Downhill all the way?

What should pension schemes assume about pensioner spending through retirement?

IPR Report

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Contents

List of Figures

Executive summary

Executive summary

The UK pension system is in transition.

Past generations of workers could look forward to a regular income in retirement, from a combination of a state pension, occupational pensions and/or a fixed income from an annuity.

But the majority of the working age population faces a different picture.

The closure of most private sector Defined Benefit (DB) pension schemes, and the process of automatically enrolling around 10 million more savers into (mostly) Defined Contribution (DC) arrangements, means most workers in future will reach retirement with a state pension and a DC pot. These savers will need to work out how to manage that DC pot to support themselves for an unknown number of years, and to deal with uncertainties around investment returns, inflation rates and changes in their own personal and household circumstances.

Against this backdrop, the Government is planning to legislate to require pension schemes and providers to establish 'default' post-retirement journeys, essentially guiding the profile of post-retirement drawdown for those who do not actively engage or who are happy to be guided by their provider.

The purpose of this report is to see what we can learn from the spending profiles of pensioners, in terms of how they choose to spend their money in retirement to inform the design of those default journeys.

Our starting point is a dataset with information on over 100,000 pensioners, surveyed over the 51-year period from 1968 to 2019. The dataset, based on the Family Expenditure Survey, includes detailed information on income and spending, as well as personal characteristics of each household member.

Intuitively one might assume that spending through retirement exhibits a 'U' shape, with relatively high spending during the early phase followed by a drop as people become less active, which is then followed by an increase for example due to rising care costs. And when we look at our 100,000 plus pensioners in aggregate, we do indeed see something of this downward slope followed by a levelling off in spending at later ages.

But by disaggregating our data, we discover that a 'one-size-fits-all' approach to designing post-retirement defaults would be inappropriate.

First, we split our data by birth cohorts, to determine whether successive generations of pensioners exhibit consistent patterns of spending through retirement. We find that they have not. Instead, individuals who were born at the start of the 20th century actually increased their spending through retirement, whereas those who were born three decades later were more likely to front-load their spending.

Next, we find important differences in spending behaviour once we split our data by housing tenure. Specifically, social tenants born in the 1930s tend to have relatively flat real spending through retirement, with a high proportion of their total spend allocated to ongoing essential costs such as food, fuel and housing. By contrast, homeowners, and in particular those retiring more recently, have a strong tendency to spend far more earlier in their retirement, reducing spending quite sharply later on.

Going forward, given that most individuals who build up meaningful DC pension pots and who go into drawdown (rather than cashing out in full) will be homeowners, it is the spending pattern of this group that is of particular relevance to policy makers and pension providers.

Our key conclusion is that a 'one-size-fits-all' approach to pension decumulation is unlikely to be a good one. Our analysis suggests that providers should be customising their defaults based on key characteristics of their members, and that the needs of homeowners in particular may be very different to those living in rented accommodation in retirement.

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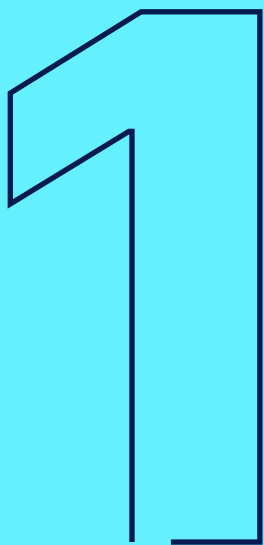
Introduction

Introduction: Do we have a problem?

Historically, pensions in the UK were largely delivered in the form of regular income for the duration of retirement. State pensions, Defined Benefit (DB) occupational pensions and annuities all paid a steady regular income from which pensioner households could budget.

Today, the situation has changed.

Growing numbers of workers will have a regular income from the state pension and alongside this will have an (often modest) 'Defined Contribution' (DC) pot to manage. They will need to use this pot to supplement their state pension to provide for their needs throughout retirement. They will also have to deal with 'shocks' to the system – macro shocks such as recessions or stock market volatility, and individual-level shocks such as losing a partner or a deterioration in health.

Given the challenge for the ordinary citizen in managing this pot over an uncertain length of retirement and in the face of uncertainty over the future returns on their pot, pension schemes will – by law – soon have to provide a 'default' post-retirement journey for members.

A key question for trustees and providers is how they should structure the drawdown of that pot through retirement.

As things stand, providers are currently looking at defaults that would generate a steady income from the DC pot, combined with a state pension which – by law – has to be indexed at least to the growth in average earnings.

Figure 1 shows the profile of real income in retirement that this approach could generate for pots of different sizes.[1] We assume that 25 per cent of each pot is taken in the form of a tax-free lump sum.

The majority of retirees in future will receive a full state pension, currently worth just under £12,000 per year or around £230 per week.

As Figure 1 shows, for pot sizes below £240k, the state pension is providing at least 50 per cent of total retirement income, and the generous indexation of the state pension drives an upward slope in real income through retirement even in the case where the DC income is fixed. Even for individuals with a £240k pot, which is well above the typical amount held by

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[1]   We have assumed, for illustration, that long-run nominal earnings growth is around 3.5 per cent, and long-run CPI inflation is two per cent. We assume that seven per cent of the initial pot can be taken in year one (based on level annuity rates for current retirees), and the same cash amount each year thereafter.

today's retirees,[2] the profile of real income through retirement is relatively flat as the over-indexation of the state pension offsets the fixed cash value of the drawdown.

Figure 1. Total real income (£ per week) through retirement if state pension is supplemented by flat DC withdrawals, for different pot sizes
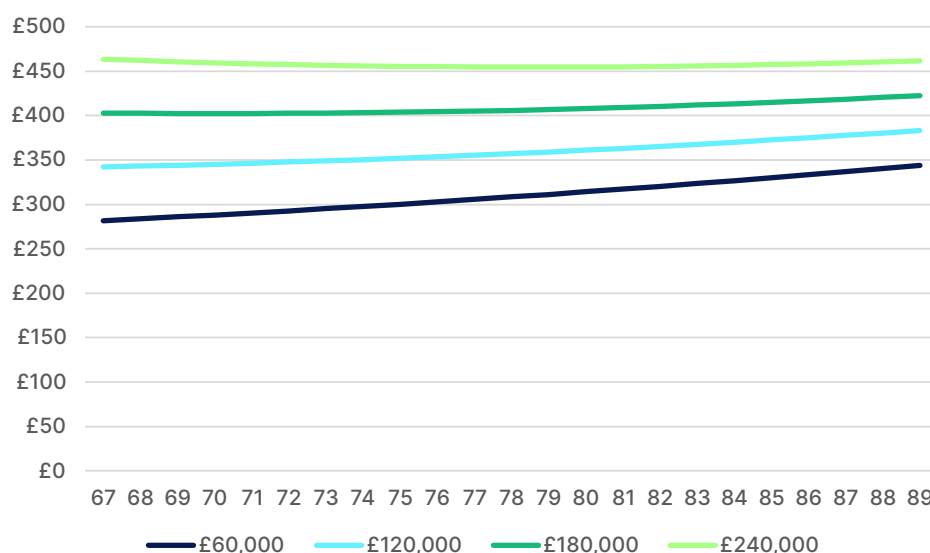
Source: Authors' calculations assuming full new state pension, indexed to earnings

At first sight, Figure 1 seems to represent a desirable outcome – a steadily increasing real income year-by-year throughout retirement for most people.

But there is a challenge.

When we look later in this report at what pensioners have historically chosen to do with their money through retirement, we get a very different picture.

Figure 2 is based on a sample of over 100,000 pensioners interviewed in government surveys of household spending over the past half a century, with data revalued to current prices.[3] It shows real spending per head of pensioner households at different points in their retirement.

What is immediately noteworthy about Figure 2 is that it shows *declining* real spending through retirement, averaged across all household types.[4]

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2   FCA data for the six months to March 2024 indicates that around 145,000 drawdown policies were taken out with an average pot size of just over £130,000. Source: retirement-income-underlying-data-2023-24.xlsx

3   Our data source is the Family Expenditure Survey (FES) and its successors, which are large annual government surveys of income and spending. We explain in more detail in the next section how this data set has been constructed and provide further information on the FES in the Appendix.

4   It is interesting to note that US research also points to a steadily falling real level of spending through retirement for US retirees – see: Hurd, M.D. and Rohwedder, S., 2022. Spending trajectories after age 65: Variation by initial wealth. Santa Monica, CA: RAND Corporation. Available at: https://www.rand.org/pubs/research_reports/RRA2355-1.html

Figure 2. Real spending per head (£ per week) of pensioner households, 1968-2019
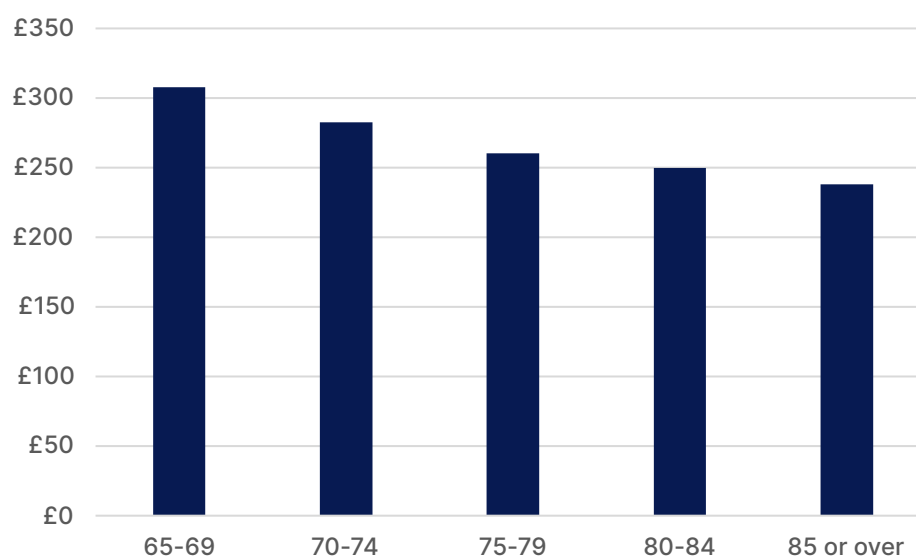
Source: Authors' calculations based on Family Expenditure Survey (FES) and successor surveys.

This might be thought of as the first part of the 'U-shaped' spending that we often assume for retirees, with a more active early phase of retirement, followed by a lower cost and more home-based second phase and then a potential later-life uptick in expenditure because of rising care costs.[5]

But the key question is this:

If pensioners have historically chosen to front-load their real spending, with the highest spending at the start of retirement, why would we design retirement products which mean people could end up with their highest real income at the end of retirement?

Providing some insights into this question is the key purpose of this report.

Section 2 provides more detail of our specially constructed dataset on the spending patterns of over 100,000 pensioners, surveyed over the last half a century. In Section 3 we summarise what this data tells us about spending through retirement and discuss how later-life care costs might be factored into this analysis. Section 4 looks at how the shape of pensioner spending through retirement has changed over time and at what this might imply about the future, whilst in Section 5 we subdivide our data in a different way to see if particular subgroups (such as those with differing housing tenure) might have different spending journeys and why this might be so. In Section 6 we combine these two approaches to look at different cohorts of homeowners and renters. Finally in Section 7 we offer some policy conclusions and avenues for further research.

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5 For reasons we discuss later in this paper, the data does not pick up most care cost expenditure and we consider later how this could be included.

2

The data

The data

The design of a default post-retirement 'journey' for pensioners needs to be informed by an understanding of what pensioners actually want to spend at different points in their retirement. But data on this subject is remarkably thin on the ground.

To help overcome this gap, we have constructed a dataset of over 100,000 people over state pension age, surveyed by the Office for National Statistics over the past 50 years.

The survey – originally known as the Family Expenditure Survey (FES), and now the Living Costs and Food Survey – involves respondents keeping detailed diaries of their spending over a two-week period as well as collecting other information about their age, income, housing tenure and other characteristics.

The FES started in 1961 with a relatively small sample of around 3,500 households but this was doubled to around 7,000 in 1968, and this is the first year of data that we use for analysis purposes. Our sample period ends at the start of the Covid-19 pandemic in 2020 as this had a huge distorting effect on household spending patterns, and so 2019 corresponds to the final year of analysis. We provide more details of the data in Appendix 1.

