Household incomes in New Zealand: Trends in indicators of inequality and hardship 1982 to 2016

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Changes since last report

- The 2017 report updates the previous one with findings based on the 2015-16 Household Economic Survey (referred to as the 2016 HES).
- It also has new analysis, including:
    - comparison of trends in median equivalised disposable household income for New Zealand and Australia since c 2000 (p70)
    - the proportion of 'middle-income' households – a New Zealand time series and comparisons with other OECD countries (p93)
    - the impact of the tax-transfer system on income inequality – a New Zealand time series and OECD comparisons (pp191ff)
    - changing tenure arrangements for older New Zealanders (p171)
    - strengthened evidence-base for the report's conclusion that relative low-income measures (based on a % of median) are not suitable for use for international league tables of 'poverty' (pp175-178)
    - more on whether the choice of equivalence scale makes much difference to levels and trends of reported income poverty (Appendices 3 and 12)
    - where on the income spectrum the new money goes in the Families Income package announced in the 2017 budget (Appendix 15)
    - more information on unequivalised household income (ie in ordinary dollars, before adjustment for household size and composition) (Appendix 10).

Next report

- The next report is scheduled for mid 2018 based on the 2017 HES. (The timing is dependent on the availability of the HES data.)

Availability on MSD website

- This report and previous ones are available on the MSD website: www.msd.govt.nz/about-msd-and-our-work/publications-resources/monitoring/index.html

Updates since publication on 25 July 2017

Nil

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Contents

Abbreviations

AHC	After (deducting) housing costs
AS	Accommodation Supplement
BDL	Benefit Datum Line
BHC	Before (deducting) housing costs
CV	Constant value (referring to low-income thresholds or 'poverty lines' kept constant in real terms) = 'anchored lines'
DPB	Domestic Purposes Benefit
EFU	Economic family unit
EU	European Union
Eurostat	The Statistical Office of the EU
FT	Full-time (30 hours or more per week)
GFC	Global Financial Crisis
HES	Household Economic Survey
HLFS	Household Labour Force Survey
HH	Household
HNZC	Housing New Zealand Corporation
IB	Invalid's Benefit
MEDC	More economically advanced country
NAOTWE	Net average ordinary time weekly earnings
NIM	Non-income measure (or sometimes, a non-monetary indicator (NMI))
NZPMP	New Zealand Poverty Measurement Project
NZS	New Zealand Superannuation
OECD	Organisation for Economic Co-operation and Development
PMP	Poverty Measurement Project
PT	Part-time (less than 30 hours per week)
REL	Relative-to-contemporary-median (referring to low-income thresholds or 'poverty lines' that are calculated as a proportion of the median for the survey year in question) = 'moving lines'
SB	Sickness Benefit
SoFIE	Survey of Family, Income and Employment
SP	Sole parent
2P	Two parent
Taxmod	The NZ Treasury's tax-benefit microsimulation model (up to HES 2004)
Taxwell	The NZ Treasury's tax-benefit microsimulation model (starting with HES 2007)
TPG	Total poverty gap
UB	Unemployment Benefit
UNICEF	United Nations Children's Fund (formerly, the United Nations International Children's Emergency Fund)
WFF	Working for Families
WL	Workless (adult or HH)

- 'Dependent children' are all those under 18 yrs, except for those 16 and 17 year olds who are in receipt of a benefit in their own right or who are employed for 30 hrs or more a week.
- When 'child' is used without qualification, it means 'dependent child'.
- A household 'with children' always means a household with at least one dependent child – the household may or may not have adult children or other adults who are not the parents or caregivers.

About this report

This report provides information on the material wellbeing of New Zealanders as indicated by their household incomes from all sources over the period 1982 to 2016. It updates the last report published in 2016 which covered 1982 to 2015.

It is one of a suite of three reports that provide information on the material wellbeing of New Zealanders. The suite includes:

- the Household Incomes Report
- the companion report that uses non-income measures (NIMs) to measure and track material wellbeing
- an Overview report which provides a 40-page summary and synthesis of the findings in the two longer reports.

A short Summary document that covers both the Incomes and the NIMs reports is available on MSD's website, along with another which gives some Guidelines on using and interpreting the findings in the reports.

The income measure used in the Incomes Report is household after-tax cash income for the twelve months prior to interview, adjusted for household size and composition. This is referred to as equivalised disposable household income and is taken as an indicator of a household's access to economic resources and of its (potential) living standards.

The major focus of the report is on trends in income-based indicators of inequality and hardship. These trends are set in the context of a description of the changing overall income distribution in the period. Extensive international comparisons are provided.

The report is about more than just the numbers. It also provides commentary, contextual information and technical notes to assist the reader with a better understanding of the indicators and the trend figures they produce.

All results are estimates, based in the main on data from Statistics New Zealand's Household Economic Survey (HES) which is a nation-wide survey with an achieved sample in recent years of of around 3000 to 3500 private households. The latest income information is from the 2015-16 HES (2016 HES, for short) which had an achieved sample of 3499 private households.[1] The interviews for the survey are conducted face to face and for the 2016 HES were carried out from July 2015 to June 2016. The income questions ask about incomes for the twelve months prior to the interview.

The report is published as part of the Ministry of Social Development's work on monitoring social and economic wellbeing. It is designed as a consolidated and accessible resource for use by a wide range of individuals and groups (policy advisors, researchers, students, academics, community groups, commentators and citizens more generally), to inform policy development and public debate around poverty alleviation and redistribution policies.[2]

This is the eleventh issue in the series of Income Reports which will be updated in similar format as new HES datasets become available. The next update with new findings is expected in mid 2018 based on the data from the 2017 HES.

The scope of the report is relatively narrow. Its focus is on the material wellbeing of New Zealanders as indicated by the equivalised disposable income of their households. Although it has a short section on the extent of re-distribution of households' market income through taxation and

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[1] The full HES is run each three years (2003-04, 2006-07, 2009-10, and so on). Starting with 2007-08, a shortened version of the full HES has been run in the two intervening years to collect data on incomes, housing cost expenditure and living standards indicators. It is referred to as the HES (Income). For more detail on the HES in general, and especially on the 2015-16 HES, see www.stats.govt.nz/hes

[2] The report shares many of the assumptions used by the New Zealand Poverty Measurement Project (Stephens et al, 1995; Waldegrave et al, 1996), Mowbray (2001) and Easton (1995a, 1995b, 1996) in their reporting on poverty trends in New Zealand.

government spending, it does not seek to give an account of how household income comes together from individual market incomes, social assistance paid to benefit units, and New Zealand Superannuation paid to older New Zealanders. Nor does the report seek to give a comprehensive explanation of the reported trends by drawing on the usual mix of labour market, demographic and macro-economic and geo-political factors, and on changes in tax and social assistance policy settings. Some limited context is given to point to macro-level changes that impact on household income, but the report is essentially descriptive.

There are several Appendices which provide more detail on some of the concepts, definitions and assumptions used in the report, and how these impact on the reported levels and trends in inequality and poverty.

Summary inequality figures are available from page 78 and from page 187 (international comparisons), and trends in low incomes / income poverty for the whole population and dependent children can be found from page 111 on. There is an Annex to Section H (starting on page 150) that brings all the child poverty and hardship material together in one place.

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Copies of the report are available on the Ministry of Social Development's website at:
www.msd.govt.nz

Feedback on the report is welcomed, especially any suggestions for possible additional information or for the clarification or better presentation of what is already included.

For feedback and enquiries, contact Bryan Perry at: bryan.perry001@msd.govt.nz

Section A
Introduction

This Introduction outlines the main concepts and assumptions used in the report. More detail is provided on selected issues in the Appendices and in other Sections as indicated.

Following the definitions below of the income measures used in the report, the Introduction is divided into two parts:

- The first outlines and discusses the over-arching income-wealth-material-wellbeing framework used in this report and in the companion report using non-incomes measures (NIMs).

- The second sets out the key assumptions and approaches used in the income data analysis that forms the basis of the report. More detailed discussion of the income poverty measures is in Sections E.

The income measures used in this report

Gross and disposable household incomes

Gross household income is the total of all income before tax for the previous 12 months from all sources for all household members aged 15 years or over. Gross household income is calculated directly from the income information given by respondents in the survey.[3]

Disposable household income is the total of all after-tax income for all household members. To calculate disposable income Statistics New Zealand uses the Treasury's tax-benefit microsimulation model (Taxwell[4]) to estimate tax liabilities for individuals and benefit units. The resulting personal disposable incomes are summed to give disposable household income. Disposable household income is sometimes referred to as net income or after-tax cash income.

Equivalised disposable household income

The primary income measure used in the report is disposable household income for the twelve months prior to interview, adjusted for household size and composition. This is referred to as equivalised disposable household income and is the international standard income measure for reports of this type. The rationale for adjusting for household size and composition and the difference that different equivalence scales make to findings are discussed below, after the next section.

In line with international practice, income from capital (eg interest and dividends) is included, but capital gains themselves are not.[5] A capital gain or loss for a household is treated as a change in net worth or wealth, except where the proposed "capital gain" is in fact income as defined by tax law.

[3] In general, income is regarded as all receipts which are received regularly or are of a recurring nature. The sources are wages and salaries, self-employed income (defined as the before-tax profit/loss of the business), social welfare benefits (including Family Support and its tax credit successors, and the Accommodation Supplement and its pre-cursors), New Zealand Superannuation and war pensions, income from investment, and other regular income (such as maintenance and directors' fees). For a business which recorded a loss in its latest balance sheet or profit and loss account, the respondent concerned is allocated a negative amount for self-employment income, the amount being the full loss or, in the case of a partnership, the respondent's share of the loss.

[4] For 1982 to 2004, the incomes data is calculated using Taxmod, the predecessor of Taxwell.

[5] UNECE (2011).

Income, wealth (net worth), consumption and material wellbeing

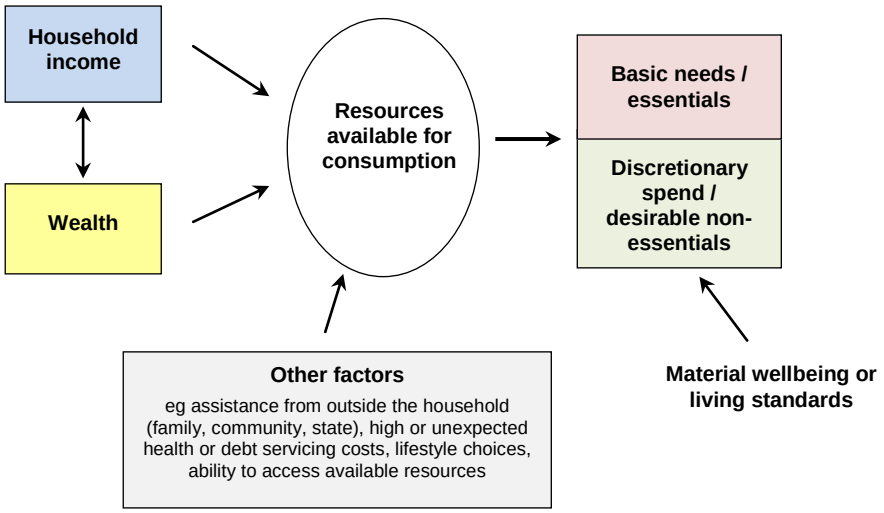
This report is about household incomes, their trends and levels over time, and how dispersed they are (levels of income inequality). While this information is of value in itself, one of the motivations for reporting on household income is to discover what it tells us about the material wellbeing of households – changes over time, and the relative positioning of different groups within the population.

In line with common practice among all OECD and EU nations, the report takes household income as an indicator or proxy measure of material wellbeing. Given the importance of income and cash in our sort of economy and society, the range of financial levers available to a government for influencing the distribution of income, and the ready availability of good income data from surveys and administrative records, there is a sound rationale for reports such as this.

Income however is not the only economic resource available to a household to generate its consumption possibilities. A household's wealth (or lack of it) is another crucial factor. A household's wealth is its total financial and non-financial assets less liabilities – this is sometimes called net worth. Income and net worth together largely determine the economic resources available to households to support their consumption of goods and services and therefore their material standard of living.

The diagram below (**Figure A.1**) shows the relationship between income, wealth and material wellbeing in a simple stylised form. It also indicates that "other factors" that vary from one household to the next can also impact on material wellbeing. These are especially relevant for low-income / low-wealth households, and can make the difference between "just getting by" and not being able to meet basic needs.[6]

Figure A.1
The income-wealth-consumption-material wellbeing framework used in the report



Income can be used for the current consumption of goods and services, or saved to increase wealth for later consumption. Some lower-income households have relatively high wealth levels and can support consumption levels well above those with similar incomes but lower net worth.

Households with resources that are not adequate for supporting consumption that meets basic needs (those experiencing poverty or hardship) are of special public policy interest. Low-income households with low net worth levels are especially vulnerable to the negative impacts of unexpected expenses or even small drops in income. Some are unable to purchase the essentials in the first place.

[6] See **Section E** for a more detailed stylised diagram and further discussion.

One of the clear implications of this framework for the central theme of this report (the material wellbeing of New Zealanders as indicated by their household incomes) is that:

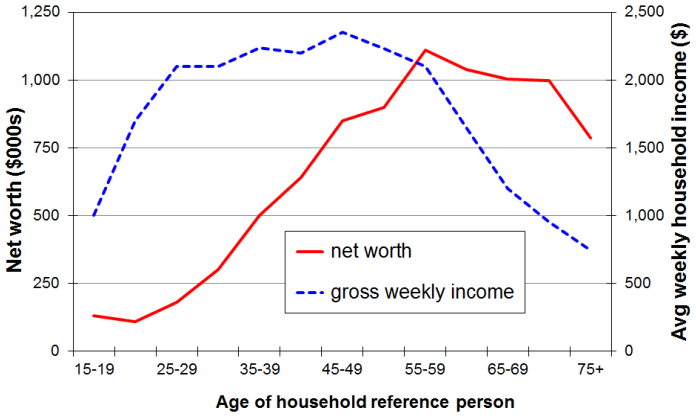
- either, income and wealth (net worth) need to be considered together to produce a proper ranking of households from high to low material wellbeing when basing the ranking on economic resources
- or, material wellbeing needs to be measured more directly using non-income measures.

The rest of this part of Section A looks in more detail at these two implications.

The distributions of household income and wealth, separately and together

Income levels and wealth accumulation vary over the life-cycle. Wealth tends to grow steadily through to near "retirement" age, especially through retirement savings, home ownership and mortgage repayment, then is used to varying degrees in "retirement". Household incomes tend to rise much more rapidly and earlier than wealth, then fall away as paid employment reduces or ceases. **Figure A.2** below shows the average trend for Australia.[7]

Figure A.2
Gross weekly household income and wealth by age of reference person, Australia, 2011-12



Source: Survey of Income and Housing (ABS), reported in ABS (2013b)

The life-cycle trends shown in Figure A.2 are averages. There are many whose life follows other trajectories that are not so tidy. For example, some accumulate very little wealth and become particularly vulnerable later in their life if their household income drops because of a relationship break-up, illness or redundancy.

Table A.1 shows that wealth is distributed more unequally than income. The figures are similar for both Australia and New Zealand. This is a well-established finding that applies to all OECD and EU countries and to many others.

