

Appendices

A Data Sources and Methods

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Appendix A: Data Sources and Methods

The PIS series in 2003/04 is based on the Households Below Average Income (HBAI) dataset, which is itself based on the Family Resources Survey (FRS). The HBAI publication makes an adjustment for households with very high incomes as the FRS under-records information about these households. This adjustment is based on data from the Survey of Personal Incomes (SPI) from the Board of the Inland Revenue.

The FRS does not collect information on people living in institutions, e.g. nursing homes, jails, and homeless people living rough or in bed and breakfast accommodation and so these are not represented in the Pensioners' Incomes Series.

The Northern Ireland PI Series gives single financial year estimates.

More Information on Data Sources and Methodology

Methodological papers on the Pensioners' Income Series is the same as that used for the UK publication, and is published on the DWP Pensioners' Income website: www.dwp.gov.uk/asd/asd6/pensioners_income.asp (and paper copies are available on request from them). These include papers on negative incomes, personal pension income, and definitions of pensioner unit.

Information on design and response rates of the FRS can be found on the DSD website at: www.dsdni.gov.uk/index/stats_and_research/family_resources_survey.htm.

A Robustness Assessment Report considering income data on the FRS can be found on the DWP website, on the Households Below Average Income web page at www.dwp.gov.uk/asd/hbai.asp.

Definitions of Gross and Net Income

Gross Income

Within the Pensioner Income Series gross income is generally separated into six components:

- Income from benefits – in section 3 this is further divided into National Insurance related benefits (mainly State Pension); income related benefits; and disability related benefits.
- Income from occupational pensions.
- Income from personal pensions.
- Income from investments.
- Earnings, including profit and loss from self-employment.
- Other income, which includes benefits from Friendly Societies, income from dependent children, and free TV licences for the over 75s.

Net Income

Net income before housing costs (BHC) is gross income less: income tax payments; National Insurance contributions; contributions to occupational and private pension schemes; local taxes; maintenance and child support payments; and parental contributions to children living away from home.

Net income after housing costs (AHC) are also net of: rent; structural insurance (for owner occupiers); mortgage payments (net of any tax relief); and ground rent and service charges. Income from Housing Benefit is included within gross income as a social security benefit.

Negative Incomes

Negative incomes are not thought to be indicative of standards of living. Pensioner units with negative net income before housing costs have their gross income components of income, and their net income before housing costs, set to zero. Net income after housing costs is set to zero minus housing costs, and so for a small number of cases will be negative.

See the PIS methodological paper no 2 for more information on negative incomes. This is available on the DWP website at: www.dwp.gov.uk/asd/asd6/pensioners_income.asp.

Households Below Average Income and the main Pensioners' Incomes Series

Tables 21 and 22 in Pensioners' Income provide information on the position of pensioners within the overall income distribution. These tables define pensioners as adults in families headed by people over state pension age. This definition was used in the Households Below Average Income (HBAI) pensioners chapter up to 2000/1. Since 2001/2 HBAI has defined pensioners as those over state pension age; the two tables in Pensioners' incomes have not adopted this convention in order to maintain consistency with previous UK publications, and because it is closer to the PIS definition of Pensioner Couples, i.e. couples where the man is over state pension age regardless of the age of the woman. The Pensioners' Income team will be looking at whether to adopt the current HBAI definition for the next edition of Pensioners' Incomes Series.

The full HBAI publication can be found on the DSD website. Results from the two types of analysis should not be directly compared. The main differences between the HBAI and PIS methods of analysis are:

Income components: The PIS results include analysis of the components of pensioner unit income (benefit income, occupational pension etc). HBAI, with its broader span of interests, does not present detailed analysis of this sort.

Household or pensioner unit: The PIS is generally concerned with cash incomes directly received by pensioners. It measures the income of pensioner benefit units only, ignoring income received by any other members of the household. HBAI attempts to measure material living standards, so it takes account of all the income coming into the household where the pensioner lives.

Equivalisation: To allow comparison of living standards of different households, the HBAI 'equivalises' household income, adjusting it to take account of household size and composition. One of the main functions of the PIS is to provide information on the cash income of pensioner units, split by sources of income. This can only be done using unequivalised income. Indeed equivalisation is not necessary for most PIS results, which are presented separately for pensioner couples and single pensioners. However, PIS results for all pensioner units are affected by changes in the balance between couples and singles. To avoid unnecessary complexity, the main PIS results are presented in monetary terms, at constant 2003/04 prices, rather than equivalised income.