The data allow us to shed light on the following questions:

— What is the profile of real pensioner spending over retirement?

— Is the apparent downward slope in spending in the first part of retirement true for all types of pensioners?

— Has the downward slope been consistent across successive cohorts?

— What is this profile likely to look like in future?

It is important to note that different people are interviewed each year, so we cannot simply follow a particular individual and see how their spending evolves as they age.

However, what our large sample size does allow us to do is to create cohorts of people and use this information to estimate the evolution of spending through retirement for all those born in the same birth year.

To give an example, our first year of data, collected in 1968 includes people aged 68 who were born in 1900. The next year of data, collected in 1969, includes people aged 69 who were also born in 1900 and so on. Although these are different people, we can regard them as samples of the same 'birth cohort' as they age through successive years of data and estimate for this group how they change their spending patterns through retirement. Given the start and end points of our data, we are able to provide results

covering at least fifteen years of retirement for five-year birth cohorts from 1902-06 to 1937-41 inclusive.

We return to these 'cohort' breakdowns later in this research.

3

Key results: Pensioner spending through retirement

Key results: Pensioner spending through retirement

For each person in our dataset, we construct a measure of their total weekly household expenditure. To provide consistency between one-person and two-person households we divide total household expenditure by the number of adults to give a per-person spending figure. We then reflate all of these figures from the year of the survey to December 2024 prices using the Retail Prices Index (RPI). This enables us to estimate 'real' spending per head on a consistent basis across a long run of data. Box 1 outlines the justification for the approach we follow.

Box 1. Choice of price index for reflation

To provide comparability between data collected up to 50 years ago and the situation today we convert historic data into current prices. We do this by reflating by the general increase in prices between the year the data was collected and the present day.

For most of the period, the main measure of inflation used was the Retail Prices Index (RPI). This was the basis for price-linked increases to state and private pensions for the whole period from 1968 to 2010. After this, the Consumer Prices Index (CPI) was more widely used because of concerns over the accuracy of the RPI, though some occupational pension schemes continued with an RPI link.[6]

On the basis that RPI was the main measure of inflation for most of our period, and that people whose pensions simply rose in line with RPI would not have perceived themselves as receiving a 'real terms' increase in pension, we have chosen to reflate all monetary values using the RPI.

One consequence of this decision is that we are using a generally higher inflation measure than if we had used CPI. We have assessed a number of our key results for sensitivity to using CPI rather than RPI. We find that, as would be expected, falls in real spending through retirement are more modest with CPI, but the key findings of the analysis are robust to the choice of inflation measure used. There is more information on this sensitivity analysis in Appendix 2.

Figure 2 reports real spending per head at different ages across the entire sample (as previously shown in Section 1).

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[6] For more information on the differences between RPI and CPI see: Office for Budget Responsibility (2023). The long-run difference between RPI and CPI inflation. Available at: https://obr.uk/box/the-long-run-difference-between-rpi-and-cpi-inflation/

Figure 2. Real spending per head (£ per week) of pensioner households, 1968-2019
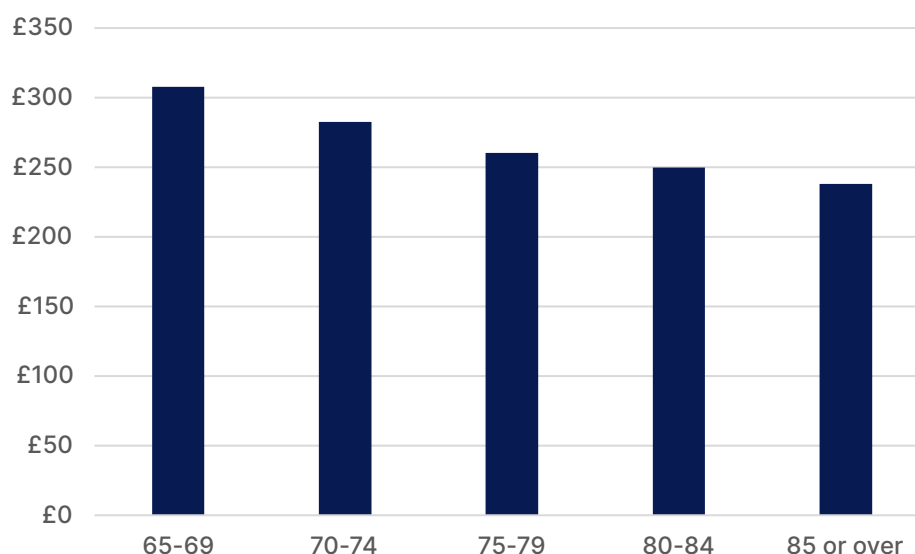
Source: Authors' calculations based on FES and successor surveys.

In early- and mid-retirement, this chart seems to support the idea of a 'U-shaped' pattern of spending in retirement, where pensioners are more active early on (e.g. going on foreign holidays, eating out, etc.), followed by a period where they are less mobile and spend less.[7]

What the chart does not really show is any 'upward slope' of spending in later life as things like care costs start to bite.

The most likely reason for this is that we are using a household sample survey, which is likely to understate the extent of care costs for two main reasons:

— The survey is based purely on private households so would not capture those in residential care settings, where care costs are likely to be especially high.

— Even amongst frail elderly households still living in their own home, response rates to a voluntary survey are likely to be low relative to those for younger pensioners. Our analysis suggests that for those in the 85+ age group in particular, our survey sample includes only about half the number of people that we might expect in a fully representative sample, and it is likely that it is those who have the highest care needs who may be least

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[7]   It is worth noting that we have simply combined data on over 100,000 people aged 65+ interviewed at any point between 1968 and 2019. Over this period there will, of course, have been huge changes in society and the economy, and people born in different generations will have experienced these in different ways. We break down the contribution of some of these different effects later in the paper.

likely to respond.[8]

We can, however, look at other data sources to see what they may reveal about the association between older age and spending on care costs.

The biggest care costs are likely to arise where people move into residential care of some sort. But these costs are likely to be extremely 'skewed' with some people never going into residential care (or needing paid care at all) whereas others face 'catastrophic' levels of care costs with multi-year stays in a residential or nursing home.

This point is illustrated in this chart from the final report of the Dilnot Commission[9]:

Figure 3. Expected future lifetime cost of care for people aged 65 in 2009/10, by percentile (2009/10 prices)
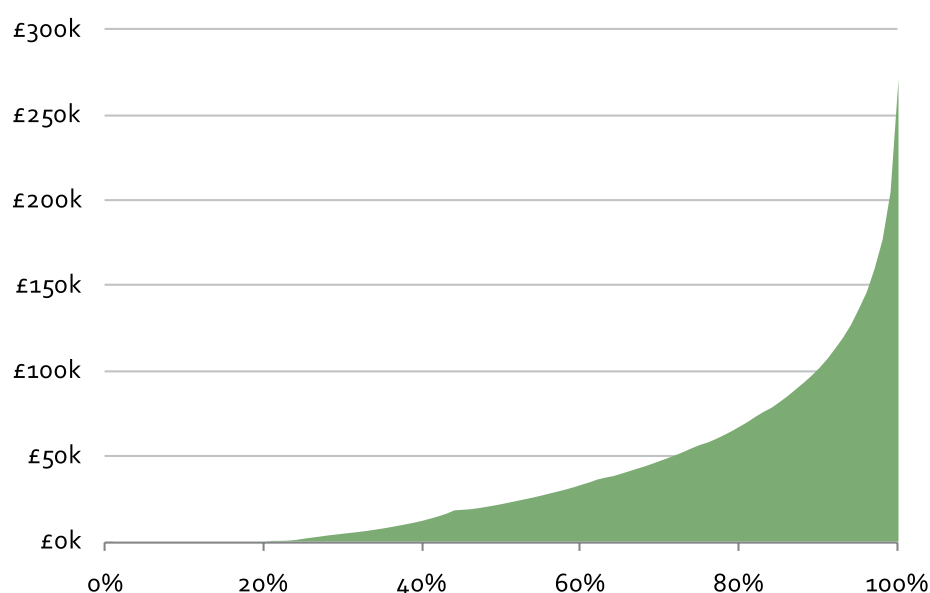
Source: Dilnot, A. (2011). Fairer care funding: The report of the Commission on Funding of Care and Support.

Although the estimates are dated, the chart shows two key points about the cost of later-life care:

— Care costs vary hugely from person to person, with around one in five set to have negligible lifetime care costs whereas others could have to find £250k

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8 One indication of this is the under-representation of people in receipt of Attendance Allowance (AA), receipt of which would be one indicator of care needs. In the most recent year of data, we find just under five per cent of pensioners in receipt of AA compared with over 12 per cent in the entire population (including residents of care homes).

9 See: Dilnot, A. (2011). Fairer care funding: The report of the Commission on Funding of Care and Support, Figure 2, p.13. Available at: https://webarchive.nationalarchives.gov.uk/ukgwa/20130221121529mp_/ https://www.wp.dh.gov.uk/carecommission/files/2011/07/Fairer-Care-Funding-Report.pdf

(in 2009/10 prices) over their lifetime.

— Care costs are highly skewed, with the median lifetime cost in this chart somewhere around £20,000, but some people paying more than ten times this amount.

Any analysis of later-life pensioner spending clearly cannot ignore the possibility of these extremely high care costs, but it is important to remember that only a very small proportion of pensioners are paying such costs at any point in time.

Findings from the 2021 Census showed there were 278,946 people aged 65 years and over living in care homes in England and Wales, but that:

> "Compared with 2011, the proportion of older people living in care homes in 2021 has decreased from 3.2 per cent to 2.5 per cent".[10]

There are clearly many different factors that may be contributing to this trend:

— The fact that the number of care beds available has not risen as quickly as the size of the older pensioner population.

— Changes in the age at which high-level care needs tend to arise.

— Changes in affordability, with care home costs having risen considerably in real terms.

— Changes in preferences, with some people preferring to be cared for in their own home rather than in an institutional setting.

To examine in more detail who is likely to be living in residential care, and at what ages, we can draw on information from the 2021 census, shown in Figure 4 below.

For most age groups, there is an extremely low chance of an individual facing the 'catastrophic' costs of residential care, though women are much more likely to face such costs than men. For example, for men, even amongst those aged 90 or above only one in ten is in residential care, whilst for women it is just over two in ten. As suggested by the previous chart from the Dilnot Commission report, very high care costs through residential care in later retirement remain very much the exception rather than the norm.

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10 Office for National Statistics (2023). Profile of the older population living in England and Wales in 2021 and changes since 2011. See: https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/ageing/articles/profileoftheolderpopulationlivinginenglandandwalesin2021andchangessince2011/2023-04-03

Figure 4. Percentage of usual resident population in each five-year age group from age 65 years residing in care homes in 2021 and 2011, by sex, in England and Wales
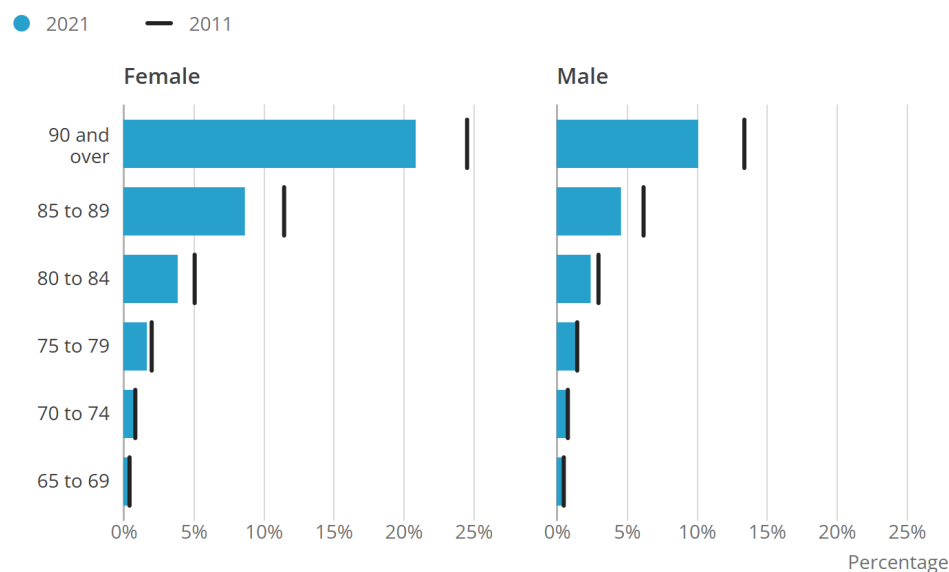
Source: Office for National Statistics (2023). Older people living in care homes in 2021 and changes since 2011.[11]

Given that 'catastrophic' care costs arising from residential care are relatively rare when averaged over the whole population, we will concentrate on adjusting our spending data purely on estimates of care spending for the much larger group of those individuals still living in their own household. This could include spending on things like 'meals on wheels', home helps of various kinds, carers who assist with bathing and dressing etc.