For both Australia and New Zealand the Gini for wealth is roughly double the income Gini. The ratio of top quintile share to bottom quintile share (S5:S1) is 5 for income for both Australia and New Zealand, whereas the same share ratio for wealth is "off the scale" – around 70 for Australia.

[7] New Zealand now has up to date wealth and income data in HES 2014-15, but we have not as yet done the analysis in Figure A.2 using New Zealand data. The analysis that follows draws on the Survey of Income and Housing (SIH) run by the Australian Bureau of Statistics (ABS), and the Household, Income and Labour Dynamics in Australia (HILDA) Survey run by the Melbourne Institute and funded by the Australian Department of Social Services. For New Zealand comparisons, unpublished New Zealand Treasury analysis of the wealth and income information from the 2003-04 wave of Statistics New Zealand's Survey of Family, Income and Employment (SoFIE) and Statistics New Zealand's analysis of the 2014-15 HES are used. In Section L (on wealth), HILDA data is used to briefly report on wealth mobility.

Table A.1
Shares of income and wealth by respective quintiles (%)

		Q1 (low)	Q2	Q3	Q4	Q5 (high)	Share ratio, S5:S1
Household income (equiv dispos)	**Australia**	8	12	17	22	41	5
	NZ	8	13	17	23	40	5
Household wealth	**Australia**	1	5	11	21	62	very large ~ 70
	NZ (SoFIE)	0	5	12	24	59	very large
	NZ (HES)	0	3	9	18	69	very large

Sources: Australia: ABS (2015), using SIH data.
New Zealand: for income, MSD analysis of HES data;
for wealth, unpublished NZ Treasury analysis of SoFIE data (2003-04) and Statistics NZ published analysis of HES 2014-15.

The separate distributions of income and wealth are of interest in themselves, but for the purposes of this report it is the joint distribution of household income and household wealth that matters, especially to better distinguish between households of higher and lower material wellbeing.

Table A.2 shows the joint distribution of income and wealth by reporting the share of total wealth held by households in the five (gross) income quintiles. For both Australia and New Zealand the wealth share ratio S5:S1 for income quintiles is much lower (3-4) than the raw wealth share ratio (70+) and is in fact lower than the income share ratio (5).

Table A.2
Shares of wealth by household income quintiles (%)

HH gross income quintile ➔	Q1 (low)	Q2	Q3	Q4	Q5 (high)	Wealth share ratio, S5:S1
Australia	12	14	15	20	39	3
NZ (SoFIE)	12	15	14	19	39	3
NZ (HES)	9	14	15	22	40	4

Sources: Australia: ABS (2015), using SIH data (2013-14).
New Zealand: unpublished NZ Treasury analysis of SoFIE data (2003-04), and Statistics NZ published analysis of HES 2014-15

The joint distribution of wealth and income as shown in Table A.2 is a more comprehensive indicator of the distribution of household economic resources than either income or wealth on their own. The difference between the raw wealth distribution and the joint income-wealth distribution reflects in part the fact that people accumulate wealth over the course of their lives. Many older people have relatively high wealth (often in the form of a mortgage-free home in the main) but low income. Many younger households have lower wealth but higher incomes than many older people. Some of all ages have low incomes and low wealth levels.[8]

Using the joint income-wealth distribution for better distinguishing between households with lower and higher material well-being (living standards)

Given the persuasive logic and potential public policy value of using income and wealth information to better identify the most disadvantaged households, why is it that this approach is not used as standard practice? There are two main challenges:

- first, for many countries, there are data limitations in that most regular income surveys do not also have wealth information
- second, it is not clear how best to combine the income and wealth information into one number for each household to allow household rankings to be made.

The Australian efforts in this regard are well-advanced. For New Zealand, in the 2014-15 HES Statistics New Zealand collects income, wealth and more direct material wellbeing information in

[8] See Whiteford (2014) for further commentary on the joint distribution.

the one survey and plans to do so at regular intervals. This is a welcome advance that enables analysis that will give more comprehensive understanding of the links between income, wealth and material wellbeing.

However, even where good income and wealth data are available, there is no agreed way of combining the two to rank individual households on a single scale from high to low material wellbeing. This remains a significant challenge.[9]

Even if income and wealth information cannot (yet) be combined at a household level to rank households by their economic resources, the information can be clumped at, say, a quintile level on the two dimensions in a simple cross-tabulation that enables the range of joint income and wealth scenarios to be better understood, and for the most vulnerable low-income-low-wealth groups to be identified.

Table A.3 illustrates this based on Australian data for 2009-10. It shows that around one third (35%) of those in the lowest income quintile are also in the lowest wealth quintile, while around a quarter (26%) have wealth in the top two wealth quintiles. Clearly the material wellbeing and actual day-to-day living standards of the latter group will be higher than for those with both low income and low wealth.

Table A.3
The distribution of wealth across household income quintiles, Australia (2009-10)

(%)		Household income quintiles				
		Q1	Q2	Q3	Q4	Q5
Household wealth quintiles	Q1	35	25	16	11	5
	Q2	17	21	21	22	17
	Q3	21	21	23	19	13
	Q4	15	19	24	25	20
	Q5	11	14	16	23	44
	ALL	100	100	100	100	100

Source: Table 8.3 in OECD (2013), from Australia's Survey of Income and Housing

It is tempting to use a tidy-looking table like Table A.3 to reach conclusions about what proportions of low-income households (say, Q1) have low living standards and what proportion do not. To get to that next step requires further information about the actual wealth levels in the bottom two to three wealth quintiles. If these quintiles all have very low wealth, and Table A.1 indicates that they do, then the vulnerable low-income group expands from 35% to 74% of the bottom income quintile. As is the case for low-income thresholds themselves, judgement calls have to be made about what wealth levels are sufficient to consider low-income households to no longer be vulnerable or "resource-poor". In addition, the composition of the household wealth is relevant too, with some types being more liquid and accessible than others.

Future analysis of the 2015 HES will allow us to also identify the proportion in each cell in a table like Table A.3 who are also in material hardship (using the non-income measures in the HES). This will give a more comprehensive and robust picture of where the vulnerable groups are in the income-wealth grid.

Using non-income measures to measure material wellbeing

Non-income measures (NIMs) are now widely used in EU and in many OECD nations to more directly measure the material wellbeing of households, especially at the low living standards or "hardship" end of the spectrum. NIMs are sometimes called non-monetary indicators.

[9] The OECD recently published a report on a "Framework for Statistics on the Distribution of Household Income, Consumption and Wealth" (OECD, 2013). It was one of the products of a 2011-12 work programme of an OECD expert group, chaired by Bob McCall from the Australian Bureau of Statistics, whose task was to improve existing metrics for measuring people's economic well-being at the micro level, i.e. at the level of individuals and households.

Using this approach, the impacts on material wellbeing of different levels of income and wealth and of the differing experiences of the "other factors" noted in Figure A.1 are all captured in the different scores reported using indices based on NIMs.

In addition to monitoring material wellbeing using household incomes, MSD also monitors material wellbeing and hardship through the use of non-income measures (NIMs) based around the basics people have and do not have, and the freedoms or restrictions they have in purchasing desirable non-essentials. Further detail is available in the companion NIMs report and in other publications available on MSD's website.[10]

The HES has collected information on NIMs since HES 2007.

Summing up: the use of household income as an indicator of material wellbeing

In the context of the framework indicated in Figure A.1, household income is taken to be either an imperfect but readily available and very important indicator of the "consumption possibilities" for a household, or as an indicator that allows comparisons of the potential living standards of households, all else assumed equal.

While the incomes approach has recognised limitations, there are several other factors to consider too when assessing its value for monitoring material wellbeing and hardship:

- Income and cash-in-the-hand are very important in our sort of economy and society. This is especially so for households that have low incomes, very tight budgets and very limited or negative net worth. Monitoring trends in low household incomes is very important for understanding how the more vulnerable groups are faring.
- Governments have a wide range of financial levers available to them for influencing the distribution of income. Although governments can also redirect resources to provide subsidies and services that reduce pressures on household budgets or more directly improve material wellbeing, the income levers use a much greater proportion of government expenditure than the subsidies or services (excluding public health and education).
- The ready availability of regular and good quality income data from surveys and administrative records.
- Using household income after deducting housing costs improves the congruence between the report's findings on the income relativities between population groups and the relativities found using more direct non-income measures.

The framework and government policy to address poverty and material hardship

The income-wealth-consumption-material-wellbeing framework together with its elaboration in **Appendix 16** in relation to child poverty and hardship provide a high-level check-list for policy development to address poverty and hardship.

For example, thinking about poverty alleviation from the perspective of the household, and how that intersects with government policy, the framework points to the following, as the pathways for addressing or alleviating poverty:

- increasing household income (whether it be from higher total earnings or increased government cash assistance or reduced tax)
- having the demands on the core household budget reduced (for example, through government services and government subsidies such as those for free doctor's visits for under 13s, reduced fees for Community Services Card holders, child care subsidies)

[10] See Jensen et al (2002), Krishnan et al (2002), Jensen et al (2006), and Perry (2009) available at: http://www.msd.govt.nz/work-areas/social-research/living-standards/index.html

- having some financial savings to help deal with shocks to the budget (for example, loss or reduction in paid employment, unexpected health issues that incur costs or reduce earning capacity, unexpected large bill for the car)
- getting better at using a given income to meet basic needs (through improved budgeting, healthy family functioning (tension and chaos reduce efficiency), improving life skills, better access to government and community services, and so on)
- having a streamlined user-friendly interface with government agencies for clients to access available assistance.

The framework makes it clear that improving the day-to-day living standards of households is about more than income, though income remains a very important factor.

When the focus is on raising incomes for households with children the framework points to three factors that impact on child poverty rates and on the proportion of poor children who come from various subgroups (that is, on the composition of the poor):

- the economy and the labour market (impacting for example on employment and unemployment rates, wage rates, benefit numbers (including numbers of sole-parent families), and interest rates)
- demographic shifts and changing cultural norms (eg the number of sole-parent families, whether sole-parent families live in households on their own or with other adults, the proportion of dual-earner two-parent households)
- policy changes that have a direct impact on income (eg policy changes around benefit rates, income-related rents, the Accommodation Supplement and Working for Families settings all have clear impacts on the child poverty rates for children from working and workless households, and on the relativities between the two groups).

[See the June 2016 report to the Ministerial Committee on Poverty which sets out the Government's ongoing approach to alleviating poverty in New Zealand, available at: http://www.dpmc.govt.nz/sites/all/files/publications/3862574-mcop-govt-actions-on-poverty-2016.pdf]

The impact of the changes to core benefit levels, the In-work Tax Credit and child care subsidies introduced in the 2015 Budget's Child Material Hardship Package, and that of the changes to the Family Tax Credit, Accommodation Supplement and Income Tax settings in Budget 2017's Family Incomes Package do not show up in the 2015-16 HES and the 2017 reports. The 2020 reports will be the first ones able to capture the impact of both these initiatives, based on the 2018-19 HES update.

Three ways of measuring material wellbeing and ranking households

The reports use three different measures of material wellbeing to rank households from high to low. Both income measures adjust for household size and composition to enable more realistic comparisons between different household types.

- BHC income (income before deducting housing costs):

  Household income from all household members from all sources after paying income tax gives an indication of the different levels of financial resources available to different households, all else being equal.

  But all else is not equal, as the diagram on the previous page makes clear. There are many factors other than current income that make a difference to the actual day-to-day living standards of households. For example, the largest item on the household budget for many households is accommodation costs, and yet for others in mortgage-free homes these costs are much lower. Accommodation costs cannot usually be changed in the short-term. To better compare the material wellbeing of households when using incomes the Incomes Report also uses household income after deducting housing costs (AHC incomes), especially for "poverty" measurement.

- AHC income (income after deducting housing costs):

  AHC income (ie BHC income after deducting housing costs) is a very useful measure for understanding the real-life differences in consumption possibilities for households when looking at income alone. AHC income is sometimes called "residual income".

  There are other factors (in addition to income and housing costs) that also contribute to a household's material wellbeing. The combined impact of all these factors on a household's material wellbeing can be captured by examining more directly the actual living conditions and consumption possibilities that households experience. The MWI does this.

- MWI (Material Wellbeing Index)

  The MWI is made up of 24 items that give direct information on the day-to-day actual living conditions that households experience. They are about the basics such as food, clothes, accommodation, electricity, transport, keeping warm, maintaining household appliances in working order, and so on, and also about the freedoms households report to purchase and consume non-essentials that are commonly aspired to. See Appendix 2 in the Overview document for a list of the MWI items.

  Differences in MWI scores reflect the differing impact on living standards of the income, assets and other factors in the framework on page 4. The MWI rankings reflect the different levels of consumption for different households in a way that gets around the need to carry out the very demanding analysis required to create a dollar value for each household's consumption.

  MSD also uses two deprivation / material hardship indices which focus only on the low end of the spectrum:

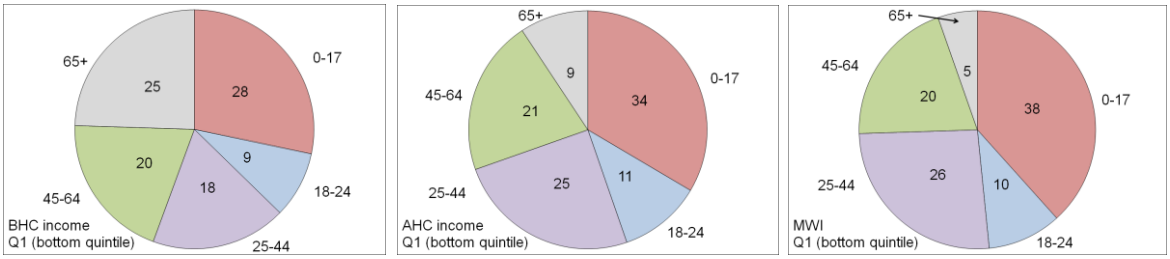
  - DEP-17: this gives the same results as the MWI when looking at the bottom quintile (20%), but the scoring is more intuitive (eg a score of 7+/17 simply means "missing 7 or more basics from the list of 17")
  - EU-13: this 13-item index is used in Europe and we use it monitor how New Zealand ranks internationally – it ranks households much the same as DEP-17 does.

The different measures can show different pictures of who is in the higher and lower material wellbeing levels

Different pictures can emerge depending on which measure of material wellbeing is used. This is most clearly illustrated when looking at how different age groups rate relative to each other on the three measures.[11]

- The charts below show how the bottom quintile (bottom 20%) becomes "younger" when the ranking measure changes from BHC to AHC to the MWI: the proportion of older New Zealanders in the bottom quintile decreases (25% to 9% to 5%) and the proportion of children increases (28% to 34% to 38%).
- The differences arise in part because mortgage-free home ownership is very high among older New Zealanders (ie housing costs are very low for most), so when moving from BHC to AHC incomes a large re-ranking happens with many older New Zealanders moving up and many families with children moving down relative to each other. The table shows the result of the movement from Q1 (BHC) to Q2 (AHC) for many older New Zealanders.

The make-up of the bottom quintile (20%) for the three measures, by age groups (HES 2015)



- The differences in the make-up of the bottom quintile on the three measures are also a reflection of the life-cycle fact that in addition to a mortgage-free home many aged 65+ have all the household appliances and furniture they need and many have other financial reserves they can call on. This explains the large change for older New Zealanders when comparing their numbers in Q5 (see table below which covers all five quintiles): using the MWI, 44% of older New Zealanders are in this higher living standards group, whereas for AHC only 20% are.
- The table also shows that around one in three older New Zealanders (35%) have BHC incomes that place them in the bottom BHC income quintile, but only one in fourteen (7%) are in the lowest MWI quintile.