'All pensioner units' average: The PIS series, when using non-equivalised cash income for single pensioners and couples, also produces an average across both groups: the 'all pensioner units' figure. Its object is to demonstrate broad trends in growth and composition of pensioners' incomes over the longer term. However this average is affected by changes in the proportions of single pensioners and couples, and so should be looked at together with couple and single pensioner unit information. Equivalisation in HBAI, and in Tables 21 and 22 in PIS, adjusts for this effect.

An alternative approach is to consider the growth in the incomes of all pensioner units keeping fixed the proportion of singles and couples over time.

A Summary Guide to Interpretation of the results within the Pensioners' Incomes Series 2003/04

Measures of Income

Use...	If...
Gross	<ul style="list-style-type: none"> interested in how much income pensioners receive. interested in different sources of income.
Net	<ul style="list-style-type: none"> interested in income available for pensioners to spend (excluding the income of other household members), either before or after housing costs.
Mean	<ul style="list-style-type: none"> interested in all income available to pensioner units in a particular group. do not consider the influence of the highest incomes to be a major problem. interested in breaking down income by source.
Median	<ul style="list-style-type: none"> interested in the income of the 'typical' pensioner unit. do not want the average distorted by a small number of high incomes. looking at distributions of incomes.
Average for all	<ul style="list-style-type: none"> interested in all income available to pensioner units in a particular group. do want to include all those with no income from a particular source.
Average for those in receipt	<ul style="list-style-type: none"> interested in the average 'rate' at which people receive income from a particular source of income. interested in an individual source of income.
All pensioner units	<ul style="list-style-type: none"> interested in broad trends in cash amounts for pensioners as a whole.
Singles and couple separately	<ul style="list-style-type: none"> comparing subgroups that contain different proportions of singles and couples. looking at distributions of incomes.

Measuring living standards

Incomes are often used as a measure of the 'standard of living' achieved by different groups. However, there are many other factors that can affect living standards, such as wealth, physical health or expenditure. Furthermore, estimates of pensioner unit income in the Pensioners' Incomes Series do not take account of the income of other members of the household, which could affect pensioners' standards of living. Therefore income estimates should only be regarded as broadly indicative of living standards.

Comparing incomes

Great care should be taken when comparing groups with similar incomes, or looking at changes in income over a short-time period, since random sampling fluctuations mean that estimates should be regarded as a broad indication of trends only (see Appendix B).

Appendix B: Reliability of Estimates in the Pensioners' Incomes Series

The analyses in this publication are based on household surveys, so no estimate should be treated as exact as there are several reasons for uncertainty in the estimates. These include potential reporting errors, systematic bias in the sample and random sampling errors. Therefore care should be taken when interpreting these estimates and they should only be used as indicators of broad patterns and trends.

Sources of uncertainty

Reporting errors: Imperfect recall and respondents choosing to deliberately give incorrect answers are examples of reporting error. If these errors are systematic they may lead to bias in survey estimates of average income and proportions in receipt. There is evidence that such a downward bias exists in survey estimates for amounts and proportions in receipt of Minimum Income Guarantee.

Systematic bias in the sample arises if certain groups are less likely to respond to a survey than others. This is corrected to some extent in the FRS by weighting to match subgroups of the population by age, gender, family status, tenure, council tax band and broad geographic region. It is impossible to account for all possible bias so some results are still affected.

Random Sampling errors occur in a survey because survey estimates are based on a subset of the population and this subset will not be identical to the remaining population who have not been interviewed.

Because of the above sources of uncertainty, the PIS will not be the most accurate source of estimates for some subjects. For example, administrative data mainly avoids the above three sources of uncertainty and is likely to give a more accurate estimate of the average amount of retirement pension received than survey based PIS estimates. The presence of uncertainty in sampling estimates means that caution should be exercised in drawing conclusions using two similar results where the difference may be due to the errors or biases mentioned above.

Estimating sampling error

The sampling error around an estimate can be measured by the size of its 'standard error'. The standard error of an estimate is typically calculated under the assumption of simple random sampling (i.e. where every member of the population has an equal and independent chance of selection). In practice, the design of the survey is more complicated than that, typically leading to a larger standard error. The effect of the design of the survey on the standard error of a given estimate can be measured by its '**design factor**', which is equal to the standard error calculated under the survey design in question, divided by the standard error calculated under simple random sampling.