The main purpose of this exercise is to generate some broad brush 'orders of magnitude' of potential care costs, and to see if these materially undermine our key findings about spending trends. Box 2 sets out our method and assumptions and Figure 5 reports the findings based on our sample data.

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11 See: https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/ageing/articles/olderpeoplelivingincarehomesin2021andchangessince2011/2023-10-09

Box 2. Adjustment for potential missing care costs

Our starting point for assessing potential care needs in the population is a survey undertaken by NHS England in 2021 that provides age-related data on the extent to which people are unable to (or find it hard to) perform certain routine 'activities of daily living'.[12] Some key results are shown in the table:

Number of ADLs or IADLs for which help was needed	Age group (%)				All ages (%)
	65-69	70-74	75-79	80+	
No help needed with ADLs or IADLs	79	76	69	48	69
Help needed with one ADL or IADL	6	5	7	12	7
Help needed with two or more ADLs or IADLs	15	19	25	40	24

Source: NHS England (2023). Health Survey for England, 2021 part 2: Social care for older adults.[13]

As we would expect, the proportion of people who need no help with daily living declines with age, but it is also noticeable that the sharpest drop occurs beyond age 80. This suggests that our data for spending in the early part of retirement is less likely to be understating the costs of paying for care than spending data for older pensioners.

Just because someone says in a survey that they are unable to (or find it hard to) perform certain daily activities, it does not necessarily follow that they are paying for social care. Most obviously, a family member or friend might be providing this care, free of charge. But by assuming that anyone needing help with two or more of these activities is paying for help, then we should obtain some sort of 'upper bound' on the care costs that we could be missing.[14]

To put a monetary value on the potential cost of this home care, we use the current rate of Attendance Allowance payable to pensioners through the social security system. Published Department for Work and Pensions (DWP) data suggests that in 2024 the average figure was around £95 per week. We then assume, in line with the table above, that 15 per cent of those aged 65-69 have spending at this level, 19 per cent of those aged 70-74 and so forth. These are added to our existing spending estimates as shown in Figure 5.

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12 Activities of Daily Living (ADLs) include things like bathing, going up and down stairs, going to the toilet etc. The data shows those who 'cannot do' one or more activity, as well as those who can only do it 'with difficulty' or 'with help'. 'Instrumental' ADLs (IADLs) are more complex tasks such as managing finances, cooking or transportation.

13 See: https://digital.nhs.uk/data-and-information/publications/statistical/health-survey-for-england/2021-part-2/social-care#care-needs-of-adults-aged-65-and-over

14 Ideally, we require year-by-year data on care needs by age and could apply the relevant prevalence to each year of our data. Unfortunately, this data is unavailable on a historic basis. However, increasing life expectancies means that the majority of the oldest pensioners in our sample were interviewed more recently, which means that the latest data on care needs provides us with a reasonable proxy.

Figure 5. Real spending per head (£ per week) of pensioner households 1968-2019, with adjustment for estimated care costs
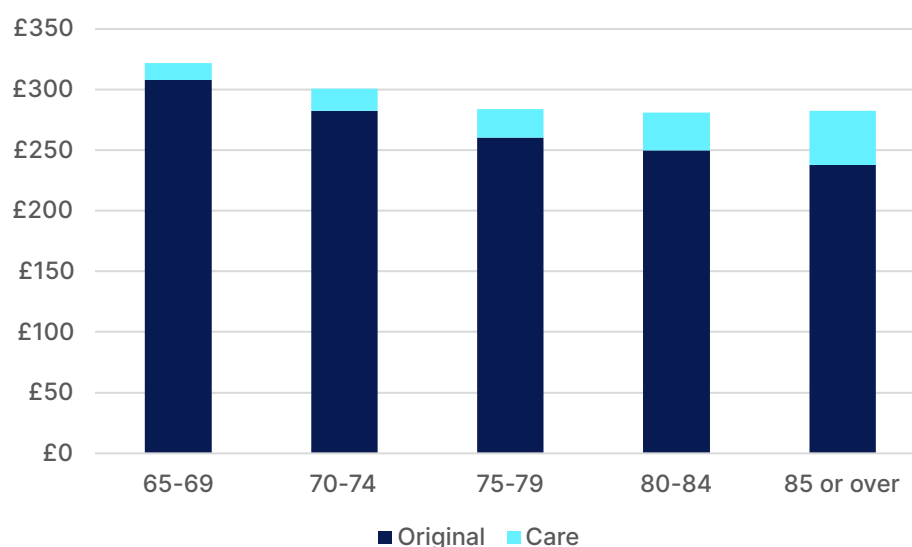
Source: Authors' calculations based on FES and successor surveys

As would be expected given that need for care rises with age, an adjustment of this sort makes more difference both in absolute terms and particularly in proportionate terms to the level of spending of older pensioners.

However, what is also striking is that even the 'adjusted' time series still shows a marked downward trend in the first fifteen years or so of retirement, with a flatter pattern thereafter. We are still a long way from a spending pattern that exhibits a full 'U' shape or even one that fits particularly well with the rising real incomes pensioners are set to receive as things stand.

In the next section we examine how far the downward slope of spending in the earlier part of retirement is a permanent feature of later life.

4

Have pensioner spending patterns changed over time?

Have pensioner spending patterns changed over time?

If we want to consider policy for the future, we need to know if the sort of patterns we have described so far have been consistent over time or have changed. If they have changed, we need to understand why this is, to take a view as to what they might look like in the future.

To do this, we first divide our sample into 'birth cohorts'. Whilst our data is a series of cross-sections, with different people interviewed each year, we do know, for example, that someone aged 65 in the 1968 survey, and someone aged 66 in the 1969 survey were born in the same year. We can therefore pool together all of those born in a given year (or group of years) and look across successive years of data to see how the spending of that cohort has evolved over time. We can then look at later birth cohorts to see if the same patterns emerge or if things have changed.

By way of context, it is worth saying that over such a long period, a lot of economic and social change has taken place, and this might well be expected to influence an individual's spending behaviour in later life.

For example:

— Rates of home ownership amongst pensioners have increased considerably, whilst average levels of non-housing wealth have also increased.

— The relative levels of women's pensions relative to those of men have risen.

— Average life expectancy at retirement has risen significantly.

All of these factors would be expected to affect the profile of spending through retirement.

To examine this further, we can look at two quite different birth cohorts – those born 1902-06 who were pensioners at the start of our data, and those born 1932-36 who reached pension age around the turn of the century and are now in later retirement.
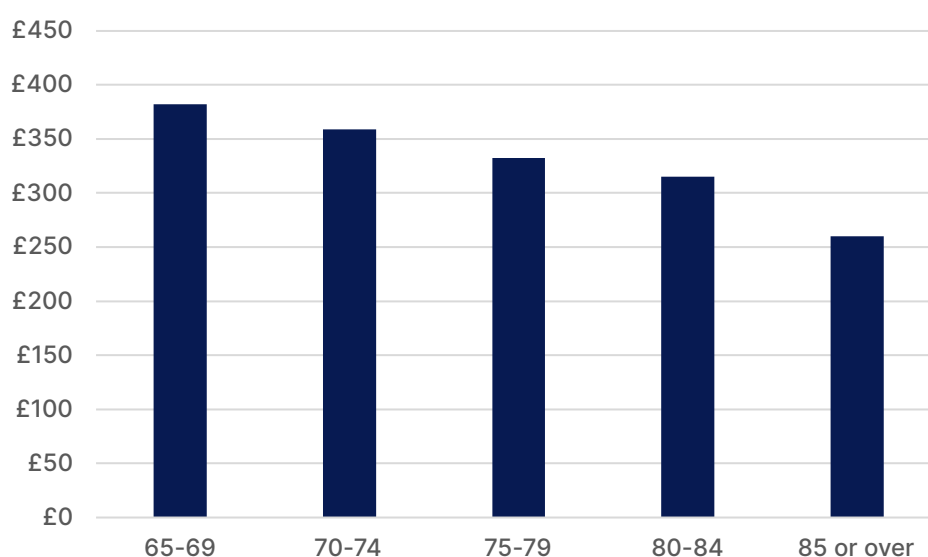
Figure 6 below shows the profile of real spending through retirement for these two birth cohorts.

Figure 6. Real spending per head (£ per week) by age, 1968-2019

a) 1902-06 cohort
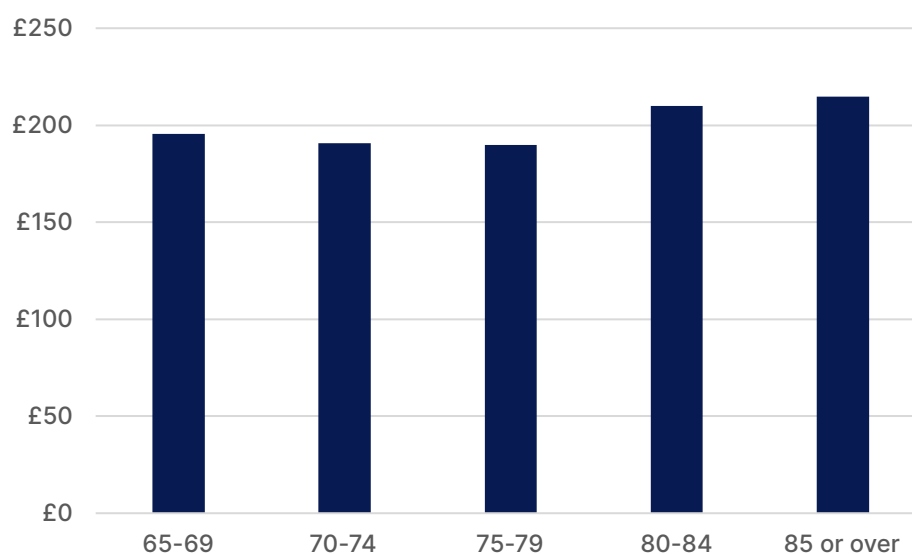
b) 1932-36 cohort

Source: Authors' calculations based on FES and successor surveys

What is very striking about these charts is that the 'downward slope' of real spending per head is clearly apparent for the most recent retirees but entirely absent for the oldest group. Indeed, the 1902-06 cohort seems to have experienced rising real spending levels from the start to the end of retirement.

It is also noteworthy that the more recent birth cohort has a far higher standard of living, particularly in the earlier part of retirement, with weekly spending approaching £400 in current prices for the 1932-36 cohort compared with only around £200 for the 1902-06 cohort. In contrast, the difference in average weekly spending levels at ages 85+ is much smaller.

We need to understand the reasons for these differences if we are to form a view as to how pensioner spending in retirement is likely to look in the future.

We investigate three factors which may explain this dramatic shift:

a) Different profiles of real income through retirement of the two cohorts

b) Different housing tenure composition of the two cohorts

c) Different longevity experience of the two cohorts

We consider each in turn.

a) Different profiles of real income through retirement of the two cohorts

For the majority of current pensioners, and for women in particular, the largest single component of their income in retirement is the state pension.

The way that the state pension increases year to year through retirement is therefore of critical importance in assessing likely patterns of income through retirement.

However, policy on the indexation of the state pension has not been static over time.

We can identify several phases of indexation policy:

a) At the start of our data in 1968, the state pension was increased on an ad hoc basis to take account of increases in prices, but in some years (e.g. between 1969 and 1970) there was no increase.

b) Indexation became more systematic after this point and in the late 1970s there was a move to link to the rise in average earnings rather than the (typically lower) rate of price inflation.

c) This 'earnings link' was broken in 1980, and the pension was generally linked to the rise in RPI inflation for the next three decades.

d) From 2011 onwards, a more generous 'triple lock' indexation was used, increasing pensions by the greatest of the rise in prices, earnings or a floor of 2.5 per cent; however, price indexation was defined in terms of the growth in the generally lower Consumer Prices Index (CPI) rather than RPI.