Where older New Zealanders are found across all quintiles (%), three measures (HES 2015)

	Q1	Q2	Q3	Q4	Q5	TOTAL
BHC	35	18	16	14	16	100
AHC	13	32	18	16	20	100
MWI	7	10	15	24	44	100

[11] See also Table E.6 in the companion report using Non-Income Measures.

Protocols and technical information for the incomes analysis

This second part of the Introduction covers the following. See Sections E for detailed discussion of the income poverty measures used in the report.

- equivalisation: comparing incomes across different household and family types
- the income sharing unit and the unit of analysis for the presentation of results
- the bottom income decile: income not a reliable indicator of economic wellbeing
- housing costs
- data source: the Household Economic Survey (HES)
- convention for naming HES years and the HES years used in the report
- treatment of negative incomes
- adjusting for inflation
- ethnicity
- household and family types
- reliability of results
- summary of key measures used for reporting on income inequality and poverty.

Equivalisation: comparing incomes across different household and family types

Equivalisation reflects the two common sense notions that:

- a larger household needs more income than a smaller household for the two households to have similar standards of living (all else being equal), and
- there are economies of scale as household size increases.

Most sets of equivalence ratios also assume that children cost less than adults.

Equivalising is a means of standardising household incomes in terms of household size and composition so that the relative material wellbeing of households of different sizes and compositions can be more sensibly compared. The adjustment also makes comparisons over time more realistic because it takes into account the changes over time in the composition and average size of households.

While considerable research has been undertaken to try to estimate appropriate values for equivalence scales, no universally accepted 'correct' set of equivalence ratios has emerged, even when household size and composition are the only factors being considered.[12]

The primary equivalence scale used in the analysis in this paper, the 1988 Revised Jensen Scale, is a scale that (by design) sits in the middle of the range of scales in the literature of that time. It is very close to what has come to be known as 'the modified OECD scale' which is now used by Eurostat, Australia, the United Kingdom and others. Different equivalence scales are used for the international comparison sections, in line with the conventions of the sources. Further discussion of the effect of the choice of equivalence scale is provided in **Appendix 3**.

This report uses the single person household as the reference household – ie a single person unit has an equivalence scale value of 1.0. A household of a couple and no children (2,0) is rated at 1.54, meaning that such a household is considered to have 1.54 equivalent adults. A two adult,

[12] Ideally, equivalence scales would also take into account other factors such as the age of children, the costs of being employed, the extra costs of disability, the differing costs faced by people in different geographical locations, the different ratios needed for households of the same type but of different incomes, and so on. Such considerations further complicate an already fraught estimation process and the common practice is to settle for simpler scales as a rough-and-ready but better-than-nothing approximation. It is important to keep in mind that equivalisation is not intended (or able) to 'fix' the fundamental limitations of using current household income as an indicator of available resources, in particular that it does not take into account wealth, or "other factors" as noted in Figure A.1.

two child household is rated as 2.17. This means that this household type (2,2) is rated as having 2.17 equivalent adults: it requires 2.17 times the income of a single person household to have the same purchasing power or to achieve a comparable material wellbeing, all else being equal.

Other commonly used reference households are the couple, the couple with one child and the couple with two children. The choice of reference household affects the numerical value of equivalised income but makes no difference to any of the distributional, inequality and hardship analysis that follows.

Table A.4 provides a look-up chart to convert equivalised dollars (dollars per equivalent adult) to ordinary dollars and vice versa for selected households.

The first row of figures identifies the family or household type: (1,2) is a one adult, two child household, and so on. The second row gives the values of the equivalence ratios used. The body of the table indicates, for example, that a (2,2) household needs around $28,000 to have the same purchasing power as a (1,1) household with an income of around $18,000. Each has an equivalised income of $13,000 (or, to put it another way, each household has an income of $13,000 per equivalent adult).

Table A.4
Conversion of equivalised dollars to ordinary dollars for households with low-to-middle unequivalised incomes

Equiv income	Income for families and households of various types in 'ordinary dollars'									
	(1,0)	(1,1)	(1,2)	(1,3)	(2,0)	(2,1)	(2,2)	(2,3)	(2,4)	(3,0)
	1.00	1.40	1.75	2.06	1.54	1.86	2.17	2.43	2.69	1.98
$10,000	10,000	14,000	17,500	20,600	15,400	18,600	21,700	24,300	26,900	19,800
$11,000	11,000	15,400	19,300	22,700	16,900	20,500	23,900	26,730	29,600	21,800
$12,000	12,000	16,900	21,000	24,700	18,500	22,300	26,000	29,160	32,300	23,800
$13,000	13,000	**18,300**	22,800	26,800	20,000	24,200	**28,100**	31,600	35,000	25,800
$14,000	14,000	19,700	24,500	28,800	21,600	26,000	30,400	34,000	37,700	27,700
$15,000	15,000	21,100	26,300	30,900	23,100	27,900	32,600	36,500	40,400	29,700
$20,000	20,000	28,100	35,000	41,200	30,800	37,200	43,400	48,600	53,800	39,600
$25,000	25,000	35,100	43,800	51,500	38,500	46,500	54,000	60,800	67,100	49,400
$30,000	30,000	42,100	52,400	61,600	46,100	55,900	64,800	72,900	80,600	59,300
$35,000	35,000	49,200	61,200	71,800	53,800	65,200	75,600	85,100	94,000	69,200
$40,000	40,000	56,200	69,900	82,100	61,500	103,700	74,600	86,400	97,200	79,000
$45,000	45,000	63,200	78,600	92,400	69,200	83,900	97,100	109,400	120,800	88,900
$50,000	50,000	70,236	87,367	102,641	76,844	93,200	107,900	121,500	134,300	98,800

- This table uses the 1988 Revised Jensen equivalence scale, as does the rest of the report, except where it is stated otherwise.
- A (2,3) household is one comprising 2 adults and 3 children (aged under 18 years), and so on.

Income sharing unit and the unit of analysis for the presentation of results

The household is used as the income sharing unit (or unit of income aggregation). All individuals in the household are assumed to benefit reasonably equally from the combined income of the household and to share a similar standard of living. Clearly this is not always the case but it is "defensible as [an approximation] to a very complicated reality of intra- and inter-household patterns of sharing" (Bradbury, 2003:25).

The use of the household as the income sharing unit is in line with international standard practice.[13]

The unit of analysis for reporting purposes is the individual. The household's equivalised disposable income is attributed to each household member as an indicator of the individual's (potential) living standards and is used for ranking purposes.[14]

For subgroup analysis individuals are grouped by their own characteristics (eg age), or by the characteristics of their household or family type (eg two-parent, 'workless', and so on). In all cases the individual is ranked or classified according to the income of their household as this gives the best income-based indication of their economic wellbeing, in line with the central purpose of this report.

A key subgroup in this report is dependent children. Dependent children are all those under 18 years, except for those 16 and 17 year olds who are in receipt of a benefit in their own right or who are employed for 30 hours or more a week.

For international comparisons using OECD data, children are taken as all those under 18 years. The use of '0 to17 years' rather than 'dependent children' makes virtually no difference to the reported results.

<u>The economic family unit (EFU)</u>

An alternative income sharing unit that has sometimes been used is the benefit eligibility unit, often referred to in New Zealand as the economic family unit or EFU. The EFU approach allows for only three ways to group individuals when it comes to income sharing: couple only, two parent with dependent children, and sole parent with dependent children. All other individuals are treated as if they are 'on their own' even when they share (to varying degrees) in the general resources of a larger household. The Ministry of Social Development used the EFU approach in incomes analysis from 2002 to 2006 but reverted to the household approach in 2007 as fewer anomalies are created by this approach. It also brought New Zealand back into line with international practice.[15]

Rules for determining household membership

A household for the HES relates to a 'private household' which is defined as:

- either a single individual living in a dwelling who makes his or her own housekeeping arrangements
- or a group of people living in or sharing a dwelling for four or more days a week, who participate in some measure at least in consumption of food purchased for joint use by members (or who, if not dependent upon a household member, contribute some portion of income towards the provision of essentials of living for the household as a whole).

The following are included in the household for survey purposes:

- any person who, because of the nature of his or her occupation cannot spend as many as four nights a week in the household but who makes a financial contribution to the running

[13] 'Canberra Group Handbook', (UNECE, 2011).

[14] This is sometimes referred to as a person-weighted approach, in contrast to a household-weighted approach. The latter reports the proportion of households below various thresholds, income inequality across households, and so on. The person-weighted approach is the international standard for the sort of analysis reported in this paper. See **Appendix 4** for a comparison of poverty rates using the two approaches.

[15] See Appendix 2 in Perry (2005) for an extended discussion on the choice of income sharing unit.

of the household and is not currently a member of another New Zealand resident private household in a permanent dwelling

- any person at boarding school or other non-private institution who usually spends holidays or other continuous periods at home, and whose living costs are subsidised by at least 50 percent by the household
- any child whose custody is shared between two households but who spends more than half their time in the sampled household – where custody or care is shared equally between two households, the child should be included in the sampled household only if they are there the night the household questionnaire is completed.

The bottom income decile: income not a reliable indicator of material wellbeing

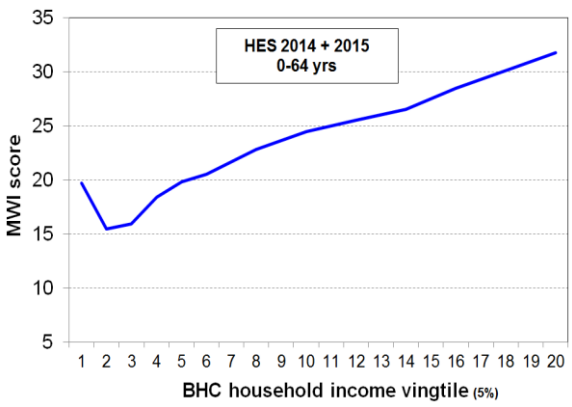
While household income is far from perfect as a measure of material wellbeing it is generally a useful enough indicator. There are however some households for whom it would clearly be very misleading to take their incomes as even a rough and ready indicator of their material living standards. This assessment is based on comparisons with income information from other surveys and known benefit levels, and from HES expenditure information: some households have implausibly low incomes, well below the minimum social support levels; some have reported expenditures well above their reported incomes.

Some of these households will be declaring income from self-employment which can legitimately be much lower than reported expenditure – the declared income may even be negative. Others will have accurately reported their incomes but will have had access to loans, gifts or 'savings' in one form or other which have been used for purchasing goods and services. Others will have intentionally or unintentionally under-reported their incomes.

Households with implausibly low incomes per se are of course found only in the bottom decile (bottom 10% of the income distribution). The reported incomes of many at the bottom are less than the incomes provided by government cash benefits or New Zealand Superannuation. This points to mis-reporting or data entry errors.

Those reporting expenditure much higher than reported income are found in most parts of the income distribution but the bulk of them are found in the bottom decile. For example, of all those in households reporting expenditure which is more than three times their income (2-3% of all households), around 70% to 80% are in the bottom income decile in any survey year.

This means that the average income of the bottom decile cannot be taken as a reasonable estimate of this group's (relative) material wellbeing. This is supported by the analysis in the graph below which shows how the MWI (Material Wellbeing Index) score decreases as expected when coming down the (BHC) income spectrum, except for the bottom income vingtile (5%) whose average MWI score is more like those at the top of the second income decile.[16] This shows that the incomes of those reporting implausibly low incomes are in general not a reliable indicator of the resources available to those households for generating consumption.



It also means that it is unwise to use very low BHC income thresholds to monitor "severe" poverty as too great a proportion of the households under such thresholds are those with implausibly low reported incomes. The Incomes Report therefore does not go below a 50% of median threshold for BHC incomes.

[16] See Carver and Grimes (2016) for a recent New Zealand investigation focussing on whether income or consumption (as measured by ELSI, the earlier version of the MWI) better predicts subjective wellbeing.

When the low-income-high-expenditure households are removed from the data, the reported low-income (poverty) rates are around 1 percentage point lower (using a 50% of median measure), but the overall directions of the trends do not change.
This noise in the lower end of the income distribution has only a limited impact on most of the indicators used in this report. For example, it does not impact greatly on the medians as the bulk of households in question would remain below the median even if their expenditures were taken as better estimates of their actual income than what was reported as such. Nor does it impact significantly on trends over time for either poverty or inequality indicators.

In general the impact is significant where the indicator is highly dependent on the incomes of those in the bottom decile or a little above it. This means, for example, that point-in-time poverty levels are noticeably affected when BHC poverty lines are set at levels lower than the 50% of median line (eg 40% of median), or below 40% for the AHC approach. In addition, the level and trend of the P10 (10th percentile) line and measures of poverty depth (see Section E) are also significantly affected.

As appropriate, the report makes comment on the likely impact of the noise at the bottom end of the income distribution in the text associated with affected indicators. **Appendices 8 and 9** provide a fuller discussion of the issue.

The companion NIMs report also discusses the issue in Section F.

Housing costs

The report provides information based on household income both before deducting housing costs (BHC) and after deducting housing costs (AHC).[17]

Housing costs include all mortgage outgoings (principal and interest) together with rent and rates for all household members.[18] Repairs and maintenance and dwelling insurance are not included. Any housing-related cash assistance from the state (eg Accommodation Supplement) is included in household income. These housing costs make up on average around 45% of the budget for working-age low-income working-age households (bottom three income deciles, unequivalised income). For many, of course, it is 50% or more.

For reporting on overall trends in household income and on income inequality, there is value in seeing the similarities and differences between the two measures (BHC and AHC) and in understanding the differing stories they tell. For reporting on trends in income poverty over time and for comparing hardship across subgroups of the population, the report recommends the use of AHC measures, although both BHC and AHC are reported.

The use of BHC measures is generally taken as the self-evident starting point. They are important for assessing the adequacy of market and social assistance incomes for delivering a minimum acceptable standard of living. Their use also ensures that the material wellbeing of those on low incomes who choose to live where accommodation is less expensive (eg some rural areas) or who live in 'cheap' substandard accommodation is not left overstated (relatively) as the use of an AHC approach on its own can do.

The rationale for the report's position that AHC analysis should also be reported, and that the AHC approach is preferable for subgroup comparisons in New Zealand is that:

- First, variations in housing costs do not necessarily correspond to similar variations in housing quality. This is most significant when comparing the material wellbeing of age groups. Many older individuals are in households that have good accommodation and relatively low housing costs (eg those living in mortgage-free homes). Many in an earlier

[17] BHC income is the same as disposable or after-tax cash income. AHC income is sometimes referred to as 'income adjusted for housing costs', 'disposable income net-of-housing-costs' or 'residual income'.

[18] There is an argument for excluding repayment of mortgage principal from housing costs on the grounds that it is simply a form of near-compulsory saving. This report includes repayment of principal in housing costs on the grounds that for most mortgages there is little scope for adjusting principal repayments to help cope with 'tight times'. It is in effect income not available to households in the short to medium term for other uses.

part of the life cycle have a similar standard of accommodation but relatively high accommodation costs. Ideally, the value of imputed rent for homeowners would be added to income to even up the comparisons (ie the BHC approach has limitations in this regard), but the practical difficulties are considerable. As an approximation for the purposes of comparing material wellbeing, the AHC approach deducts housing costs from after-tax cash income for all households.

