Summary of modelling approach

The six identified risk factors modelled are:

<b>G</b>	Nominal GDP
<b>P</b>	CPI
<b>W</b>	Average weekly earnings
<b>Y<sup>l</sup></b>	Long-term yields
<b>Y<sup>s</sup></b>	Money market yields
<b>S</b>	Stock returns

Using these variables, a six dimensional process,  $x_t$  is defined.

$$\begin{bmatrix} \ln G_t - \ln G_{t-12} \\ \ln(P_t - \ln P_{t-12} + 0.02) \\ \ln W_t - \ln W_{t-12} \\ \ln(e^{Y_t^l} - 1) \\ \ln(e^{Y_t^s} - 1) \\ \ln S_t \end{bmatrix}$$

Where  $t$  denotes time in months.

The development of the vector  $x_t$  is modelled by the first order stochastic difference equation:

$$\Delta x_t = Ax_{t-1} + a + \varepsilon_t$$

Where  $A$  is a 6 by 6 matrix,  $a$  is a six dimensional vector and  $\varepsilon_t$  are independent multivariate Gaussian random variables with zero mean. The matrix  $A$  and the covariance matrix of the  $\varepsilon_t$  were determined by calibrating against the historical data. The coefficients of  $a$  were then selected to match the long-term economic assumptions.

It follows that the values of  $x_t$  will have a multivariate normal distribution. Simulated investment returns will, however, be non-Gaussian partly because of the nonlinear transformations above. Moreover, the yields are nonlinearly related to bond investments.

The first component and third components of  $x_t$  give the annual growth rates of GDP and wages, respectively. The fourth and fifth components are transformed yields. The transformation applied ensures that the yields are always positive in simulations. Similarly the second component gives a transformed growth rate of CPI. In this case, the transformation applied ensures that inflation never drops below -2% in the simulations. This figure was selected to be twice the maximum rate of deflation ever found in the historical data.

## References

---

- Association of British Insurers (2018) *Quarterly Pension Annuities by Age and Fund Size (2018 Q3)*
- DWP (2017a) *Automatic Enrolment Review 2017: Maintaining the Momentum*
- DWP (2017b) *Automatic Enrolment Review 2017: Analytical Report*
- DWP (2016) *Impact of New State Pension (nSP) on an Individual's Pension Entitlement – Longer Term Effects of nSP*
- HM Revenue and Customs (2018) *Cost of Registered Pension Scheme Tax Relief*
- OECD (2018) *Pensions Outlook 2018*
- Office for National Statistics (2018a) *Gender pay gap in the UK: 2018*
- Office for National Statistics (2018b) *National life table, UK: 2015 to 2017*
- Pensions Policy Institute (2016a) *Automatic enrolment changes*
- Pensions Policy Institute (2018) *Evolving retirement outcomes*
- Pensions Policy Institute (2016b) *Future trends in pensions tax relief*
- Pensions Policy Institute (2016c) *The Under-pensioned*
- Scottish Widows (2017) *Women and retirement 2017*
- Scottish Widows (2018) *Women and retirement 2018*
- WHERL (2017) *The Wellbeing, Health, Retirement and the Lifecourse Project*

---

# Acknowledgements and Contact Details

---

The Pensions Policy Institute is grateful for input from many people in support of this paper, including:

Adrian Boulding

Amy Mankelow

Cheriton Alexander

Danielle Baker

Janine Harrison

Laurie Edmans

Maritha Lightbourne

Sarah Luheshi

Timothy Pike

Editing decisions remained with the author who takes responsibility for any remaining errors or omissions.

© Pensions Policy Institute, 2019

Contact: Chris Curry, Director

Telephone: 020 7848 3744

Email: [info@pensionspolicyinstitute.org.uk](mailto:info@pensionspolicyinstitute.org.uk)

Pensions Policy Institute  
King's College London  
Virginia Woolf Building  
1<sup>st</sup> Floor, 22 Kingsway  
London WC2B 6LE

The PPI is grateful for the continuing support of its Supporting Members:

**PLATINUM**

Columbia Threadneedle Investments  
 Just  
 LifeSight  
 LV=  
 The Pensions Regulator

**GOLD**

Aberdeen Standard Investments	AXA Investment Managers
DWP	Hymans Robertson
Legal & General	MFS Investment Managers
NEST	Phoenix Group
Scottish Widows/Lloyds Banking	Smart Pension
The People's Pension	Wealth at work
XPS Pension Group	

**LONG  
STANDING  
SILVER**

Age UK	Aon Hewitt
ABI	Aviva
Barnett Waddingham	BP Pension Trustees Ltd
Exxon Mobil	MNOPF Trustees Ltd
PLSA	Prudential UK & Europe
Quilter	RPMI
Royal London/Scottish Life	Sacker and Partners
Schroders	Shell
CII/TPFS	USS

\*A full list of all PPI supporting members can be found on our website:  
<https://www.pensionspolicyinstitute.org.uk/support-the-ppi/supporting-members/>



Published by  
PENSIONS POLICY INSTITUTE

PPI

[www.pensionspolicyinstitute.org.uk](http://www.pensionspolicyinstitute.org.uk)

ISBN 978-1-906284-82-4