Figure 7 shows the RPI-adjusted value of the basic state pension over the whole period. As can be seen, the state pension rises relatively rapidly in real terms during the 1970s, and particularly during the short period of earnings indexation. After that, its real value is relatively flat, but then starts to rise again after 2010 as the 'triple lock' policy was put into effect.

The importance of this chart for interpreting the profile of pensioner spending in retirement is that different cohorts will have experienced different patterns of real income in their respective retirements and will differ in the extent to which they rely on state pension as a source of income.

The oldest cohort in our data were a) the most dependent on the state pension and b) able to enjoy rapid real increases through the first decade or so of their retirement (the 1970s). By contrast, those who retired at the turn of the century, who also benefited from a higher level of private pension provision, will have seen only a modest real increase in their state pension through retirement alongside limited indexation of their private pension. The combined effect of these factors is that the oldest cohort typically enjoyed sharply rising real living incomes post-retirement – much of which they spent – whereas the latest cohort had a much flatter profile of real income. These different profiles of real income will have fed through into the profile of real spending that we see.

Figure 7. Real (RPI deflated) value of basic state pension – £pw 2019 prices
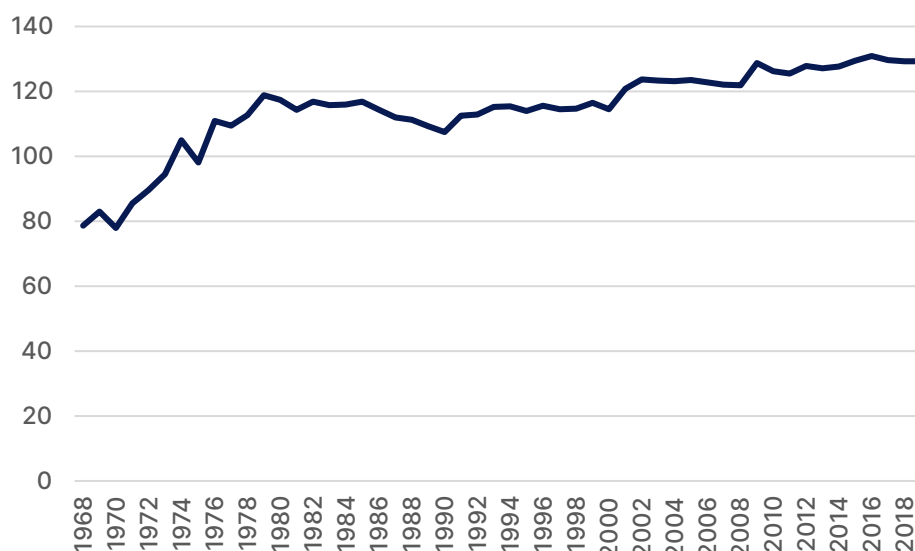
We also see that the role of the state pension changes over time as shown in Figure 8.

Figure 8. Real weekly income from state pensions and private pensions, 1968-2019
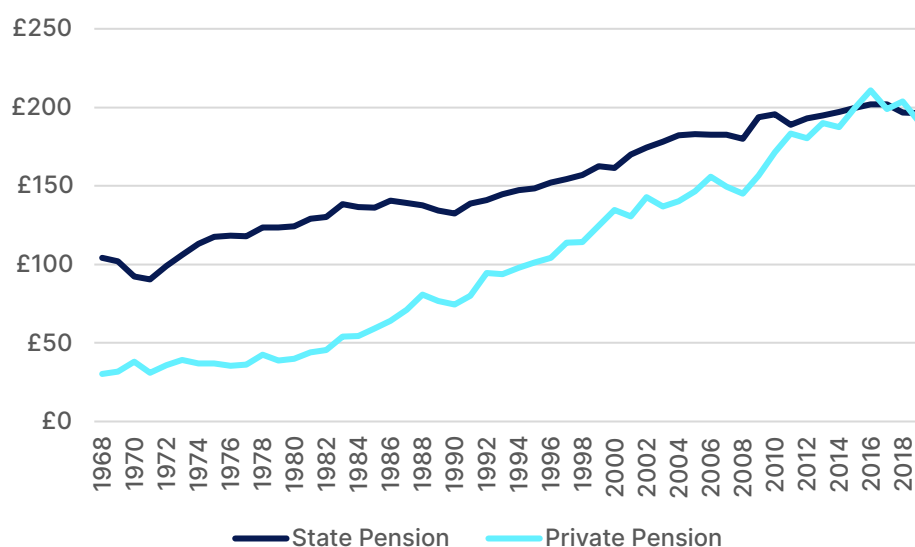
Source: Authors' calculations based on FES and successor surveys

On the one hand, more women gradually build up state pensions in their own right over time, and the real level of the state pension increases, contributing to a rise in average real state pension income per head. But at the same time, there is a faster increase in the contribution of occupational pension income to total income in retirement, which may have reached its peak towards the end of our sample period.

We can also split the data by cohorts to show how the contribution of state pension and private pension to total household income has changed over time. This is shown in Figure 9.

Figure 9. Real income per head (£ per week) from state and private pensions

a) 1902–06 cohort
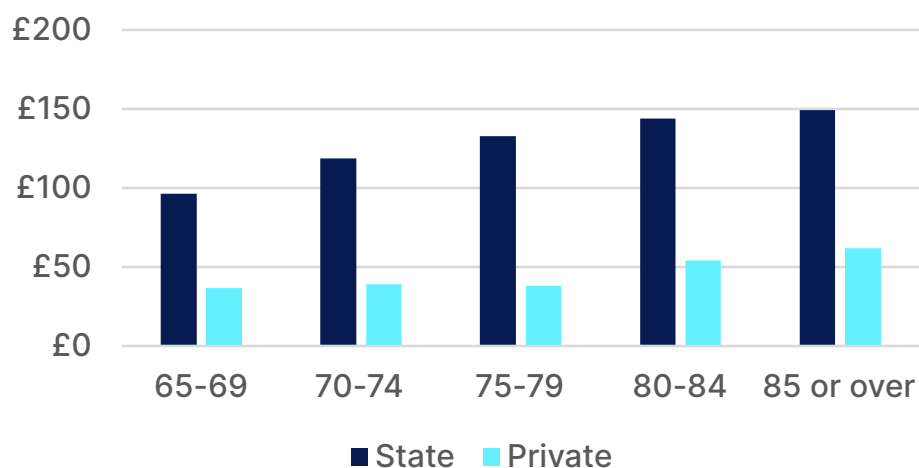
b) 1932–36 cohort
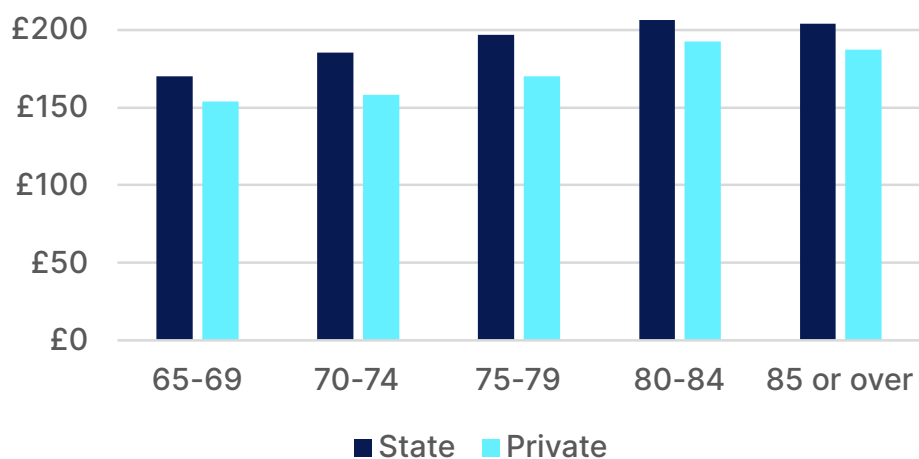
Source: Authors' calculations based on FES and successor surveys

Figure 9 shows that private pensions are far more important for determining retirement income in later cohorts than in earlier ones. However, private pensions tend to have much less protection against inflation than state pensions. This helps to explain why the trend in real income through retirement was markedly different between the two cohorts and this in turn is highly likely to have driven differences in the profile of spending.

b) Differences in tenure composition across cohorts

Over the three decades between when the oldest cohort and youngest cohorts in our dataset started retiring there have been significant socioeconomic and demographic changes. One of the most important is the dramatic shift in housing tenure amongst the pensioner population.

Figure 10 shows the proportion of our sample who are a) renting from a private landlord, b) renting from a local authority / housing association and c) homeowners.

In 1968 nearly one quarter of all pensioners were renting from a private landlord – a world away from the present situation where barely one in twenty pensioners is a private tenant. With regard to social housing, the proportion renting from a local authority rose steadily up to the early 1980s, peaking at roughly two in five of all pensioners, but fell back sharply thereafter, partly due to the 'right to buy' policy of the 1980s and more generally because of the decline in council house building. The flip side of this is the remorseless rise in owner occupation which is very much the dominant tenure in retirement.

Figure 10. Tenure of pensioner households, selected years, 1969-2019
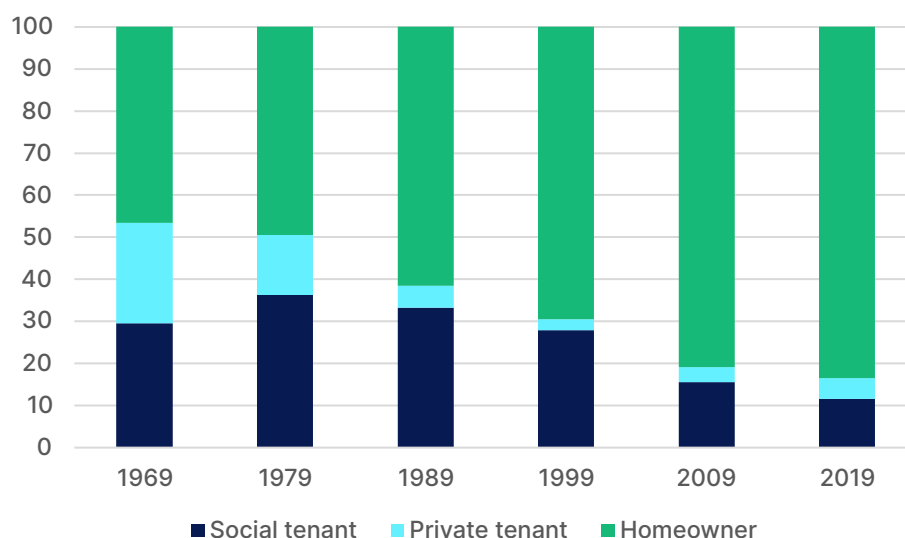
Source: Authors' calculations based on Family Expenditure Surveys

In the next section we examine how differences in housing costs are likely to shape pensioner spending through retirement, one direct implication is that if a household has a rent to pay throughout their retirement, then their ability to sharply reduce their spending as they age is constrained. The shift from flat or rising spending in retirement to one of falling spending,

as exhibited by homeowners in later cohorts, will at least in part reflect the switch from renting to home ownership as the main form of housing tenure amongst pensioners.

c) Different longevity experience of the two cohorts

An important factor to bear in mind when interpreting this data is that we are looking at spending per head. The fact that people often transition from being part of a couple at the start of retirement to being a widow or widower during the course of their retirement will have an impact on their spending per head. And changes in the typical age of being widowed will therefore feed through into spending profiles.