- Once a household is committed to a particular residence, outgoings on housing costs cannot easily be adjusted or put off in "tight times" as they can for other expenses like entertainment and recreation, and even to some degree for basics like food and clothing. When the primary focus is on trends in income poverty and hardship, it is important to understand trends in "residual income", taking housing costs as a given fixed cost in effect. Housing costs represent a very significant proportion of the total spending for many low-income households.
- Third, a unique characteristic of the New Zealand BHC income distribution is the large 'pensioner spike' at around the value of New Zealand Superannuation. In recent years, the spike has been located close to a 50% of median poverty line (BHC). In the late 1990s it was around a 60% of median poverty line. The presence of the spike can lead to large variations in reported poverty rates for the 65+ group over time, leaving the misleading impression that there are significant changes in material wellbeing occurring for this group. In addition, the same issue can lead to similarly misleading comparisons with the relative wellbeing of other age groups. An AHC approach largely avoids these issues and is more suitable as the primary measure (for New Zealand at least). See also Section I.

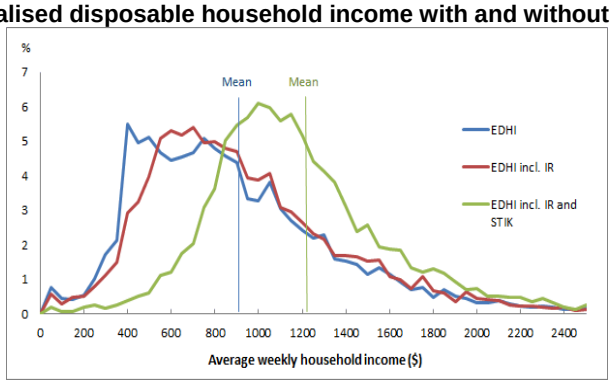
Imputed rent

For households with similar income and similar other characteristics, the consumption possibilities are much greater for households with low housing costs than for those with high housing costs. As discussed above, standard income measures of material wellbeing do not capture this difference: households with the same BHC income are ranked in the same place despite housing cost differences.

The use of "imputed rent" is an important way of dealing with this in a formal way. Imputed rent for home-owners is the difference between the estimated market rent of the dwelling and the usual costs a landlord would incur such as mortgage interest, rates, insurance and minor repairs. For renters whose rent is subsidised, imputed rent is the difference between market rent and actual rent paid.

The inclusion of imputed rent in household income is something to be aspired to. It provides a more realistic and meaningful comparison of the material wellbeing of households of different tenure type. The Australian Bureau of Statistics has made significant progress in recent years in its efforts to include imputed rent in its analysis of household income and its distribution. **Figure A.3** below shows how the inclusion of imputed rent reduces the dispersion of the income distribution, with the Gini changing from 32.0 to 30.3 (see ABS, 2013a). The inclusion of social transfers in kind (STIK) further reduces measured income inequality as the income concept broadens further. Examples of STIKs are free or subsidised education, health and child care.

Figure A.3.
Distribution of equivalised disposable household income with and without IR and STIK, 2011-12



Several OECD and EU countries are developing methodologies to enable this advance to be applied and used, but there is no standard approach agreed to as yet. The imputation is a quite data intensive exercise. (See Figari and Paulus (2013) and Maestri (2012) for reports on empirical efforts to impute rents and to observe the changed ranking of households that follows.)

In the meantime, this report uses the AHC approach outlined above to take some account of the implications of different tenure arrangements for comparing the material wellbeing of households.

Further discussion on the relative merits of the BHC and AHC approaches is in **Appendix 5.**

Main data source: the Household Economic Survey (HES)

The report draws on data from Statistics New Zealand's Household Economic Survey (HES). The HES was an annual survey from 1982 to 1998, using March years, then three-yearly from 1998 to 2007, using June years from 2001 on. The 2007-2008 survey was the first of the new HES (Income) Surveys which makes income, housing cost and living standard indicator data available in each of the two years between the full HES surveys. The HES (Income) collects the same information on these domains as the full HES does. The full HES (including full expenditure information) is still on a three-yearly cycle. The 2015-2016 HES is the latest full HES.[19]

A sample of approximately 3500 private households has been achieved each survey in recent years (except for 2012-13), and for the 2014-15 HES a much larger sample of just over 5500 was achieved (see **Table A.5** below for details). Interviews are conducted face to face. For the full HES, contact with each participating household extends for a period of just over two weeks. During that time, each household member aged 15 years or over keeps an expenditure diary for 14 consecutive days, recalls major purchases made in the previous 12 months, and provides income and employment data. The income information is also for the 12 months prior to interview.

The target population for the HES is New Zealand resident private households living in permanent dwellings. This means, for example, that those in institutions and those in non-permanent dwellings are not included.

Table A.5
Achieved sample sizes and response rates for recent HES (for data held by MSD)

HES year	Achieved sample size	Response rate
2000-01	2808	73%
2003-04	2854	73%
2006-07	2550	62%
2007-08	3295	77%
2008-09	3210	74%
2009-10	3126	69%
2010-11	3536	81%
2011-12	3565	83%
2012-13	3003	67%
2013-14	3391	81%
2014-15	5561	78%
2015-16	3499	78%

Note: The response rate for 2009-10 and later is the post-imputation response rate. For other years it is the pre-imputation response rate. See the text below.

[19] See the Statistics New Zealand website for general information about the HES, and for Statistics New Zealand's first release reports. The Hot Off the Press release from November 2016 has analysis and general information on the 2015-16 HES, and the one from June 2016 has information on net worth from the previous survey. See www.stats.govt.nz/browse_for_stats/people_and_communities/Households/household-economic-survey-info-releases.aspx

Imputation was introduced into HES for the 2009-10 survey. Imputation is a data set enhancing process that replaces missing values with actual values from similar respondents.[20] At that time, imputation was also applied to the data for the 2006-07, 2007-08 and 2008-09 surveys, and Statistics New Zealand has updated its Hot Off the Press tables and Table Builder information accordingly.

The 2015 Incomes Report (last year's) revised all the relevant tables and charts starting using the data sets with imputation from 2006-07 on. The revisions were all relatively minor, and there was no change to trends or relativities or Key Findings.

The report also uses some net worth and income mobility information from Statistics New Zealand's longitudinal Survey of Families, Income and Employment (SoFIE).

Population weighting

The preparation of the HES weights provided by Statistics New Zealand to enable population estimates to be produced from the HES sample follow a two stage process:

- the sample design weight (the inverse of the selection probability) is calculated for each private household, along with an adjustment for non-response
- the weight of each household is adjusted using integrated weighting, calibrating to independent benchmarks of the number of people by age, sex, ethnicity and region and the number of households by household size (from estimates based on the 2013 Census for the 2015-16 HES).

The HES weights do not calibrate to the number of people receiving income-tested benefits or New Zealand Superannuation payments. The weighted HES data underestimates these numbers by around a third in each survey.

The Treasury has also developed a set of weights for use with its HES-based tax-benefit microsimulation model, Taxwell. The Taxwell weights include the number of beneficiaries as one of the key benchmarks, in accordance with Treasury's primary use for the HES in the Taxwell model. Treasury's Taxwell weights therefore provide a better estimate, for example, of the number of children in beneficiary families, although to achieve this there has been a trade-off with achieving other benchmarks. This report almost always uses Statistics New Zealand's HES weights. Where the Taxwell weights are used, this is made clear in the text.[21]

Convention for labelling HES years

The report adopts a common short-hand convention for describing HES years. For example, "the 2007 HES" is short for "the 2006-07 HES". The 2007 survey is for the year ending 30 June 2007 with its midpoint in December 2006. For the 1998 HES and earlier ones the survey period was for March years. The 1998 HES therefore has a midpoint of September 1997. There is therefore a good case to be made for the 2006-07 HES being labelled the "2006 HES". While logic and clarity support this, it would unfortunately fly in the face of common custom and possibly lead to confusion. This report has therefore (reluctantly) followed the custom to date.

In its international league tables and other publications the OECD uses the "2006-07" = 2006 approach. As the OECD's reports are now much more easily accessible, better promoted and more widely read, there is a better case now for adopting that pattern. It is likely to change for next year's report.

The income values, inequality figures, poverty rates, and so on for specified HES years are best interpreted as being for the calendar year in which the survey started unless noted otherwise. Particular care is required in establishing which survey year will pick up the implications of policy

[20] For more detail on the imputation process and the impact on achieved response rates, see the Technical Appendix to the 2013-14 HES Hot Off the Press release (see link noted in the previous footnote).

[21] But see the companion NIMs report for the use of the Taxwell weights for HES 2015-16.

changes or of significant labour market or GDP changes, or of other major events, when some or all of these changes occur during a survey year.

HES years used in the report

The tables and graphs report for each second HES year from 1982 to 1998 and every three years to 2007, then each survey for 2008 to 2016. Key changes in the income distribution occurred in the years from 1988 and again from 1994. The loss of information that arises from using every second year only does not impact on the overall trends reported as these key years are included in the reporting.

The points on the graphs are all joined by straight or smoothed lines. This is done for presentational purposes only to give the general trends, and should not be taken to mean that the data points in the intervening years would all lie on the interpolated lines.

Treatment of negative incomes

In each HES survey there are a few records showing negative incomes. For this report these negative incomes are re-assigned a value of zero before analysis is undertaken. This is done to reasonably approximate the treatment of negatives asked for by the OECD in the data sent to them by statistical agencies such as Statistics New Zealand and it therefore assists with international comparisons. This treatment of negatives has no effect on medians, no impact on reported trends over time for the approaches used in this report, nor on poverty rates at any point in time, nor on the composition of the poor. It has a very small impact on means and income shares for quintiles.

Adjusting for inflation

Household incomes and low-income thresholds are adjusted for inflation at various places in the report. Household incomes are converted to 2016 dollars for reporting on income trends in real terms. For the reporting on trends in income poverty based on an "anchored" or "fixed line" approach, thresholds are based on proportions of the 2007 median and are held constant in real terms over other years.[22]

The adjustments for inflation are carried out using CPI full-year averages for a March year up to and including the 1998 survey and a June year from 2001. For BHC incomes Statistics New Zealand's CPIQ.SE9A series is used, with the annual figure being the average of the four quarters for the period. AHC incomes and thresholds from 1989 to 2016 are adjusted using the index from the "All Groups less Housing" series (CPIQ.SE9NS1010) for the survey's midpoint quarter[23]. For 1982 to 1988 the AHC adjustments are based on the author's extrapolation of the series. The reported trends in AHC incomes and the size of low-income populations are not greatly sensitive to different assumptions within a plausible range for the index in the estimated years. See **Appendix 7** for the indices used.

Ethnicity

Ethnicity of individuals aged 15 and over is as reported by the individual. Children under 15 are attributed with the ethnicity of the survey respondent in years to HES 2004. Starting with HES 2007, ethnicity for children is provided in the survey data, with the information coming from either the children themselves or from their parents. No analysis is carried out based on household or family ethnicity as ethnicity is a characteristic of individuals.

If a respondent reports more than one ethnicity, the ethnicity attributed is determined according to a prioritised classification of Māori, Pacific Island, Other and then European/Pākehā. Using a "total

[22] In reports prior to the 2010 report, the reference or base year for the fixed line poverty measures was 1998. The shift to 2007 has had an impact on the poverty levels for a given point in time, but no significant impact on the trends, nor on subgroup relativities. See pp 85ff for further discussion on the choice of base or reference year for the fixed line approach to poverty measurement.

[23] The series is no longer published by Statistics New Zealand, but they produce it as a customised output for MSD for the Incomes Report.

counts ethnicity" approach makes no noticeable difference to the findings in this report. The table below illustrates this using the 50% AHC moving line measure for the whole population. Moving to the total ethnicity convention is on the agenda for a future issue of the Incomes Report.

rate (%)	**Prioritised**	**Total**
European/Pakeha	10	11
Maori	21	21
Pacific	20	22
Other	23	22
ALL	14	15

Only limited analysis by ethnicity is reported because of the relatively small sample sizes for Maori, Pacific and Other (especially for Pacific). See the discussion below under "Reliability of results".

Household and family types

The report uses the following household types for subgroup analysis.

Household type	**Definition**
One person HH, 65+	one person aged 65+
Couple HH, 65+	at least one partner is 65+
One person HH, under 65	one person aged under 65
Couple HH, under 65	both partners are under 65
SP with children	SP with children, at least one of whom is dependent
2P with children	2P with children, at least one of whom is dependent
Other family HHs with children	Family HHs (other than SP or 2P HHs) where there is at least one dependent child
Other family HHs, adults only	Family HHs (other than couples) where there are no dependent children
Non-family HHs	Unrelated individuals

For family types, the report uses the 'economic family unit' (EFU). There are four types of EFU:

- couple only
- two parent with dependent children
- sole parent with dependent children
- everyone else (ie unattached individuals who are not dependent children).

In each case the EFU may be living in their own separate household or with others in a wider household.

Note that the household is always used as the income sharing unit. Individuals are attributed with their household's equivalised income, then assigned to a particular household or family type, carrying their household's equivalised income with them as an indicator of their material wellbeing.

Reliability of results

As the figures in this report are estimates taken from a sample survey, they are subject to variation as a result of both sampling error and bias due to non-sampling error, especially non-response.

In addition, there are assumptions made in the use of equivalised income as an indicator of (potential) living standards and in constructing the measures of inequality and hardship.

All these factors raise the question of the reliability of the results.

Sampling error

Sampling error is a misleading term. It has nothing to do with "mistakes". It is about the variability that occurs by chance because a sample rather than an entire population is surveyed. For example, the relative sampling error for average household income is typically around 4% at the 95% confidence level. This means that there is a 95 percent chance that the true value lies within 4% of the survey mean.

The sampling error is larger the greater is the degree of disaggregation at which results are presented. Special care is therefore needed when interpreting results applying to smaller subgroups. Care is also needed when comparing estimates from one survey to the next as both estimates are subject to sampling error.

Two examples are discussed below to illustrate the issues.

People living in sole parent households are a relatively small subgroup, making up only 8% of the population. In Table B.7 the distribution of the population across household income quintiles is reported by various household types. Only 4% of those in sole parent households are found in the top income quintile. On the other hand, a high proportion have incomes in the lower end of the income distribution. When reading **Table B.7** for the distribution of those in this household type across the quintiles, it is reasonable to conclude that "around four in five are found in the bottom two quintiles", and "there are very few in the top quintile", but to claim that "11,400 (4% of 284,000) are in the top quintile" would be spurious precision.

Another example is reporting on poverty trends by ethnicity. The example uses changes from HES 2004 to 2007. The Pacific, Maori and Other groups made up 6%, 15%, and 13% respectively of the population in 2007, using the HES weights. Between the 2004 HES and the 2007 HES, the estimated poverty rates using the AHC 60% fixed line measure fell dramatically for those classified as Pacific (29% to 12%), while for Maori there was very little change (22% to 24%). The large change for Pacific is inconsistent with independent information for the period from the Income Supplement (IS) of the Household Labour Force Survey (HLFS) which has a larger sample than the HES. It would be misleading to report on the basis of these two HES surveys that "poverty has reduced significantly for Pacific people" – or, if it went to, say, 25% in HES 2008 that "Pacific poverty rose sharply from 2007 to 2008".