The standard error can be converted into a 'confidence interval' which gives an indication of the degree of uncertainty surrounding the estimate, by giving a range that the true mean is likely to be within. For example, if mean income is £201 a week, with a 95% confidence interval of +/- £4, then it this means that in 95% of all possible survey samples that we could have taken, we would expect the estimated mean to fall within the range £197 to £205. In other words we can be 95% confident that the true mean lies within that range.

The wider that a confidence interval is, the more uncertainty there is, and the less we can infer about the true mean. The two main factors affecting the size of confidence intervals are the sample size and how much the income measure in question varies from pensioner unit to pensioner unit.

The smaller the **sample size** that an estimate is based on, the wider the confidence interval will be so the fewer people we have information about, the more uncertainty there will be when we make claims about the whole population. Consequently there will be a wider confidence interval around the estimated mean income of single male pensioners, for example, than of all pensioner units.

The more **variability** in the income measure, the wider the confidence interval is likely to be. If there is a wide range of incomes in the population, there is more risk of choosing a survey sample that includes incomes that are very different from the true mean. So, estimates of mean benefit income are likely to have smaller confidence intervals than estimates of investment income, as the range of possible values of benefit income is much narrower.

Uncertainty surrounding selected estimates in the Pensioners' Income Series, 2003/04

Results based upon data from the FRS

Incomes in £ per week, 2003/04 prices

	Estimate £pw	Standard Error	95% confidence interval		
			Interval Width	Relative Width	Interval Range
All Pensioner Units					
Gross Income	258	11	22	9%	[235, 280]
Of which:					
Benefit income	158	3	5	3%	[152, 163]
Occupational pension	62	8	15	24%	[47, 78]
Personal pension income	8	3	6	75%	[2, 15]
Investment income	9	1	3	30%	[6, 12]
Earnings	18	7	13	72%	[5, 32]
Mean net income					
Before housing costs	235	10	20	8%	[216, 255]
After housing costs	221	10	20	9%	[201, 241]
Subgroups of pensioners					
Mean net income BHC					
Pensioner couples	331	21	42	13%	[289, 373]
Single pensioners	171	4	8	5%	[163, 179]
Recently retired head	280	32	62	22%	[218, 343]
Head under 75 years	251	14	28	11%	[223, 279]
Head over 75 years	214	12	24	11%	[190, 238]
Single male pensioners	167	9	17	10%	[150, 184]
Single female pensioners	172	5	9	5%	[163, 181]

Assessing the reliability of an estimate depends not only on the absolute size of its confidence interval, but also on how large the confidence interval is relative to the estimate itself. For example, an estimate of £100 +/- £10 gives a confidence interval of [£90, £110], while an estimate of £10 +/- £10 gives a confidence interval of [£0, £20]. Clearly we may want to treat these two estimates differently when advising on their reliability. The simplest way of capturing this effect is to look at the **relative confidence interval**, which is the width of the confidence interval calculated as a percentage of the estimate itself. The examples above give relative confidence intervals of 10% and 100% respectively.

The table on the previous page gives some examples of standard errors and confidence intervals that have been calculated for estimates of pensioners' average incomes in 2003/04. It shows that while there is a degree of uncertainty about the estimates it does not effect the broad conclusions drawn, such as the relative importance of different types of income, or the fact that single men on average have higher incomes than single women.

Where uncertainty restricts the conclusions that can be drawn from such comparisons, users would be advised to look at the results over several years for more evidence of the true pattern. For example, if group A had substantially higher income than group B in each of the four preceding years (and there is no reason to suspect that the current year should be any different), then there is more evidence that group A genuinely has a higher average income. As there are only two consecutive years of results available to date, it will be impossible to make four year comparisons such as this until we have results for both 2004/05 and 2005/06.

Comparisons over time represent a special case. Over short time periods it is likely that an income measure will not change dramatically, and so any uncertainty is likely to be large compared with the change itself. That is why users are strongly advised not to draw firm conclusions from looking at year-on-year changes, as recent growth estimates for smaller subgroups of pensioners are even more uncertain.

Survey design effects have been incorporated into the calculation of standard errors for most of the 2003/04 estimates. However, for some 2003/04 estimates it has not proved possible to do this. For these estimates, standard errors and confidence intervals have been calculated using simple random sampling assumptions.

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