For much of the 1970s, under half of those in the 75-79 age group were in a couple compared to over 60 per cent in the most recent data. Indeed, in the latest data it is only in the 85+ group where the median person is not in a couple.
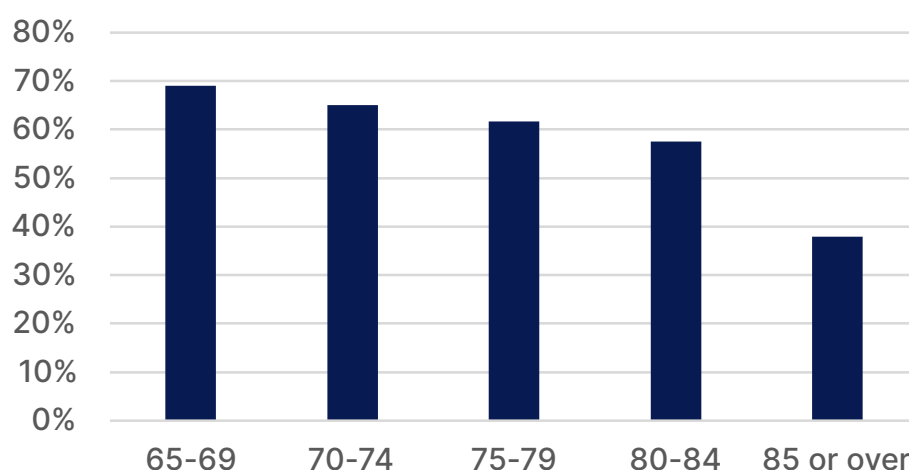
This is illustrated in Figure 11, which shows the percentage of people who are (still) married at different ages, first for the cohort born in the 1902-1906 period and then for those born in the 1932-1936 cohort.

Figure 11. Percentage of cohort at each age group who are married
a) 1902-06 cohort
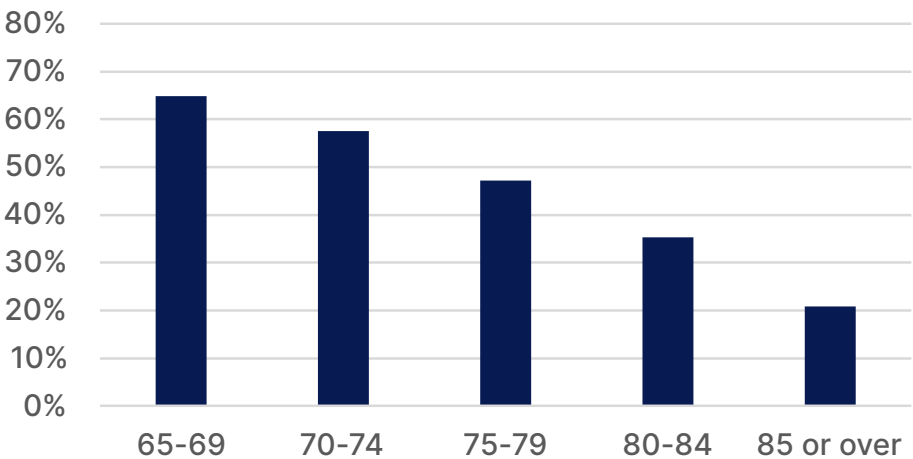
b) 1932-36 cohort

Source: Authors' calculations based on FES and successor surveys

In the earliest cohort, marriage rates decline quite steeply with age. In the more recent cohort, the proportion who are married remains remarkably stable even into their early 80s.

This change is important because becoming widowed will affect two things – spending per head and income per head.

Spending per head

In broad terms, becoming a widow (in particular) will tend to result in an increase in spending per head. This is because certain household costs (e.g. rent, standing charges, unmetered water bills, home insurance) will be largely fixed regardless of the number of adults, whilst others (e.g. council tax, cost of running a car) will fall by less than 50 per cent when the number of adults drops from two to one. The key point is that, other things being equal, the drop from two adults to one tends to result in a rise in spending per head. As this happened earlier in retirement for the 1902-06 cohort than the 1932-36 cohort, we are likely to see more of an upward trend in spending per head in the earlier cohort, consistent with the findings in Figure 6.

Income per head

Along with changes in spending per head, becoming a widow will also affect income per head, and this in turn is likely to feed through into spending patterns. Not only have we seen an increase in the average age at which people become widows, but there have also been big changes in the way in which being widowed affects your income[15]

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15 And, to the extent that these changes arise from the effective removal in 2016 of inheritance rights from the state pension system, we are only now beginning to see these effects play out amongst the retired population.

A major change is in the balance between state pensions, which – until recently – provided generous 'survivor' pensions, and occupational pensions, which typically offer only a 50 per cent replacement pension.

At the start of our analysis period, the state pension was the major source of income for most of our sample. Amongst couples, it would be common for a man to have a substantial state pension and his wife a much smaller state pension. When the husband died, his wife could in effect inherit all of his state pension instead of her own. This meant that her income *per head* would *go up* on becoming a widow. By contrast, if a company pension only provides a 50 per cent replacement rate, then the household company pension income would halve when the husband died but so would the income, leaving company pension income *per head* unchanged.

It follows from this that in the early period when state pensions were a relatively more important source of income, women who lost their husbands would tend to see an increase in their income per head and, arising from this, an increase in their spending per head. And this would often happen relatively early in retirement resulting in an uptick in spending per head in our charts for the oldest cohorts.

Some evidence of this trend comes from a one-off piece of analysis conducted by the Office for National Statistics, which shows that the median age at which a married woman became a widow rose by four years in the period from 1997 to 2017.[16]

As younger cohorts typically get a lower level of income replacement following the death of a husband, rely less on state pensions, and are also typically widowed later, this reduces and delays any uptick in real income into later retirement.

Key points

We have spent some time looking at what might explain the different shapes of in-retirement spending for those born in the early 1900s and those born 30 years later. There are two key points arising from this:

— It is not a given that pensioner spending will fall through retirement; a lot depends on factors such as policy on state pension indexation, the nature of in-retirement housing costs, and the likelihood of losing a spouse or partner at some point in retirement and how these impacts on income and spending.

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16 Office for National Statistics (2020). Average age of becoming a widow(er): Estimates using the ONS Longitudinal Study, England and Wales, 1997 to 2017. See: https://www.ons. gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates / adhocs/11434averageageofbecomingawidowerestimatesusingtheonslongitudinal studyenglandandwales1997to2017

— If pension providers are tasked with designing post-retirement defaults for future cohorts of pensioners, one needs to take a view as to how these (and other) underlying factors are likely to evolve in future so that they can estimate whether a 'downward slope' in spending is the right profile to facilitate.

5

## Do different subgroups of pensioners behave differently?

Do different subgroups of pensioners behave differently?

We have looked at whether spending profiles through retirement have changed across cohorts, but we can also use our dataset to understand whether these spending profiles vary by subgroup. As indicated above, differences in housing tenure and hence housing costs are likely to be important.

Figure 12 shows, for the whole period from 1968-2019, the profile of real spending per head through retirement separately for homeowners[17] and for social tenants.[18]

Figure 12. Real spending per head by housing tenure, 1968-2019
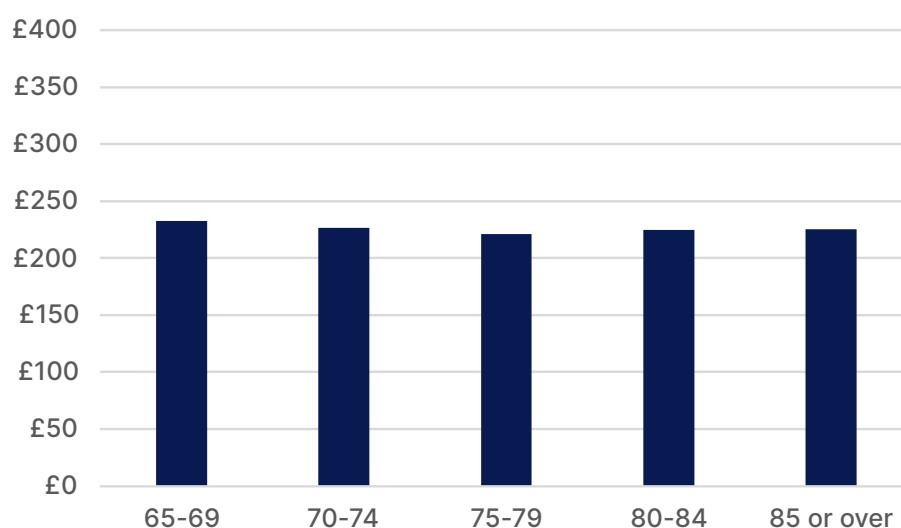### a) Homeowners

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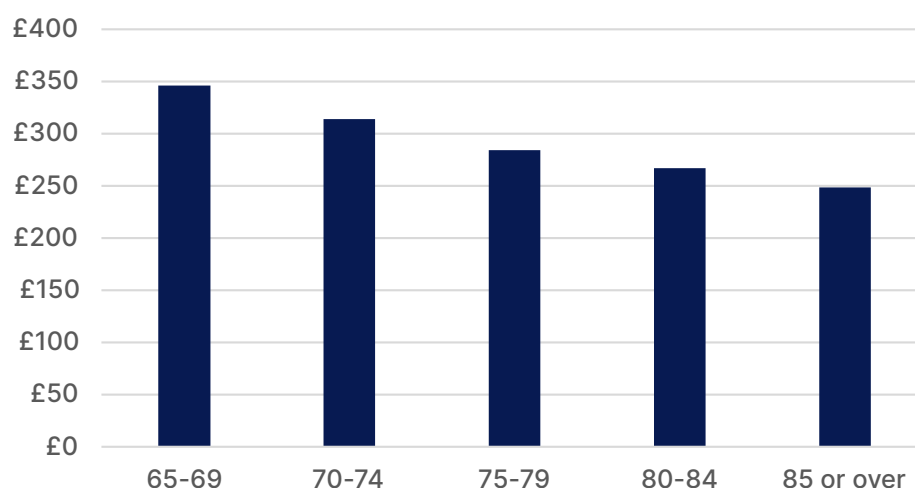
17 The vast majority of homeowners in retirement own their home outright, but we have also included a small number who have a residual mortgage balance into retirement. These balances are typically small and the repayments on those balances have little impact on total spending.

18 Although private renters make up around a quarter of the pension population at the start of our sample, they are only around one in 20 by the end. The sample sizes of subgroups of private renters (for example broken down by birth cohort and age group) are simply not viable for later years. For this reason, we concentrate here on social tenants and on homeowners, both of which are significant groups throughout.

b) Social tenants

Source: Authors' calculations based on FES and successor surveys

Figure 12 confirms, unsurprisingly, that homeowners have much higher living standards than renters, with much higher average real spending per head, even after accounting for the fact that the spending of tenants includes payment of rent.

But the striking difference is the pronounced front-loading of spending by homeowners whereas real spending by social tenants is relatively consistent throughout retirement. This immediately suggests that a 'one-size-fits-all' approach to designing retirement income profiles would not be appropriate.

To understand the differences between tenure groups we split total spending into three broad categories:

— Housing costs – including rent, water rates, local taxes (rates, council tax, etc.), buildings insurance, house maintenance, etc.

— Essentials (excluding housing) – food, fuel and clothing

— 'Luxuries' – all other spending including on leisure, alcohol, tobacco, motoring, etc.