For those classified as Other for ethnicity the estimated poverty rate fell from 38% (2004) to 21% (2007). Again, this is inconsistent with HLFS-IS information for the period. In this case, the size of the subgroup is itself probably not the only issue. The volatility for those classified as of Other ethnicity is likely to be driven to a large degree by the considerable heterogeneity in this group, and its changing composition over recent years.[24] This heterogeneity adds another source of potential sampling error when using smaller subgroups. It applies much more to a subgroup like those classified as of Other ethnicity than to a similar sized group such as sole parent households discussed above which is more homogeneous in relation to household incomes and factors which impact on these. Those in one person 65+ households are a smaller still subgroup (4%), but are even more homogeneous (eg they are all in the same household type, in the same age group, and are mainly European/Pakeha).

[24] Starting with the 2007 HES, the 'Other' ethnicity category includes those who identified themselves as 'New Zealanders'. Prior to this, the proportion reporting in this way was smaller, and they were included with the European/Pakeha category.

For these reasons, poverty trends by ethnicity are not reported. Instead, trends in median household incomes are provided, and the distribution across quintiles is given to provide an indication of the relative spread of incomes. The median incomes are still subject to sampling error but as they use information from the whole sample rather than just from those at the low end, the trends are more reliable. For poverty levels the report uses the average of (the latest) three surveys to give a reasonably robust estimate of relativities of one group compared with the others.[25]

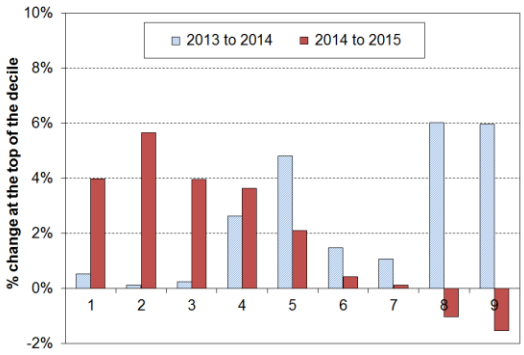
Non-response

The reliability of the results is also affected by any bias due to differential non-response from households chosen for interview. To go some way to correct for this, when weights are being assigned to households to produce population estimates, those households that are under-represented in the sample are given larger weights to compensate. The weights are chosen so that grossed-up population estimates accord with key control variables such as the age, gender and household type distributions from the latest census or census-based projections.

There is, however, no guarantee that such weighting procedures will deliver accurate population estimates for all variables of interest. One area where this is an issue affecting reliability of results using the HES is in the estimates of the number of beneficiaries. The HES typically underestimates beneficiary numbers by around one-third.[26] The total value of the Accommodation Supplement (AS) reported in the HES is around 40% to 50% of that recorded in the Ministry of Social Development's administrative data. This may not necessarily mean that half the AS income is missed, as some of the "missing" amount is likely to be counted in the reported benefit income which is in aggregate usually higher than administrative records report.

The report uses Treasury's modelled values of benefit income, modelled WFF tax credits and modelled AS, so the actual reported values do not come into the analysis in the report.

An example showing how using year-on-year changes can lead to misleading results.



While reported changes from one survey to the next for the median and nearby are reliable for giving the actual direction of the change and a good estimate of the real-world change, those for high or low incomes are often not. This is illustrated in the graph on the right which shows year-on-year changes for incomes at the top of each decile for HES 2013 to 2014, and for HES 2014 to 2015. A tempting summary or headline finding for the 2015 update could have been *"higher incomes fell and lower incomes rose from 2014 to 2015".* This would be misleading as it puts too much reliance on year-to-year changes for high and low incomes where the uncertainties are at their greatest. As the graph shows, the changes from 2013 to 2014 go the other way and would be equally misleading to rely on on their own.

The findings about differences or changes are at their strongest when looking at clear trends or changes over several surveys or longer, when comparing rankings using different measures, and when identifying which groups are faring well and which not so well.

[25] For poverty analysis, the denominator has large enough numbers, but the numerator has too few sample numbers to sustain the analysis for the Pacific group. On the other hand, poverty trends are given for people in one person 65+ households, even though this group and those in Pacific households make up about the same proportion of the population (4% to 6%). Poverty trend analysis for the former is unlikely to show the volatility that the latter can show as the 65+ group are much more homogeneous than the Pacific group who come from a wide range of household types, have a wide range of ages and incomes.

[26] See Creedy and Tuckwell (2003) for an account of a HES re-weighting exercise carried out by the New Zealand Treasury for tax-benefit microsimulation modelling purposes using TAXMOD.

The volatility of the Gini measure of inequality

The Gini coefficient takes all household incomes into account. It is therefore susceptible to large fluctuations depending in particular on which and how many very high income household9s are captured in the survey samples from year to year. See **Section D** for detailed information on this.

Monitoring trends for households with dependent children

The achieved HES sample is usually around 3000 to 3500 households. Households with dependent children are a sub-population of considerable interest for public debate and for policy development, and trends and relativities are carefully monitored. However, as there are only around 1100 of these households in each survey, some year-on-year volatility is only to be expected and longer term trends are needed to tell a robust story. Australia (14,000), the UK (20,000) and Ireland (5,500) all use larger sample surveys and therefore are able to produce much smoother year-on-year lines.

Income as an indicator of material wellbeing

There is a general question as to how well income performs as an indicator of access to resources or as a proxy for living standards, but the most pressing issue, as noted above, is that there are particular problems in the bottom decile where the incomes of many households cannot be taken even as a rough and ready indication of resources.

Where the noise in the bottom decile significantly impacts on reported results, the associated text notes and describes the impact. This issue is further discussed in **Appendices 8 and 9**.

Avoiding unwarranted impressions of precision

The use of too many significant figures or decimal places in reporting results can imply a spurious precision that is inconsistent with the considerations noted above. This applies particularly to poverty rates, and especially for figures relating to subgroups of the whole population. Poverty rates and poverty structure are therefore generally reported to the nearest whole number rather than to one decimal place as is common elsewhere.

Longer-term trends over several surveys and significant differences between subgroups within a year can be counted as providing robust and reliable information. Smaller changes between surveys and small differences between subgroups in the one survey year should not be used to support definitive conclusions about change or differences.

Summary of special features of selected HES samples that potentially impact in a misleading way on trend lines, and the actions taken to address these in the analysis and reporting

As discussed above, there are always uncertainties involved when carrying out analysis based on samples.

The table below identifies particular features of the samples in recent surveys that, if not addressed, could lead to the published findings leaving misleading impressions or take-outs for the reader, and also outlines the measures taken to minimise the chances of this happening.

	Special features of samples that impact on trend lines in a way which may mislead if not addressed	**Actions taken to address the issues and eliminate or minimise chances of reporting misleading information**
2014 HES	• Incomes of some beneficiary families were implausibly low. The issue arose in association with the change in core benefit categories and names in July 2013. • This artificially reduced the dollar value of the bottom decile boundary (P10), and slightly inflated the 50% of BHC median low-income rate, as some beneficiary families have incomes a little above this line, when correctly reported.	• The 2015 Incomes Report noted the issue and did not report on selected indicators such as: - the 90:10 household income inequality ratio, - the P10 value of the upper boundary of the lower decile - the 50% of median BHC low-income measure.
2015 HES	• The sample contained an unusually high number of households with very high incomes. • This artificially raised indicators such as the proportion of income received by the top decile and the income inequality rate as measured by the Gini (The 90:10 ratio remained steady as it was unaffected by the sampling issue).	• The 2016 Incomes Report noted the issue and reported on Gini trends with the top 1% deleted, while at the same time reporting the flat trends in top 1% share from more reliable sources. • The Report advised readers and users to hold off any judgements about change in the trend line until the results of another survey or two were available. • The number of very high income households in the 2016 sample reduced to something closer to trend as did the Gini measure of income inequality.
2016 HES	• The sample contained an unusually low number of sole-parent households and beneficiary households with dependent children, and the standard Statistics New Zealand weights did not fully correct for this for the population estimates. • The two parent households in the sample were on average better off than in previous years. • These two factors worked in the same direction to lower the reported low-income rates and the material hardship rates for children in 2016, relative to the trend line.	• For child poverty rates, the 2017 Incomes Report partially corrects for the lower-than-expected number of sole parent and beneficiary-with-children households by a three-step process: - adjust the numbers of children from sole-parent families and reducing the numbers in two-parent families to match external benchmarks and also the numbers from HES years 2013 to 2015 - retain the low-income rates produced by the raw data - apply these rates to the adjusted numbers above to get the total number “in poverty” and the adjusted rate. • The adjusted rates are typically one to one-and-a-half percentage points higher. • The 2017 Report uses rolling two-year averages for reporting trends in the charts, smoothing the trend to make it clearer. • For the Non-income Measures report the 2016 figures use the Treasury’s Taxwell weights as these use a wider range of benchmarks that give population estimates for sole parents and beneficiary children that are closer to real-world numbers. • The 2017 NIMs report also uses rolling two-year averages for reporting trends.

Summary of key measures used for reporting on income inequality and poverty

The table below gives a high-level outline of the measures used in the report for the inequality and poverty analysis. Issues around each decision point are discussed in the main sections that follow and in the Appendices.

Decision point	Option used in this report
income sharing unit	household (HH)
income concept	equivalised disposable HH income (ie after-tax cash income, adjusted for HH size and composition) - before deducting housing costs (BHC) - after deducting housing costs (AHC)
equivalence scale	revised Jensen 1988 (except for Section J, the international section, in which the 'square root' scale is used for OECD comparisons, and the 'modified OECD scale' for EU comparisons
inequality measures	percentile ratios (90/10 and 80/20) decile and quintile share ratios Palma ratio Gini coefficient
types of low-income thresholds or 'poverty lines'	'moving line' thresholds – set relative to the median for the survey year (REL) 'fixed line' thresholds – anchored in a base year (2007) and kept at a constant value in real terms (CV)
setting of low-income thresholds or 'poverty lines'	REL thresholds set at 50% and 60% of the median HH income (BHC) CV thresholds set at 50% and 60% of the 2007 median HH income (BHC), and adjusted forward and back by the CPI AHC thresholds are set at 25% less than the corresponding BHC threshold, as an allowance for average housing costs
primary measures for income poverty trends	AHC 'fixed line' (50% and 60%) – the rationale for this is noted earlier in this Section and is further discussed in Section E.

Section B
Household incomes in 2015-16

This section provides general information on the distribution of household income using the 2015-16 HES (2016 HES). The following are reported:

- means and medians for gross, disposable and equivalised disposable income
- medians for different household types
- graphs of the income distribution for the whole population
- a table to assist households to identify where they fall in the distribution
- distribution of individuals across household income quintiles by various household and individual characteristics
- income shares for income deciles
- the extent of re-distribution of market income through taxes and cash benefits.

Means and medians

Table B.1 reports median and mean household incomes for the 2016 HES using gross, disposable (after-tax), and equivalised disposable concepts, and the changes in real terms from the 2009 to 2011 HES (capturing the main impact of the global financial crisis) and from the 2011 to 2016 HES. Longer term trends are reported in Section D.

In the 2016 HES, median annual household income after taking account of all income tax paid and transfers received (eg welfare benefits, NZS, WFF tax credits) was $76,200, up just over 3% in real terms since the 2015 HES. This is in line with the 3% pa increase over the five years from from the 2011 HES.

Mean or average household income was higher at $90,900, up 2% since the 2015 HES. This year-on-year figure is lower than the 2.7% pa figure for the five years from the 2011 HES, reflecting the unusually large number of high income households in the 2015 sample, and the more normal numbers of high income households in the 2016 sample (see Section D for more on this).

Table B.1
Gross, disposable and equivalised disposable household incomes: annual medians and means (HES 2015), with changes from recent years

	Median			Mean		
	2015-16 HES	Real changes		2015-16 HES	Real changes	
		2008-09 to 2010-11	2010-11 to 2015-16		2008-09 to 2010-11	2010-11 to 2015-16
Gross	$91,900	-3.8%	+15.7% = 3.1% pa	$112,000	-2.0%	+13.6% = 2.7% pa
Disposable (BHC)	$76,200	-1.7%	+15.5% = 3.1% pa	$90,900	+1.0%	+13.6% = 2.7% pa
Disposable (AHC)	$58,200	-1.3%	+16.8% = 3.4% pa	$72,400	+0.8%	+14.0% = 2.8% pa
Equiv disposable (BHC)	**$37,900**	**-2.9%**	**+14.6% = 2.9% pa**	**$46,000**	**+0.7%**	**+12.6% = 2.5% pa**
Equiv disposable (AHC)	**$29,100**	**-3.1%**	**+16.0% = 3.2% pa**	**$36,900**	**+0.5%**	**+14.3% = 2.8% pa**

Note: The equivalised income rows in the table (the bottom two) use the one person household as the reference. The unit is 'dollars per equivalent adult'.

The impact on household incomes of the global financial crisis and economic slowdown began to be seen in the 2009-10 HES. Using the 2008-09 HES as the reference year the "2008-09 to 2010-11" columns show the cumulative impact over two surveys.

The gross median income fell by some 4% and disposable (after tax) household income by 2% in real terms in those years. The smaller after-tax decline reflects the higher average income tax rate for higher income households. The household disposable income distribution is less spread than the gross income distribution and the changes from year to year are therefore smaller in percentage terms.

Changes in the mean are a little different than changes in the median as they are strongly influenced by what happens to higher incomes whereas changes in the median are influenced by what happens to incomes in the middle parts of the distribution.

The "2010-11 to 2015-16" columns show evidence of household incomes recovering: a 16% real increase (~3% pa) for median gross household income and for median household income after tax.

Medians are calculated by assigning individuals the income of their household, ranking the individuals and finding the middle one. This person-weighted approach is different from the household-weighted approach which simply ranks households by their income and finds the middle household. The person-weighted approach is the international standard for the sort of analysis carried out for this report. See **Appendix 4** for further information.

Mean incomes are higher than median incomes because of the skew of the income distribution towards the lower end. The relatively few households with incomes at the very upper ranges of the income distribution have a disproportionately large upward impact on the mean compared with their impact on the median, and therefore pull the mean up above the median. The varying number of very high income households in different years can also lead to the mean being less stable than the median.

Medians for households of different types

The overall median BHC household disposable income in the 2016 HES was $76,200 (ordinary dollars). In equivalised terms this is 37,900 dollars per equivalent adult.

Different household types have different median incomes, some above and some below the overall median. For example, the median household income for households comprising a couple plus one dependent child was $83,500 in ordinary dollars and $41,900 when the ranking is done by equivalised household incomes (ie 41,900 dollars per equivalent adult).

Table B.2 shows the median disposable incomes (BHC) of different household types using incomes before equivalising (centre column) and after equivalising the household incomes (right hand column).

Table B.3 shows the same information for AHC incomes.

Tables B.2 and B.3 show that the median equivalised household incomes for older one-person and couple households, sole-parent households and larger two-parent households are all below the overall median. This means that these households are all more concentrated in the lower half of the equivalised income distribution.

On the other hand, "working age" couple-only households, two parent with one dependent child households and family households with no dependent children have equivalised medians above the overall median and are therefore more concentrated in the upper half of the equivalised income distribution.