Figure 13. Real weekly spending per head by age group and category, 1968-2019

a) Homeowners
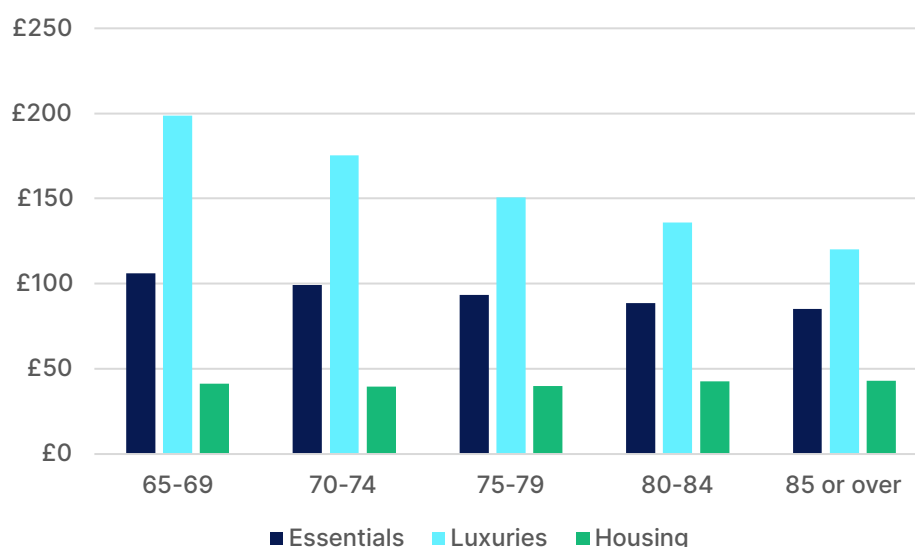
b) Social tenants
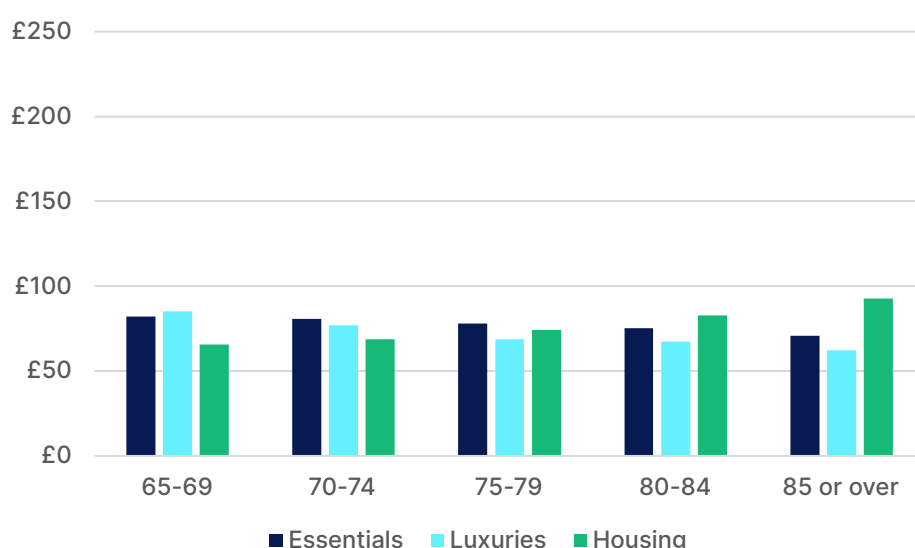
Source: Authors' calculations based on FES and successor surveys

Figure 13 shows striking differences in spending patterns between homeowners and renters.

For homeowners we observe their real housing costs are relatively low and rise gradually through retirement. This is likely to be driven mainly by real increases in local taxes (Domestic Rates and Council Tax) and water bills in the period covered by our data. Spending on other 'essentials' is a relatively modest part of the total spend of these households but drifts down gradually in real terms through retirement. This may in part reflect the fact that the items included in this category may still be somewhat discretionary. For example, although clothing is 'an essential', those who are more active

and socialise more will tend to spend more on clothing. Figure 13 may also reflect a gradual change in lifestyle resulting in falling real spending in these more discretionary items.

But by far the most dramatic feature of Figure 13a is the trend in real spending on 'luxuries', as defined above. Homeowners in their mid to late sixties are spending over £200 per week on non-essentials (in current prices) whereas homeowners in their mid-eighties and beyond are spending less than £150 per week. This strongly suggests a lifestyle related reduction in discretionary spending for this group and would provide support for a 'front loaded' release of retirement funds.[19]

Turning to Figure 13b and renters, a very different pattern emerges. Housing costs are larger in absolute terms than for homeowners and rise gradually through retirement. As well as an increase in real local taxes, this may also reflect increasing real rent levels for this group. For 'essential' items, real spending is relatively flat, trending down from just over £80 per week for those in their mid to late 60s to under £70 per week for those in their mid to late 80s. The strongest downward move of spending for this group is on non-essentials, but even here there is only a modest fall from the start to the end of retirement.

These very dramatic differences are a clear sign that we should avoid a 'one-size-fits-all' approach to designing retirement defaults. The fact that social tenants appear to need to sustain a steady or even rising regular spend throughout their retirement might suggest that an annuity-based solution might suit them best. By contrast, the evidence suggests homeowners heavily front-load spending, and a well-designed default should be able to distinguish between the two.

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[19] have further broken down the figures for homeowners by cohort and find that in any given cohort, homeowners have a higher proportion of their total retirement spending taking place in the early years of retirement than renters. But in early years, when renters were heavily end-loading their spending, homeowner spending was relatively flat. It is only in more recent cohorts that the sharp downward trend for homeowners becomes more apparent

6

# Changes over time for different tenure groups

Changes over time for different tenure groups

Our analysis has established two key findings:

— Earlier-born cohorts (those born in the years 1902-06) tended to have 'end-loaded' spending patterns through retirement, whereas later-born cohorts (those born in the years 1932-36) tended to have 'front-loaded' spending patterns.

— Across the whole sample period, social tenants have tended to have relatively flat spending profiles through retirement whereas homeowners spending follows a downward sloping trend.

We next analyse whether these findings hold when we split our sample by birth cohort and tenure group. We switch to using median real spending (rather than mean) as the measure of average spending to avoid distortions arising from a small number of outlier values that arise due to limited sample size.

Figure 14. Median real spending per head of social tenants

a) 1902-06 cohort
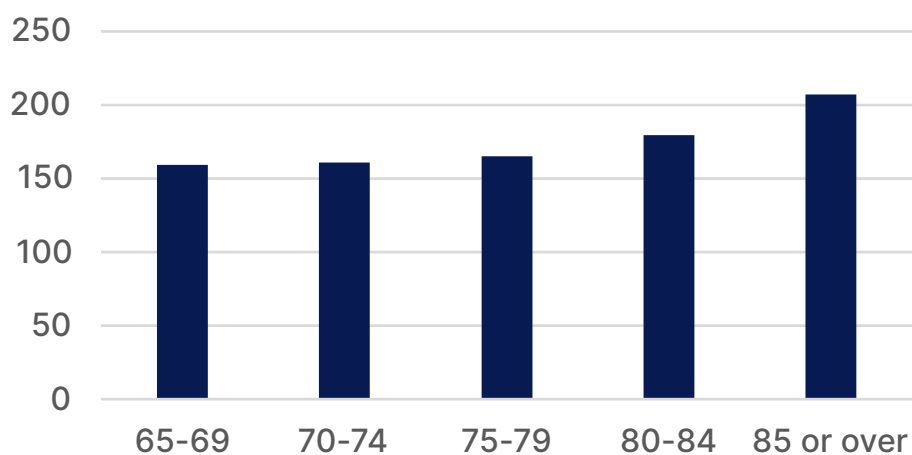
b) 1932-36 cohort
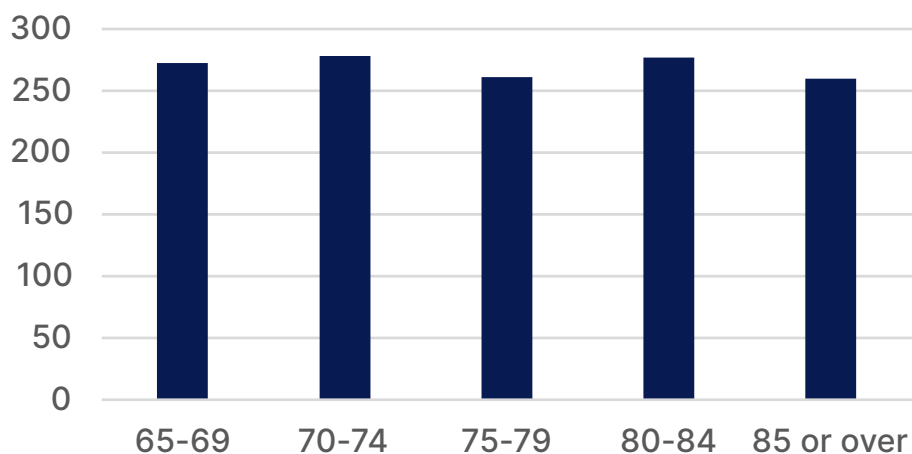
The key result from Figure 14 is that more recent cohorts of social tenants have a broadly flat level of spending through retirement, unlike earlier cohorts. This is likely to be largely driven by the fact that later generations of social tenants have been dependent on a state pension which has been relatively flat in real terms whereas earlier generations enjoyed significant real increases through retirement.

Next we repeat the analysis for homeowners.

Figure 15. Median real spending per head of homeowners

a) 1902-06 cohort
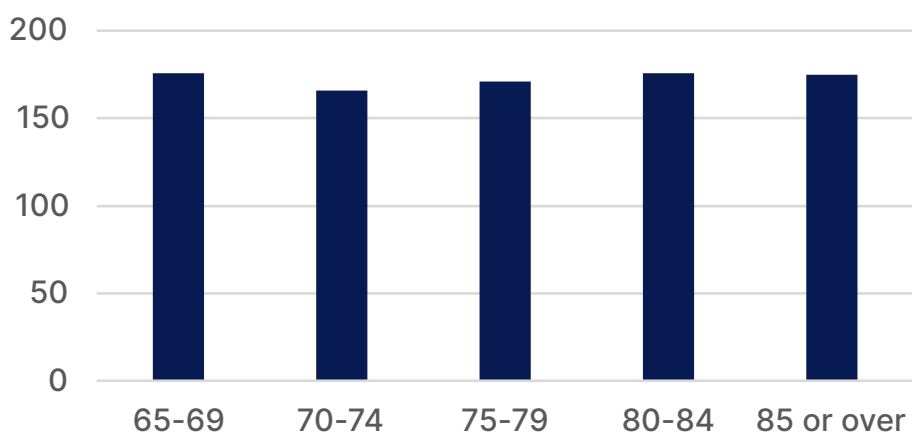
b) 1932–36 cohort

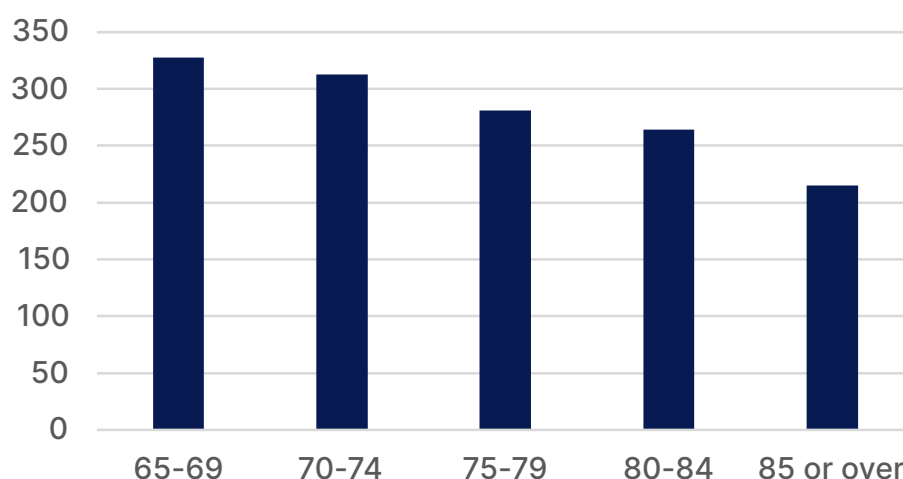For homeowners we also observe a 'cohort effect', but in this case moving from having relatively flat spending through retirement in earlier cohorts to having a sharply downward sloping pattern of spending amongst those who retired more recently.

This tenure split sheds light on the patterns shown in Figure 6, and suggests that the differences between the two cohorts have been heavily influenced by the significant change in the tenure mix between those who retired in the late 1960s and those who retired three decades later.

In terms of the policy implications of our analysis, it is Figure 15b which is of significant interest. The majority of today's retirees are homeowners, particularly among those individuals with meaningful pension savings considering using drawdown in retirement. The strong front-loading observed amongst the cohort born in the 1930s must be fully factored into the design of default strategies.

7

Policy conclusions and areas for further research

Policy conclusions and areas for further research

A number of key results emerge from our analysis so far:

— There is no 'one-size-fits-all' pattern of spending through retirement; spending profiles have changed over time and may be different for different groups – notably homeowners versus renters.

— For homeowners, and for more recent birth cohorts, there is evidence of downward sloping spending, particularly in the earlier part of retirement; this is not a good match for what is likely to be an 'end-loaded' stream of real income for many retirees.

— Pension schemes and providers should consider constructing 'multiple defaults' so that members can be allocated to the default which best fits their individual characteristics.

However, the fact that the profile of spending has evolved over time and now looks very different for recent cohorts than for those born a generation ago, means that we need be careful before assuming that the future will look like the present.

To assess future retirement spending profiles, we therefore need to take a view about trends in the underlying determinants of these profiles.

Some of the key changes in the future we need to factor in would include:

— **State pension indexation**. Even though the state pension 'triple lock' is regularly called into question, we may still expect to see some form of 'earnings link' to the value of the state pension, creating an underlying increase in real incomes for most pensioners through retirement.