Table B.2
Median disposable income (BHC) for different household types (HES 2016) in ordinary and equivalised dollars

HH type	Median disposable income for the HH type (ordinary $)	Median disposable income for the HH type ($ per equivalent adult)
One person, 65+	22,600	22,500
Couple, 65+	46,600	30,300
One person, under 65	40,100	40,100
Couple, under 65	85,900	55,800
SP, 1 child	45,600	29,400
SP, 2 children	45,300	23,400
SP, 3 or more children	40,600	18,300
2P, 1 child	83,500	41,900
2P, 2 children	83,700	38,400
2P, 3 or more children	80,500	31,600
Other family HHs with children	97,000	35,900
Family HHs, all < 65 – no children	100,400	44,900
Family HHs, at least one 65+ – no children	80,500	42,600
Whole population	**76,200**	**37,900**

Table B.3
Median disposable income (AHC) for different household types (HES 2016) in ordinary and equivalised dollars

HH type	Median disposable income for the HH type (ordinary $)	Median disposable income for the HH type ($ per equivalent adult)
One person, 65+	19,500	19,500
Couple, 65+	41,600	27,000
One person, under 65	26,200	26,200
Couple, under 65	66,100	43,000
SP, 1 child	29,100	19,700
SP, 2 children	23,400	13,100
SP, 3 or more children	22,500	11,100
2P, 1 child	64,200	32,800
2P, 2 children	62,100	28,600
2P, 3 or more children	59,900	24,200
Other family HHs with children	73,400	26,700
Family HHs, all < 65 – no children	82,900	37,300
Family HHs, at least one 65+ – no children	76,200	36,700
Whole population	**58,200**	**29,100**

Note: See the box on the next page for further information about the relationship between the two columns of figures in these tables.

Reconciling Table A.4 with Tables B.2 and B.3

This report uses the one person household as the reference for the equivalising process. The unit is dollars per equivalent adult. To convert ordinary disposable income to equivalised incomes for a particular household type, the ordinary incomes need to be divided by the appropriate equivalence ratio listed in Table A.1 in the Introduction. For example for a (2,1) household, divide by 1.86. This means that a (2,1) household with a disposable income of $65,500 has an equivalised disposable income of $35,200 (ie 35,200 dollars per equivalent adult). (65,500 / 1.86 = 35,200)

This relatively simple conversion can be applied to any individual household. It cannot however be generally applied to medians of the population as a whole or of any subgroup of the population. There are three reasons for this:

- For the population as a whole, the concept of equivalence ratio is meaningless as individuals come from a range of different household types, and different equivalence ratios apply to each of these.
- For some subgroups (eg “other family households with children”), no equivalence ratio is defined as there are unknown numbers of children and adults in each household in this group.
- For any subgroup of households which have children, children of different ages are assigned a slightly different equivalence ratio when using the 1988 Revised Jensen scale. This means that the ranking of individuals using equivalised incomes can end up slightly different than the ranking of individuals using ordinary household incomes for the same household type (eg couple plus one dependent child). This leads to the equivalised median being not quite the same as the “ordinary” income divided by the appropriate equivalence ratio. Note that for couple households without children, the simple conversion does work. See Tables B.2 and B.3.

Income distribution for the whole population, HES 2015

Figures B.1 and B.2 (next page) show the general shape of the income distribution for the whole population, with the 65+ age-group distinguished from the rest.

The graphs also show two of the main low-income thresholds ("poverty lines") that are used later in the report: 50% and 60% of the (current survey) median for BHC incomes, and these less 25% for AHC incomes.

Apart from the skew to the left with a long right-hand tail of higher household incomes, the distinctive feature of the BHC distribution is the 'pensioner spike' just above the 50% threshold, and the strong bunching of those aged 65+ in households with incomes in the 50% to 70% of median range. The pensioner spike arises because:

- New Zealand has a universal pension for those aged 65 and over[27] that is neither income nor asset tested (New Zealand Superannuation (NZS))
- there is no mandatory second tier employment-related component
- in 2015, 40% of those aged 65+ report household incomes of less than $100pw (per capita) from sources other than NZS
- the value of NZS was around 52-54% of the BHC median from 2010 to 2015 and between 51% and 67% from 1988 to 2008.[28]

This strong bunching of incomes for older New Zealanders in the 50% to 70% of median range has implications for the reporting of poverty rates for this group. When using thresholds set as a proportion of the current median, a small shift in the median from one year to the next can lead to a very large change in reported income poverty for the 65+ even though there has been little or no change in their income or living standards. Similarly, using a 50% of median income threshold gives a very different picture than when a 60% threshold is used.

For the AHC distribution, there is still a reasonably strong bunching of incomes between the median and the 60% threshold used with AHC incomes, but the pensioner 'spike' is broadened out and in the main lies above the 50% and 60% thresholds. This happens because of the high proportion of older New Zealanders with mortgage-free homes and very low housing costs (72% on average over the 2014 to 2016 surveys). Small shifts in the median or the threshold do not therefore have the same disproportionate and misleading effects on (trends in) poverty rates as they do when using BHC incomes. In addition, differing housing costs among some lower-income 65+ households spread their AHC incomes over a wider range than their BHC incomes. These two factors combined form part of the rationale for this report's position that using AHC incomes is more useful for monitoring poverty trends for older New Zealanders and for making comparisons with the rest of the population. This is discussed further in **Section E, Section I** and in **Appendix 5**.

[27] In addition to the age qualification, there are also residency requirements.

[28] There is often a bunching in the income distributions in other countries but they tend not to have the spike that New Zealand does because of the different retirement income regimes. For example, see Figure 3.3 in Brewer et al (2004) for the UK.

Figure B.1
BHC household income distribution for all individuals: HES 2015

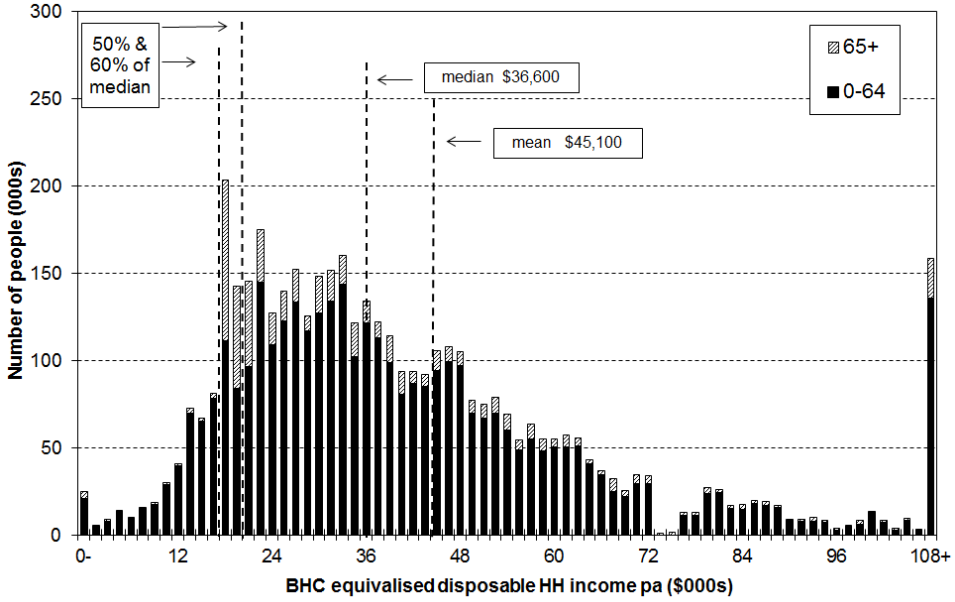
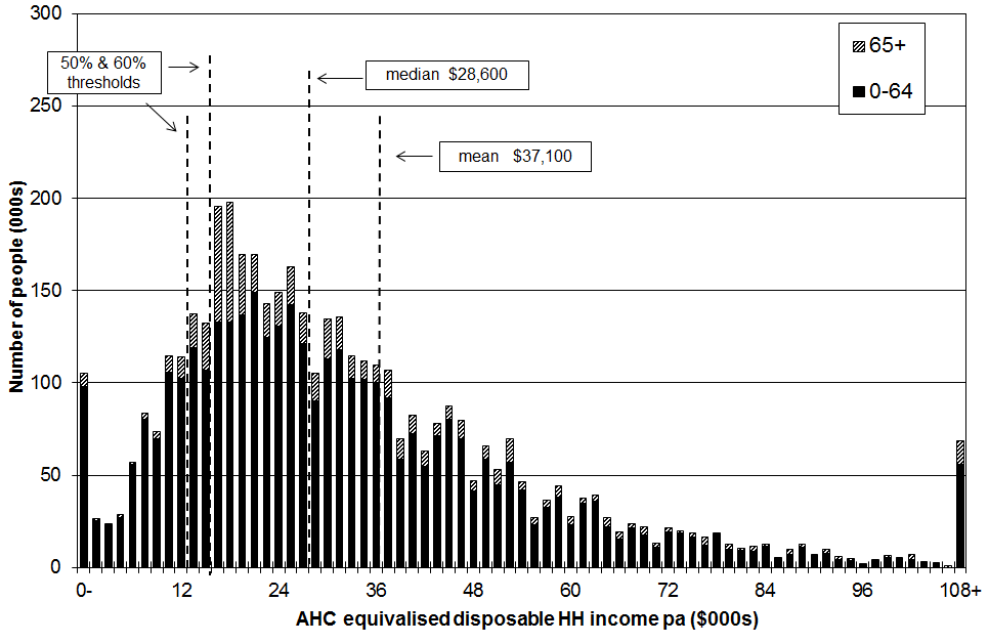


Figure B.2
AHC household income distribution for all individuals: HES 2015



Notes: 1 For both graphs, individuals are grouped by their household incomes in multiples of $1500 pa ($30 pw). This is a rough and ready way of showing the shape of the income distribution and the number of people in different income bands.

2 Figure B.1 draws attention to the pensioner spike in the BHC distribution. In 2015 the pensioner spike was just above the 50% of median line.

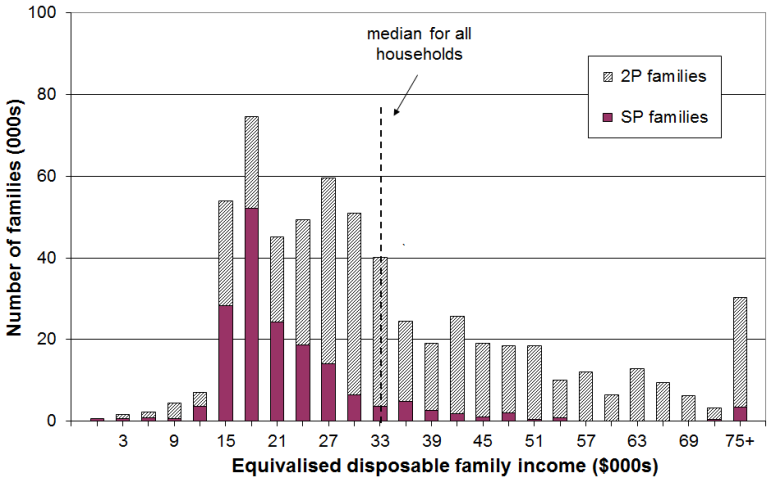
3 The AHC low-income thresholds ('poverty lines') are set at the 50% and 60% BHC thresholds, less 25% to allow for housing costs. See Appendix 6.

Income distribution for sole parent and two parent families, HES 2013

Figure B.3 shows the distribution of family incomes for sole parent and two parent families. In 2013, around 90% of sole-parent families had incomes below the median household income for all households, with or without children.[29] For two-parent families the proportion was 50%. This is similar to previous years.

The relatively low incomes of sole parent families reflects in the main two factors: (a) there is only one potential earner in a sole parent family, and (b) the relatively low full-time employment rate for sole parents (around 35% in 2013). In 2013, 76% of sole mothers and 54% of sole fathers were receiving a main benefit. 18% of these sole parents had declared earnings in June 2015. Sole parent beneficiary families are clustered in the lower part of the income distribution.

Figure B.3
Distribution of sole parent and two parent family income, HES 2013



Notes: 1 Individuals are grouped by their family incomes in multiples of $3000 pa ($60 pw).
2 'Family' here means 'Economic Family Unit'.
3 Treasury's Taxwell weights are used as they give a better population estimate of the number of beneficiary families.

It is clear from Figure B.3 that whatever standard income poverty measure is used, the proportion of those in sole parent families with incomes below the selected threshold (ie the income poverty rate for sole parent families) will be high in itself, and also higher than for those in two parent families.

[29] This is for family or household income adjusted for family size and composition (equivalised family income). Using unadjusted family income makes little difference to this finding.

Where does your household fit?

Many people do not have a realistic idea as to where they (and their household) fit in the income distribution.[30] **Tables B.4A and B.4B** give the annual (unequivalised) disposable income levels (BHC) of different household types in each (equivalised) income decile. From these tables, most people will be able to locate where they and their households fit on the income distribution.

To use these tables, select the column heading that best describes your household situation. Go down the column until you find your household's disposable income range (ie annual after-tax income, including all social assistance and tax credits from the state). The row gives the equivalised income decile for your household income. For example, a household comprising a sole parent with two children with a disposable income of $52,000 pa is in decile 4.[31]

Table B.4A
Where does your household fit in the overall household income distribution (BHC)?
HES 2016

Equivalised income decile	Ordinary dollars (ie not equivalised)				
	One person, no children (reference HH)	Sole parent, one child	Sole parent, two children	Sole parent, three children	Sole parent, four children
Bottom decile	< $19,500	< $27,300	< $34,100	< $40,100	< $45,400
Decile 2	19,500 - 23,600	27,300 - 33,100	34,100 - 41,400	40,100 - 48,700	45,400 - 55,100
Decile 3	23,600 - 28,400	33,100 - 39,700	41,400 - 49,700	48,700 - 58,500	55,100 - 66,100
Decile 4	28,400 - 32,900	39,700 - 46,100	49,700 - 57,600	58,500 - 67,800	66,100 - 76,700
Decile 5	32,900 - 37,900	46,100 - 53,000	57,600 - 66,200	67,800 - 78,000	76,700 - 88,200
Decile 6	37,900 - 43,100	53,000 - 60,300	66,200 - 75,400	78,000 - 88,800	88,200 – 100,400
Decile 7	43,100 - 50,800	60,300 - 71,100	75,400 - 88,900	88,800 - 104,600	100,400 - 118,300
Decile 8	50,800 - 61,300	71,100 - 85,800	88,900 - 107,200	104,600 - 126,200	118,300 - 142,800
Decile 9	61,300 - 80,800	85,800 - 113,200	107,200 - 141,500	126,200 - 166,500	142,800 - 188,400
Top decile	> $80,800	> $113,200	> $141,500	> $166,500	> $188,400

Note: use disposable household income when using this table – that is, household income from all sources after paying personal income tax and after receiving all tax credits (from Working for Families) and other state transfers (eg NZS, AS, main benefits)

[30] For example, a survey conducted in 1999 by the Social Policy Research Centre (University of New South Wales, Sydney) showed that the vast majority of Australians thought that their household incomes placed them in the middle of the distribution. Around half thought they were in either the 4th or 5th deciles and virtually none thought they were in the top quintile (Saunders, 1999). A similar perception is likely to hold in New Zealand too.

[31] The calculations in the table assume that any children are aged around 8 to 10 years, but the figures are close enough if the children are younger or older.