— **State pension inheritance rules**. For those retiring post 2016, inheritance of state pension from a deceased spouse has been largely eliminated. This means that in future, the drop in household income per head following losing a spouse will become much sharper than in the past. On the other hand, this event will probably continue to happen steadily further into retirement, with many widows / widowers experiencing only a relatively short period at the end of retirement when they are dependent on a single income. We need to think through what this means for the default profile of pensioner income from DC pension pots.

— **The declining contribution of DB pensions**. Outside the public sector, active membership of DB pensions has been in decline for the last two

decades,[20] so the proportion of retirees whose income fall following widowhood will be cushioned via a survivor's pension will continue to fall

— **Future changes in housing tenure**. Although the last half a century has seen a dramatic shift out of private renting and, more recently, social renting, and into owner occupation, there are signs that this trend may be starting to reverse. If we do see the expected rise in private renting in retirement this would increase the importance of pension providers treating renters as a separate group when designing defaults.

— A recent policy change that could have a significant impact is **the inclusion of unspent pension balances in estates** for Inheritance Tax (IHT) purposes from 2027. There is already some anecdotal evidence of people using their pension pots to pay for multi-generational family holidays and other items of large expenditure in order to reduce the potential IHT bill which their heirs may face. Whilst this is only really an issue for those with larger pots, a change of this sort could lead to a further reshaping of retirement spending – perhaps resulting in even more 'front-loading' than is currently the case.

Our dataset provides a trove of information about pensioner spending patterns through retirement and how this has evolved over time. Some priorities for future analysis include:

— Understanding more about the front-loading of spending in retirement amongst particular subgroups, looking in more detail at spending categories and how these evolve through retirement; related to this, we need to understand whether 'front-loaded' spending is financed by pension lumps sum, other savings (such as ISAs) or in some other way.

— Analysis of changing sources of *income* at, and through, retirement and how this might influence spending profiles in future; for example, as non-state pensions shift from regular DB income to simply having a DC pot, could this lead to more front-loading of spending?

— Assessing whether, aside from housing tenure, there are other key factors that have a powerful effect on spending profiles (and which could be used by pension schemes to offer more customised defaults).

— Looking at how differential life expectancy at retirement for different groups should feed through into the design of default journeys.

— How care costs evolve through retirement for different groups and how, if at all, defaults for pension drawdown should factor in the risk of 'catastrophic' care costs in later retirement.

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20 See: Pension Protection Fund (2024). The Purple Book 2024: DB pensions universe risk profile, Figure 3.9, p.8. Available at: https://www.ppf.co.uk/-/media/PPF-Website/Public/Purple-Book-Data-2024/PPF-The-Purple-Book-2024.pdf

Appendices

Appendix 1: Data and methods

The Family Expenditure Survey (FES) was an annual survey of UK households designed to help with the construction of spending weights for inflation measures. Participants in the survey kept a detailed spending diary over a two-week period as well as providing information about other spending over a longer time period, and other detailed information about their income and household characteristics.

The FES started in 1961 and doubled in sample size in 1968 which is the first year of data that we use. It continued until 2000/01 when it was merged with another existing ONS survey to form the Expenditure and Food Survey (EFS). The EFS ran until 2007/08, after which it became the Living Costs and Food Survey (LCFS) which has continued to run annually to this date. Our sample period ends in 2019, as the Covid-19 Pandemic then caused huge distortions to household incomes and spending patterns.

We restrict attention to individuals aged 65 or over. Male pension age was 65 from the start of the period (1968) right up to Autumn 2018, after which it slowly increased, reaching 66 in Autumn 2020. Women's pension age was 60 until 2010, rising to 65 in Autumn 2018 and then also rising to 66 in Autumn 2020. By choosing an age cut-off of 65, we ensure that virtually all of our sample are at or above pension age for the entire sample period.

Our sample is households comprising exclusively people who meet the age criteria set out above, and so we end up with a set of one-person and two-person households where all are aged 65 or above. Note here we do not place any restrictions on earnings in retirement.[21]

In each year of data, we end up with (very roughly) 2,000 pensioners. Although the size of the pensioner population has increased considerably, unfortunately response rates to the survey have started to drift down and the two effects have largely offset each other. As a result, we end up with just over 107,000 pensioners from our 51 years of data.

Inevitably in a series of surveys undertaken over half a century there have been a lot of changes in the questions asked and how the data is coded. For example, in the 'public use' data we can see the age of respondents by single year of age until 2005/06 when older ages (those aged 80+) are grouped into five-year age bands for greater anonymity. In order to allocate people in these age groups to single year birth cohorts we randomly assign them a single year of age within the five-year band.

The data we use in this report is 'unweighted' – that is to say, it does not seek to correct for known patterns of non-response in the survey nor weight to a population total, given we pooled multiple waves. This includes variations in response rates by age, housing tenure and income.

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21 We assess the impact of including / excluding non-retired households in Appendix 2.

With regard to the measures of household expenditure, our estimates of mean spending can be distorted by a small number of 'outliers' (e.g. households who made large one-off purchases in the period covered by the survey), particularly when we are looking at subgroups such as particular birth cohorts or tenure groups broken down by age. To reduce the 'noise' from such cases appearing in some samples and not others we have 'top-coded' expenditure figures at the 99th percentile level for each subgroup under examination. For example, in a chart looking at spending levels for social tenants by age group, we have capped spending at the 99th percentile within each age group of social tenants.[22]

Data copyright

Data has been supplied by the UK Data Service. We provide below a sample copyright notice for one each of the FES, EFS and LCFS. Full notices are available on request for the full 51 years of data.

a) FES [1968]

Department of Employment. (1993). Family Expenditure Survey, 1968. [data collection]. UK Data Service. SN: 3045, DOI: http://doi.org/10.5255/UKDA-SN-3045-1

b) EFS [2001/02]

Department for Environment, Food and Rural Affairs, Office for National Statistics. (2007). Expenditure and Food Survey, 2001-2002. [data collection]. 3rd Edition. UK Data Service. SN: 4697, DOI: http://doi.org/10.5255/UKDA-SN-4697-1

c) LCFS [2008]

Department for Environment, Food and Rural Affairs, Office for National Statistics. (2020). Living Costs and Food Survey, 2008. [data collection]. 3rd Edition. UK Data Service. SN: 6385, DOI: http://doi.org/10.5255/UKDA-SN-6385-1

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22 We discuss this approach to dealing with 'outliers' and compare it with alternative approaches in the sensitivity analysis in Appendix 2.

Appendix 2: Sensitivity analysis

In the course of preparing our analysis we have had to make a number of decisions on issues such as:

— The way in which monetary values in historic survey data are brought up to date

— Our sample selection, including the lower age limit, and whether we include individuals who are over the lower age limit but may still be 'non-retired'

— How we deal with potential distortions arising from the presence of 'outliers' in the expenditure data

In each of these examples, the choice we make will affect the results we derive. In the course of the report, we have explained the reasons for the choices that we have made, but in this section we test whether the qualitative nature of findings would differ if we had made different choices in three key areas.

a) Method of revaluation

A standard way of adjusting historic data on expenditure to reflect current prices is to revalue using a price index.

For most of the period under examination, the generally accepted measure of inflation was the Retail Prices Index (RPI). This was used for any inflation linkage in the state pension system and was also used for indexation of many company pensions. However, after 2010 the inflation measure used by the Government for state pension increases switched to the (generally lower) Consumer Prices Index (CPI), whilst company pensions used a mix of RPI (where their scheme rules specified this inflation measure) or CPI.[23]

Because RPI was the dominant inflation measure in use between 1968 and 2010, and because RPI continues to be used by many occupational pension schemes, we opted to reflate historic monetary values by this index throughout the analysis. However, one reason why RPI was dropped as an official statistic is because of concerns over its accuracy as an inflation measure and because of a desire to move to a more internationally standard measure. It is therefore worth verifying whether using the CPI as the reflator would have significantly altered our results.

We look first at the spending profile through retirement of the oldest cohort, those born between 1902 and 1906, and compare the results under

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[23] For more information on the differences between RPI and CPI see: Office for Budget Responsibility (2023). The long-run differ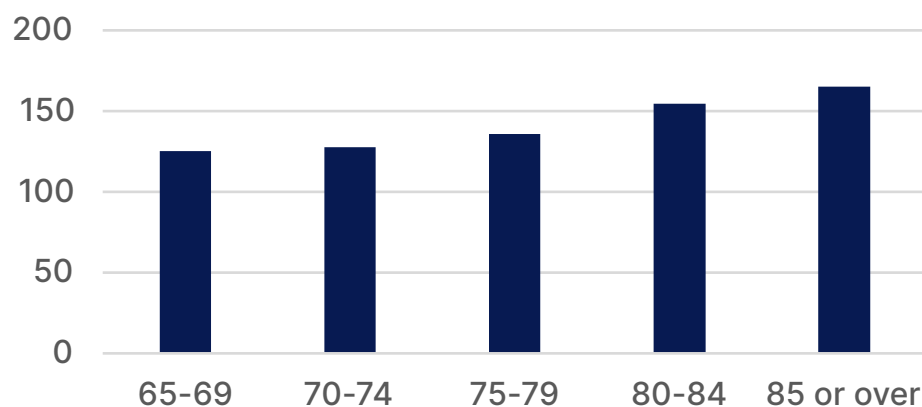ence between RPI and CPI inflation. Available at: https://obr.uk/box/the-long-run-difference-between-rpi-and-cpi-inflation/

different inflation measures.

Figure A1. Real spending through retirement for 1902-06 cohort
a) RPI reflation
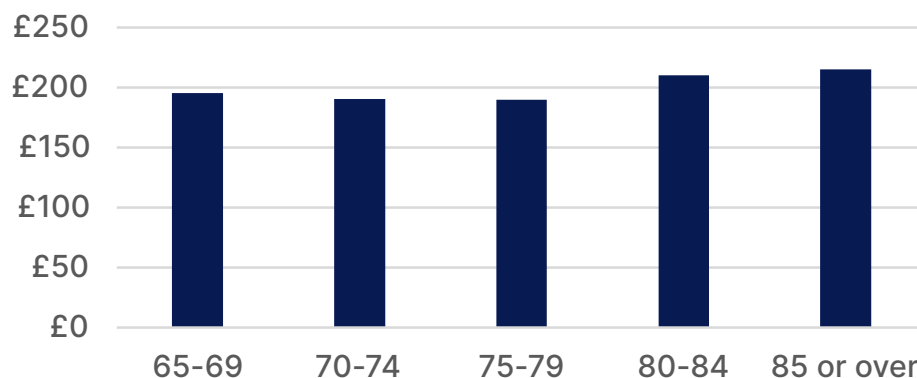
b) CPI reflation

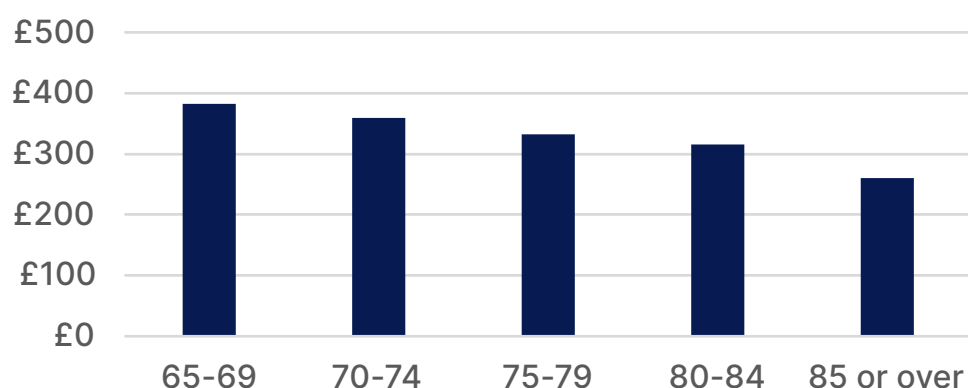Source: Authors' calculations based on FES and successor surveys

When historic numerical values are brought up to date using the CPI, which has produced much lower figures for inflation than RPI, the absolute numerical values will be lower. The progression of real spending through retirement will however be faster, as we are benchmarking actual spending against a lower inflation figure as shown in Figure A1.

However, a key point is that our main observation for this earlier cohort is that – far from being front-loaded – the expenditure of this group was, if anything, end-loaded, is reinforced by the use of a CPI reflator.
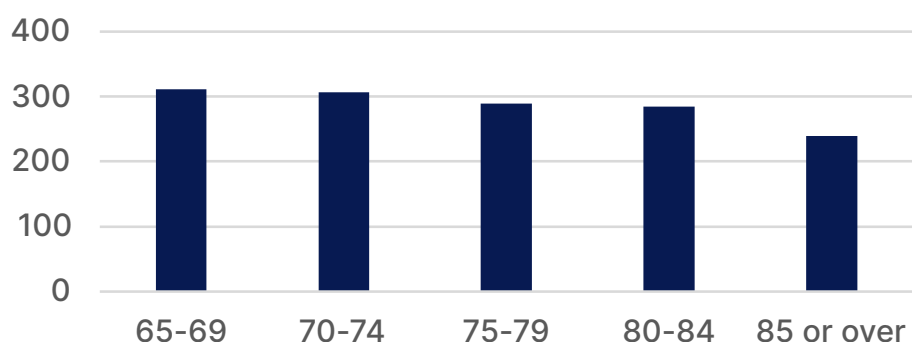
Turning to the most recent cohort, that is, individuals born between 1932 and 1936, Figure A2 looks at the sensitivity to choice of reflator.

Figure A2. Real spending through retirement for 1932-36 cohort

a) RPI reflation

b) CPI reflation

Source: Authors' calculations based on FES and successor surveys

As with the previous cohort, the absolute numerical values are lower with CPI reflation, but the impact is smaller because this cohort was interviewed much more recently on average than the 1902-06 cohort.

In terms of the profile of spending through retirement, using a lower inflation measure tends to dampen the decline in spending, but there is still some indication of a gradual downward slope even in the CPI chart. Perhaps more importantly, the contrast between the earlier and later cohorts remains stark even with an alternative measure of inflation – whether using RPI or CPI, the older generation spent progressively more through retirement whereas the later generation spends less – and potentially much less – as they age.

b) Inclusion / exclusion of non-retired households

Patterns of working past pension age have changed considerably over the last half a century, and we are currently seeing a marked increase in the number of people who continue to work beyond state pension age. As we are interested in how people shape their spending in later life, we took the view that we would miss some important trends if we excluded those who

are still working (even if only part-time).

On the other hand, it may be that some people only choose to access their pension pot once they have finally stopped working, and in this case, their spending patterns are only relevant when they no longer have a wage.

To test the impact of including or excluding those with earnings, we next present the results for our entire sample (now reverting to RPI for all charts) first including those with earnings, and second excluding them.
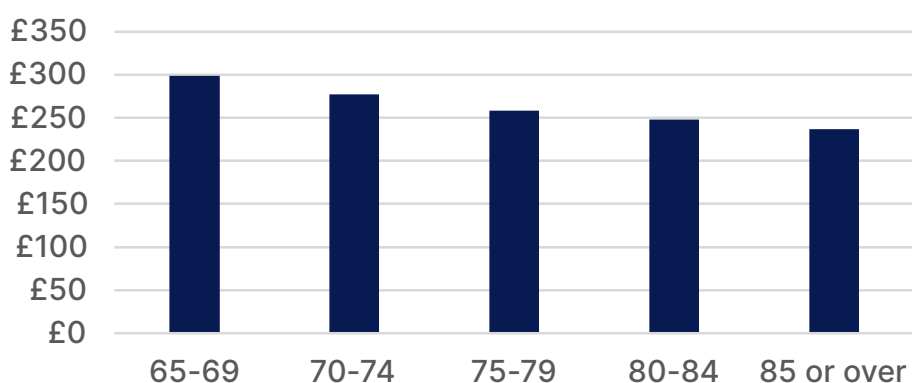
Figure A3. Real spending through retirement, 1968-2019

a) Including those with earnings
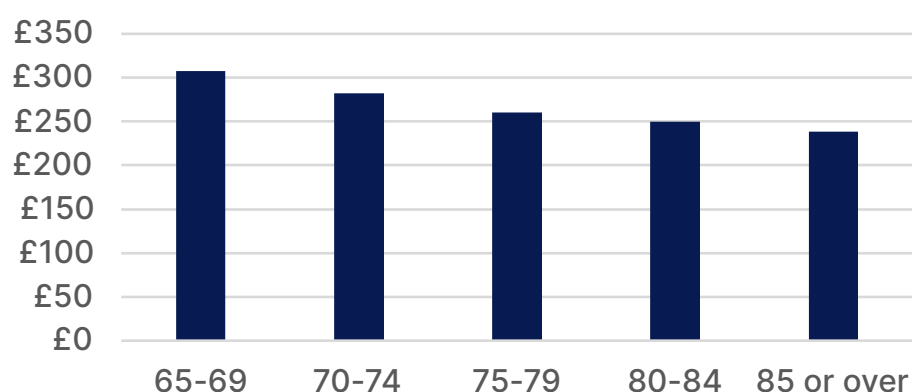
b) Excluding those with earnings

Source: Authors' calculations based on FES and successor surveys

Because only around 1 in 8 of our entire sample has any household earnings, excluding this group has a relatively modest impact on average real values for household spending. More importantly, a comparison of the two charts in Figure A3 shows that even excluding those with earnings (who are naturally concentrated amongst the younger age groups) does not materially change the picture of an overall downward trend in real spending through retirement.

c) Treatment of outliers

In any sample survey there is always a risk that extreme observations will distort the overall picture. Given that we are not observing the same households from one year to the next, this is a particularly important issue, as our conclusions about trends depend heavily on the assumption that each year's sample is essentially a random and representative sample of the relevant population as a whole.

In the context of results for the entire sample of over 100,000 pensioners, a small number of outlier figures for expenditure would not be expected to distort the results. But once we analyse spending behaviour among particular subgroups – for example, homeowners in a particular five-year birth cohort and within a particular five-year age band, the risk of distortions arising from outliers becomes more serious.

The approach we have taken in most of this report is to 'top code' extremely high expenditure figures by capping them at the 99th percentile of the relevant distribution. For example, this means that a chart showing data for homeowners by age group has been capped in this way for each age group of homeowners separately.

Another option would have been to effectively strip out the effect of outliers by using medians rather than means. One reason we opted not to do this is that we wanted to be able to decompose total spending by average amounts spent in different categories, and this produces much more intuitive results when dealing with mean spending totals. But we do switch to medians when dealing with the most detailed breakdowns as presented in Section 7.

To test whether using medians rather than top-coded changes the qualitative nature of the findings, we next present the results for our oldest and youngest cohorts respectively, first with top-coded mean values and second on the basis of medians.
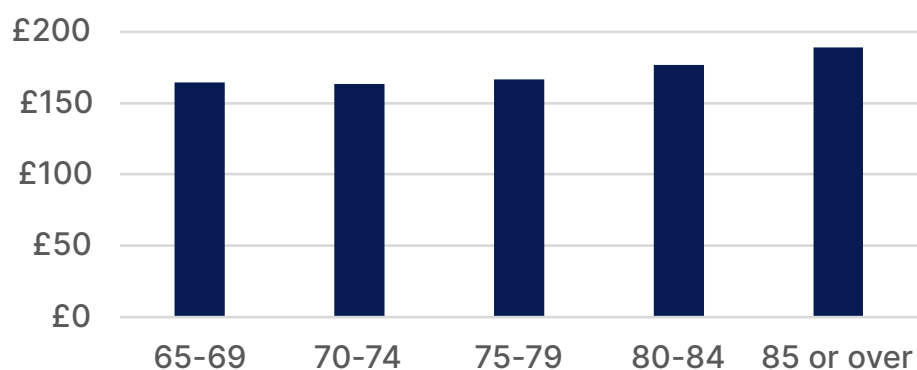
Figure A4. Real spending per head through retirement, 1902-06 cohort

a) Top-coded mean spending
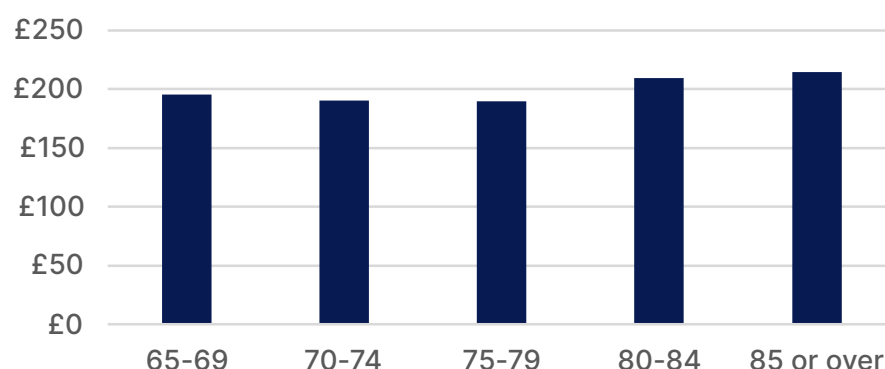
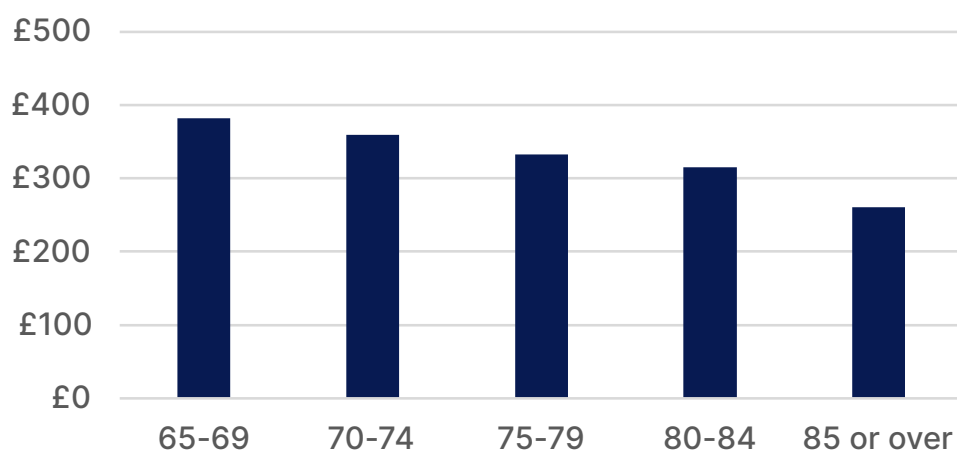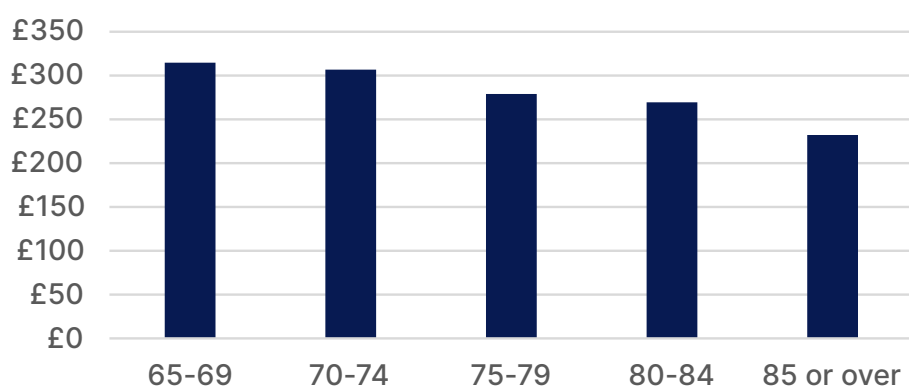**b) Median spending**

Source: Authors' calculations based on FES and successor surveys

Figure A5. Real spending per head through retirement, 1932-36 cohort

a) Top-coded mean spending

b) Median spending

Source: Authors' calculations based on FES and successor surveys

Comparing Figures A4 and A5 we observe that the contrasting spending profile between earlier and later cohorts is still visible, whether we summarise the data by using a top-coded mean or a median. If anything, the median chart for the earlier cohort shows a smoother upward trend in real spending than its mean-based counterpart, perhaps suggesting that there may be some 'noise' in the former chart arising from outlier values being more prevalent in some years of survey data than others.

The sensitivity analysis has shown that decisions regarding how one reflates historic data, which groups to include in the sample, and how best to summarise the data do clearly have a material bearing on the results. Nevertheless, it also shows that the main qualitative nature of the findings are robust to these particular methodological choices.