Table B.4B
Where does your household fit in the overall household income distribution (BHC)?
HES 2016

Equivalised income decile	Ordinary dollars (ie not equivalised)					
	Couple or 2 adults sharing	**Couple, one child**	**Couple, two children**	**Couple, three children**	**Couple, four children**	**Three adults, one child**
Bottom decile	< $30,000	< $36,200	< $42,300	<$ 47,300	< $52,400	< $44,000
Decile 2	30,000 - 36,400	36,200 - 44,000	42,300 - 51,300	47,300 - 57,500	52,400 - 63,600	44,000 - 53,400
Decile 3	36,400 - 43,700	44,000 - 52,800	51,300 - 61,600	57,500 - 69,000	63,600 - 76,400	53,400 - 64,200
Decile 4	43,700 - 50,700	52,800 - 61,200	61,600 - 71,400	69,000 - 80,000	76,400 - 88,500	64,200 - 74,300
Decile 5	50,700 - 58,300	61,200 - 70,400	71,400 - 82,100	80,000 - 92,000	88,500 - 101,800	74,300 - 85,500
Decile 6	58,300 - 66,400	70,400 - 80,200	82,100 - 93,500	92,000 - 104,700	101,800 - 115,900	85,500 - 97,400
Decile 7	66,400 - 78,200	80,200 - 94,400	93,500 - 110,200	104,700 - 123,400	115,900 - 136,600	97,400 - 114,800
Decile 8	78,200 - 94,400	94,400 - 114,000	110,200 - 133,000	123,400 - 148,900	136,600 - 164,800	114,800 - 138,500
Decile 9	94,400 - 124,500	114,000 - 150,400	133,000 - 175,400	148,900 - 196,500	164,800 - 217,500	138,500 - 182,700
Top decile	> $124,500	> $150,400	> $175,400	> $196,500	> $217,500	> $182,700

Note: use disposable household income when using this table – that is, household income from all sources after paying personal income tax and after receiving all tax credits (from Working for Families) and other state transfers (eg NZS, AS, main benefits)

See **Appendix 10** for (unequivalised) household income decile boundaries when all households are ranked together.

Distribution of individuals across income quintiles by various household and individual characteristics

When the population is ranked on their household incomes and divided into five equal groups, each group is called a quintile. A quintile contains 20% of the population.

Table B.5 shows the position of groups of individuals in the household income distribution (BHC) according to various household and individual characteristics. The proportions sum to 100% across the quintiles.

The numbers in each quintile can be obtained by using the information in the right-hand column which gives the number of individuals in the various subgroups. For example, in the lowest quintile (Q1), there are around 145,000 individuals in sole parent households where there are dependent children (50% of 284,000), and 220,000 in two parent households with dependent children (14% of 1,582,000).

Table B.6 shows the composition of each income quintile (BHC) according to various household and individual characteristics. The proportions sum to 100% down the columns for each set of characteristics.

Tables B.7 and B.8 repeat the analysis for AHC incomes.

Caution

When using the figures for smaller sub-groups, the proportions in each quintile should be taken as indicative rather than precise.

For example, in Table B.8 those living in one person 65+ households are reported as making up only 4% of the population. When reading Table B.7 for the distribution of those in this household type across the quintiles, it is reasonable to conclude that "around two thirds are found in the bottom two quintiles", but to claim that 20,400 (12% of 170,000) are in the top quintile is spurious precision.

Another example is the distribution across the quintiles by ethnicity. With the Pacific group making up only 6% of the population, the same sort of caution applies as for the one person 65+ households noted above. The 'Other' group is larger (14%) but is somewhat diverse, so results for each quintile can be volatile from year to year. An example of what it is reasonable to conclude from the analysis in the tables which follow is that household incomes for those of Maori and Pacific ethnicity are similarly distributed across the quintiles (50% to 60% are in the lower two quintiles), and are each quite differently distributed than are household incomes for European/Pakeha (for whom around one third are in the lower two quintiles).

See further comments in Section A under "Reliability of results".

Table B.5
Distribution of individuals across income quintiles (BHC)
by various household and individual characteristics (%)

(sum to 100% across rows)

HES 2015	Equivalised disposable household income					All individuals (000s)
	Q1	Q2	Q3	Q4	Q5	
Age						
0-17	23	28	21	17	12	1097
18-24	18	18	21	25	18	439
25-44	14	20	22	23	22	1154
45-64	15	15	19	22	29	1149
65+	35	18	16	14	16	626
All	20	20	20	20	20	4464
Household type						
One person 65+	52	20	10	10	9	170
Couple 65+	30	18	16	19	21	407
One person under 65	33	12	19	18	9	194
Couple under 65	9	9	18	26	39	524
SP with dependent children	50	29	12	5	4	284
2P with dependent children	13	26	26	18	17	1582
Other family HHs with dependent children	20	24	18	30	7	371
Family HHs with no dependent children	12	13	21	25	31	690
Non-family HHs	16	18	19	24	28	245
All	20	20	20	20	20	4464
Ethnicity						
European/Pākehā	16	18	19	22	25	2878
NZ Māori	33	25	17	16	9	701
Pacific	35	24	24	11	6	279
Other	16	21	25	21	17	605
All						4464
Main source of income (under 65s)						
Market	10	22	23	23	23	3453
Government transfer	88	9	3	0	0	429
All	18	20	21	21	21	3839
Tenure (under 65s)						
Owned with mortgage	8	16	22	27	26	1650
Owned without mortgage	16	16	18	20	31	658
Rented - private	24	27	20	19	11	1279
Rented - HNZC and local authority	67	19	7	6	1	204
Children by household type						
Children in SP HHs	55	27	11	4	4	168
Children in 2P HHs	15	30	23	17	15	733
Children in other family HHs	25	18	25	26	7	145
Children in non-family households	*	*	*	*	*	17
All children	23	28	21	16	12	1063

Notes:

1 See note on page 67 for the need for caution in interpreting results for smaller sub-groups.

2 The sample numbers for children in non-family households are too small to give reliable estimates of their distribution across the quintiles.

Interpreting Tables B.5 and B.6: an example

Consider the 0-17 year old group (children).

- Table B.5 (distribution of each group across the quintiles) shows that 51% children are in households in the bottom two income quintiles.
- Table B.6 (composition of each quintile) shows that children make up 28% of all people in households with incomes in the bottom quintile.

Table B.6
Composition of income quintiles (BHC)
by various household and individual characteristics (%)

(sum to 100% down columns)

HES 2015	Equivalised disposable household income					Overall composition
	Q1	Q2	Q3	Q4	Q5	
Age						
0-17	28	34	26	20	15	25
18-24	9	9	10	12	9	10
25-44	18	25	28	29	28	26
45-64	20	19	25	28	37	26
65+	25	13	11	10	12	14
All	100	100	100	100	100	100
Household type						
One person 65+	10	4	2	2	2	4
Couple 65+	14	8	7	7	8	9
One person under 65	7	3	4	4	4	4
Couple under 65	5	5	10	15	25	12
SP with dependent children	16	9	4	2	2	6
2P with dependent children	24	50	42	32	31	35
Other family HHs with dependent children	8	8	11	11	3	8
Family HHs with no dependent children	9	10	16	19	20	15
Non-family HHs	7	4	4	9	9	6
All	100	100	100	100	100	100
Ethnicity						
European/Pākehā	52	59	63	70	79	65
NZ Māori	26	20	13	13	7	16
Pacific	11	8	8	3	2	6
Other	11	14	17	14	12	14
All	100	100	100	100	100	100
Main source of income (under 65s)						
Market	50	95	99	100	100	90
Government transfer	50	5	1	0	0	10
All	100	100	100	100	100	100
Tenure (under 65s)						
Owned with mortgage	22	37	50	49	53	43
Owned without mortgage	12	11	15	18	30	17
Rented - private	45	45	31	30	17	33
Rented - HNZC and local authority	20	5	2	2	0	5
Other	1	2	2	1	0	1
Children by household type						
Children in SP HHs	38	15	8	4	5	16
Children in 2P HHs	45	74	76	73	86	69
Children in other family HHs	15	9	16	21	8	14
Children in non-family HHs	3	2	1	2	1	2
All children	100	100	100	100	100	100

Notes:

1 See note on page 67 for the need for caution in interpreting results for smaller sub-groups.

Interpreting Tables B.5 and B.6: an example

Consider the 0-17 year old group (children).

- Table B.5 (distribution of children across the quintiles) shows that 51% of this group are in households in the bottom two income quintiles.
- Table B.6 (composition of each quintile) shows that children make up 28% of all people in households with incomes in the bottom quintile.

Table B.7
Distribution of individuals across income quintiles (AHC)
by various household and individual characteristics (%)

(sum to 100% across rows)

HES 2015	Equivalised disposable household income					All individuals (000s)
	Q1	Q2	Q3	Q4	Q5	
Age						
0-17	27	24	22	16	12	1097
18-24	23	16	19	25	17	439
25-44	19	18	22	22	19	1154
45-64	16	13	18	23	30	1149
65+	13	32	18	16	20	626
All	20	20	20	20	20	4464
Household type						
One person 65+	25	41	13	12	10	170
Couple 65+	8	32	18	16	26	407
One person under 65	40	11	19	13	18	194
Couple under 65	11	9	19	34	37	524
SP with dependent children	59	23	11	4	4	284
2P with dependent children	19	24	24	18	16	1582
Other family HHs with dependent children	21	16	27	24	12	371
Family HHs with no dependent children	12	12	18	28	30	690
Non-family HHs	25	14	14	33	14	245
All	20	20	20	20	20	4338
Ethnicity						
European/Pākehā	15	19	20	22	25	2878
NZ Māori	33	23	18	16	10	701
Pacific	37	23	22	12	6	279
Other	23	20	21	20	16	605
All	20	20	20	20	20	4464
Main source of income (under 65s)						
Market	14	19	22	23	22	3453
Government transfer	87	11	2	0	0	429
All	21	18	20	21	20	3839
Tenure (under 65s)						
Owned with mortgage	12	16	22	26	24	1650
Owned without mortgage	11	9	20	22	38	658
Rented - private	32	24	19	18	8	1279
Rented - HNZC and local authority	59	25	10	5	2	204
Children by household type						
Children in SP HHs	64	21	9	3	4	168
Children in 2P HHs	20	26	24	17	14	733
Children in other family HHs	26	16	26	22	10	145
Children in non-family households	*	*	*	*	*	17
All children	28	24	22	15	12	1064

Notes:

1 See note on page 67 for the need for caution in interpreting results for smaller sub-groups.

2 The sample numbers for children in non-family households are too small to give reliable estimates of their distribution across the quintiles.

Interpreting Tables B.7 and B.8: an example

Consider the 0-17 year old group (children).

- Table B.7 (distribution of children across the quintiles) shows that 51% of this group are in households in the bottom two income quintiles.
- Table B.8 (composition of each quintile) shows that children make up 34% of all people in households with incomes in the bottom quintile.

Table B.8
Composition of income quintiles (AHC)
by various household and individual characteristics (%)

(sum to 100% down columns)

HES 2015	Equivalised disposable household income					Overall composition
	Q1	Q2	Q3	Q4	Q5	
Age						
0-17	34	29	26	19	15	25
18-24	11	8	9	12	9	10
25-44	25	24	28	28	25	26
45-64	21	17	24	29	38	26
65+	9	23	13	11	14	14
All	100	100	100	100	100	100
Household type						
One person 65+	5	8	3	2	2	4
Couple 65+	4	15	8	7	12	9
One person under 65	9	2	4	3	4	4
Couple under 65	7	5	11	14	22	12
SP with dependent children	19	7	3	1	1	6
2P with dependent children	33	43	42	32	28	35
Family HHs with dependent children	9	7	11	10	5	8
Other family HHs with no dependent children	9	9	14	22	23	15
Non-family HHs	7	4	4	9	4	6
All	100	100	100	100	100	100
Ethnicity						
European/Pākehā	47	61	65	70	80	65
NZ Māori	26	18	14	13	8	16
Pacific	12	7	7	4	2	6
Other	16	14	14	13	11	14
All	100	100	100	100	100	100
Main source of income (under 65s)						
Market	59	94	99	100	100	90
Government transfer	41	6	1	0	0	10
All	100	100	100	100	100	100
Tenure (under 65s)						
Owned with mortgage	28	39	51	47	50	43
Owned without mortgage	6	9	11	22	27	17
Rented - private	51	44	31	28	13	33
Rented – HNZC and local authority	15	7	3	1	0	5
Other	1	0	2	2	1	1
Children by household type						
Children in SP HHs	36	14	7	3	3	16
Children in 2P HHs	49	75	76	74	83	69
Children in other family HHs	13	9	16	20	11	14
Children in non-family HHs	2	2	1	3	1	2
All children	100	100	100	100	100	100

Notes:

1 See note on page 67 for the need for caution in interpreting results for smaller sub-groups.

Interpreting Tables B.7 and B.8: an example

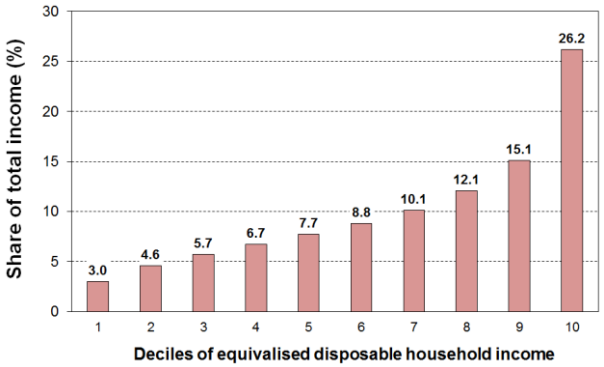
Consider the 0-17 year old group (children).

- Table B.7 (distribution of children across the quintiles) shows that 51% of this group are in households in the bottom two income quintiles.
- Table B.8 (composition of each quintile) shows that children make up 34% of all people in households with incomes in the bottom quintile.

Income shares across the distribution

Figures B.1 and B.2 above show that income is not distributed evenly across the population even after taxes and transfers have been taken into account. **Figure B.4** presents the same information in a different way by showing the share of the total income that is received by the different income deciles (BHC).[32] Because the income concept is *equivalised* household disposable income, the information in the graph needs to be interpreted as comparisons of the consumption capabilities for those in the various deciles, having adjusted for household size and composition.

Figure B.4
Shares of total income by deciles: HES 2016



The top 10% receive just over a quarter (26%) and the top 30% receive just over a half (53%) of the total population (equivalised) income. This is much the same as in recent years. For example, the average figures from HES 2007 to HES 2012 were 25% and 53% respectively. See **Table 9.3** in Appendix 9 for the time series from 1982 to 2016.

Table B.9 shows that the distribution of household income in New Zealand (HES 2013) is broadly similar to that in the UK, Australia and Canada, but more dispersed than for Finland and Norway.

Table B.9
Shares of total income by quintiles of equivalised disposable household income (%): international comparisons for c 2012

	Q1 (low)	Q2	Q3	Q4	Q5 (high)
Norway	10	16	19	23	33
Finland	10	14	18	23	36
Sweden	9	15	19	23	34
France	9	13	17	22	40
NZ HES 2013	8	13	17	23	40
NZ HES 2016	7	12	16	22	42
UK	8	13	17	22	41
Australia	8	12	17	22	41
Canada	7	12	17	24	40
Italy	7	13	18	23	39
Spain	6	12	17	24	41
Greece	6	12	18	24	40

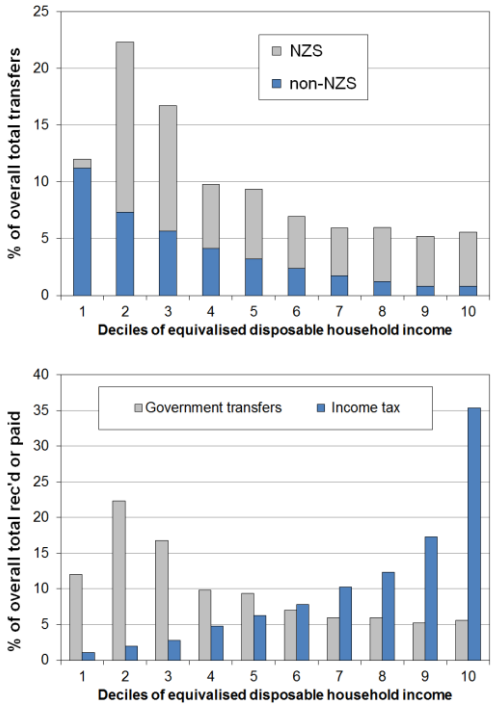
Sources: Australia (Table 1 in ABS (2015) for 2014; Canada (Table 202-0606 in Statistics Canada (2011) for 2009; European countries (Eurostat statistical database for Population and Social Conditions for 2012).

[32] See Appendices 8 and 9 for a detailed discussion of the limitations of the income data in decile 1 in relation to its use as an indicator of (potential) living standards.

The redistribution of income: market income, government cash benefits, income tax, consumption tax and publicly provided services

New Zealand, like all OECD countries, has a tax and transfer system that significantly redistributes market income (wages, salaries, investments, self-employment) and reduces the inequality and hardship that would otherwise exist. In interpreting the findings in this section it is important to note that market income is not the counterfactual or "natural state" that would exist if there was no government intervention. The existence of taxes, government expenditure and the apparatus of the welfare state influences citizens' behaviour in relation to labour market participation, living arrangements, and so on. The analysis can be taken as an indication of the extent of redistribution given that we live in a redistributive welfare state.

Figure B.5
Cash transfers and income tax paid: HES 2015



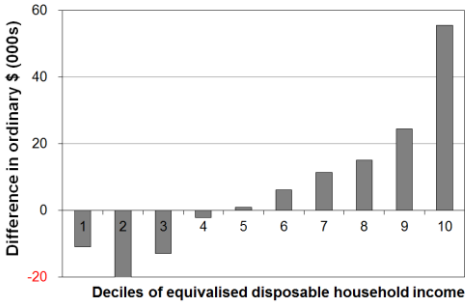
"Government transfers" include working-age welfare benefits, New Zealand Superannuation (NZS), the Accommodation Supplement, Working for Families tax credits, special needs grants, and so on. The top chart of **Figure B.5** shows the distribution of these transfers across household income deciles, with NZS separated out. For example, decile 2 households receive 22% of all transfers and two thirds of that is NZS.

The lower chart of Figure B.5 shows how the proportion of total income tax paid and transfers received varies across the different deciles. For example, households in the top decile pay one third (35%) of all income tax collected, and receive 5% of all transfers. The transfers received by the top decile are almost entirely from NZS. The rest would be from low-income 'independent' adults living in high-income households while (legitimately) receiving a core income-tested benefit such as sole-parent support.

Another useful way of looking at the extent of redistribution is to look at the difference between income taxes paid and transfers received for households in different income deciles For many households, the amount they receive in transfers is greater than what they pay in income tax. They have a negative net tax liability.

One group with negative net tax liability is low- to middle-income households with dependent children. For example, single-earner families with two children can earn up to around $60,000 pa before they pay any net tax. Around half of all households with children receive more in welfare benefits and tax credits than they pay in income tax. The vast majority of older New Zealanders (aged 65+) live in households where there is a negative income tax liability – the income tax they pay is less than the value of the NZS they receive. "Working-age" working households without dependent children have a positive income tax liability whatever their income.

Figure B.6
Income tax less govt cash transfers



When all households are counted (working age with children, working age without children, and 65+ households), and looking at households grouped in deciles rather than looking at individual households, the total income tax paid by each of the bottom four deciles is less than the total transfers received. See **Figure B.6.** It is only for each of the top five deciles that total income tax paid is greater than transfers received.[33]

[33] In Figures B.5 and B.6 the deciles are deciles of individuals ranked according to the equivalised disposable income of their respective households. The difference for each decile between total income tax paid and government cash transfers received is calculated (in ordinary dollars) for the households to which the individuals belong.

The inequality-reducing impact of taxes and transfers

Figure B.7 and **Table B.10** show the inequality-reducing impact of taxes and transfers by comparing the Gini scores for household market income and household disposable income – that is for household incomes before and after taxes and transfers.

Figure B.7
Gini scores (x100) for market and disposable household income, 1985 to 2015 (18-65 yrs)

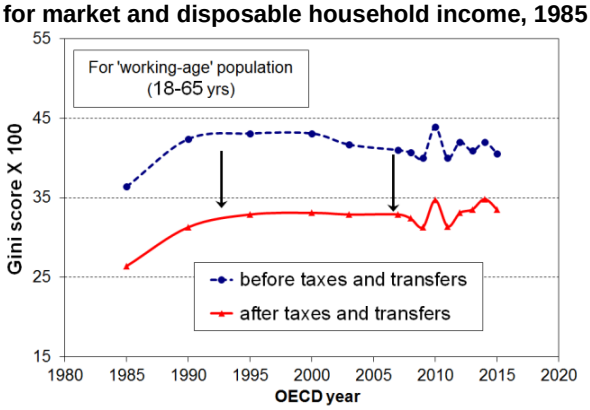


Table B.10
Gini scores (x100) for market and disposable household income, 1985 to 2012 (18-65 yrs)

HES year	OECD year	Before taxes and transfers (market income)	After taxes and transfers (disposable income)	Reduction (%)
1986	1985	36.4	26.4	27
1991	1990	42.4	31.3	26
1996	1995	43.1	32.9	24
2001	2000	43.1	33.1	23
2004	2003	41.7	32.9	21
2008	2007	41.0	32.9	20
2009	2008	40.7	32.4	20
2010	2009	40.0	31.3	22
2011	2010	43.9	34.7	21
2012	2011	40.0	31.4	21
2013	2012	42.0	33.1	21

Reading note for Figure B.7 and Table B.10:

HES year 'n' is reported as 'n-1' in the OECD Income Distribution Database and related publications (eg 2013 is reported as '2012').

For working-age New Zealanders (aged 18 to 65 years), the reduction in the household market income Gini was ~20-22% from 2003 to 2012 (OECD yrs), with a small rise during the immediate post-GFC years. This reduction is similar to Canada, but less than Australia and the UK (~25%), and much lower than many European countries such as Denmark, France and Austria (33-36% reductions). The median OECD reduction was 27% for 2013.

When the full population is used, New Zealand's reduction in inequality is 28% compared with the OECD median of 35%.

For more detailed OECD comparisons and a very recent update to comparisons for later years, see the International Section (Section J).

Box 3
How the income inequality picture changes depending on the income concept used

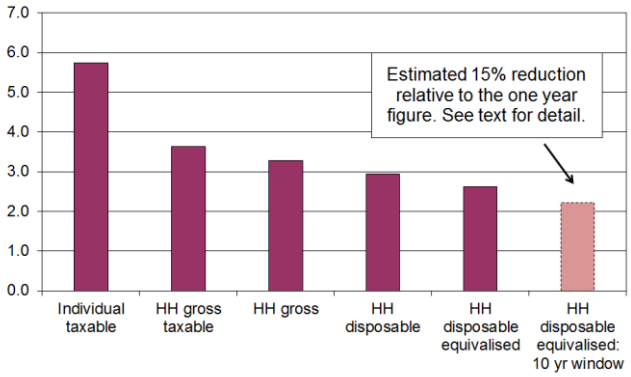
The level of inequality or dispersion in the distribution of incomes depends on which income concept is used.

This report uses equivalised disposable household income as the income concept for all its income distribution, inequality and poverty analysis. This is the total after-tax income of all individuals in the household, together with Working for Families Tax Credits and other non-taxable income such as the Accommodation Supplement (AS) and so on, adjusted for household size and composition. This is standard international practice for reports of this type, where the focus is on household income as an indicator of the material wellbeing of household members relative to others from other households.

The graph below shows the different levels of inequality that different income concepts produce, using the 80:20 percentile ratio as the measure.

Inequality is lower when the focus moves from individuals to households (HHs). The 80:20 ratio falls from 5.8 for individual taxable income to 3.6 for HH gross taxable income. HH gross taxable income excludes all non-taxable components such as WFF tax credits, AS, and so on. When these are included, inequality drops further (HH gross). Taking personal income tax deductions into account further reduces the 80:20 ratio, as does the adjustment for household size and composition. The 80:20 ratio is more than halved in going from individual taxable income to equivalised disposable HH income. The latter is the best of these income concepts to use when using income to assess the material wellbeing of the population, and of subgroups within it.

80:20 percentile ratio for different income concepts, 2012-13
(HLFS for individuals, HES for households)



When the same group of individuals is followed over time (longitudinal data), and the income concept is the average household disposable income of the individual over, say, ten years rather than one, then measured inequality falls even further as a result of income mobility. For Australia the fall was around 15% for both the 90:10 ratio and the Gini from 2001 to 2010 and for the UK it was around 15% for the Gini for five year periods starting at various years in the 1990s. The right-hand bar above assumes a 15% reduction for illustrative purposes. See **Section K** for more on this.

"Final" household income

Figure B.5 tells only a part of the government transfer story. A more comprehensive analysis needs to include tax paid through GST especially as lower-income households generally apply all or almost all their income to expenditure on GST-able goods and services, whereas higher-income households apply a lesser proportion of their income to GST-able expenditure, with a portion going to savings and interest payments which do not attract GST. GST is therefore generally a higher proportion of the income of lower-income households than for higher-income households.

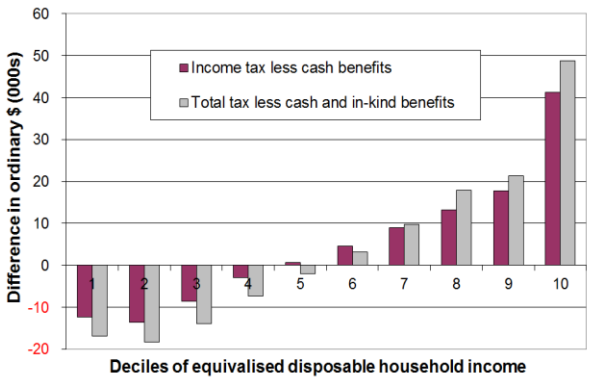
Households also receive government-funded health and education services which means that they do not have to pay for them directly from their own income. These services can be seen as a form of income or in-kind government benefit to be counted along with any cash benefits received.

In this broader framework the concept of "final" household income is sometimes used as a means of taking into account cash and in-kind income from the market and the government and consumption taxes as well as income taxes. Crawford and Johnston (2004) have shown that, using a final household income approach, there is further redistribution from more well-off households to less well-off households because households in the higher income deciles pay more consumption tax and also receive less in the way of in-kind benefits from education and health spending combined. They conclude that "final incomes are more equally distributed than disposable incomes" (p29).

This finding is illustrated in **Figure B.7** which compares the redistribution using both the narrower and broader frameworks for 1998. [34]

The large additional transfer to low- to middle-income households through the Working for Families package in 2005 to 2007 and the tax switch changes in October 2010 are not captured in their analysis. The Treasury have since updated the analysis to 2010 (Aziz and colleagues, 2012), and that analysis confirms the earlier findings on inequality, among other things. This is consistent with other similar research from other OECD countries.[35]

Figure B.8
Redistribution of market income: HES 1998



Source: Crawford and Johnston (2004)

An example is a 2008 OECD study[36] on the equality-enhancing impact of taxes and cash transfers and of government services. The study found that:

- public expenditure on the provision of social services (mainly health and education) significantly reduces inequality within countries and reduces the range of inequality otherwise found across countries
- the size of the reduction in inequality from government in-kind services is on average less than that achieved by income taxes and transfers, but is still significant – it is around a quarter when using the inter-quintile share and a half when using the Gini coefficient[37]
- the inequality-reducing impact of the countries' tax and transfer systems is more variable across countries than the impact of public services
- the ranking of countries on inequality does not change very much when moving from a household disposable income measure to the broader measure that includes public services (correlation ~ 0.95).

[34] Note that Figures B.5 and B.7 are both simply cross-sectional snapshots of income re-distribution across the deciles and do not show how incomes of individuals or households change over time. At one point in time a household may be a net 'receiver' and at another time, a net 'payer'.

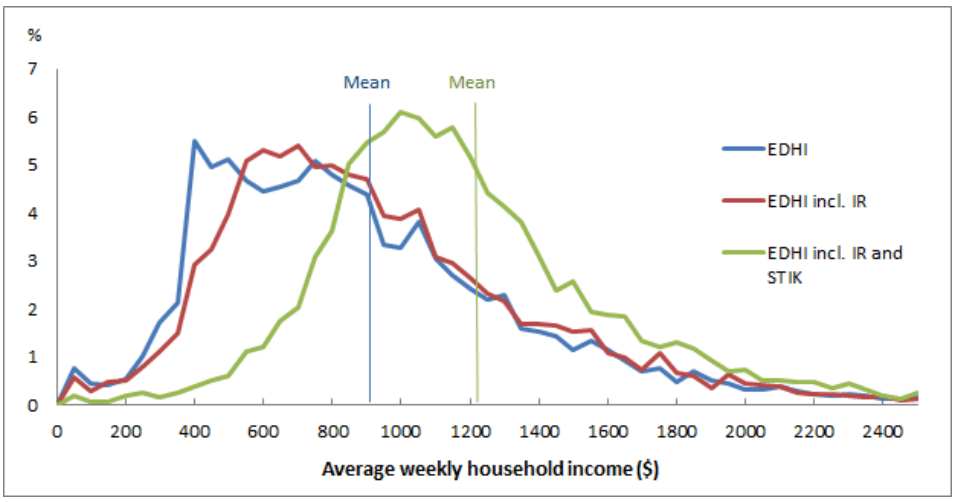
[35] For example, see ABS (2013), Appendix 4 for Australia.

[36] See Chapter 9 in OECD (2008).

[37] See Section D for more on the Gini and other measures of inequality.

The Australian Bureau of Statistics has made significant progress in recent years in its efforts to include imputed rent in its analysis of household income and its distribution. **Figure A.3** below shows how the inclusion of imputed rent reduces the dispersion of the income distribution, with the Gini changing from 32.0 to 30.3 (see ABS, 2103a). The inclusion of social transfers in kind (STIK) further reduces measured income inequality as the income concept broadens further. Examples of STIKs are free or subsidised education, health and child care.

Figure A.3.
Distribution of equivalised disposable household income with and without IR and STIK: Australia, 2011-12



Source: ABS (2013a)

Section C
Trends in key labour market, demographic, housing costs and social assistance variables

This report is essentially descriptive. It does not attempt, for example, to give a detailed explanation of changes in the income distribution by drawing on what we know about the impacts of key labour market, demographic, macro-economic and geo-political factors and of tax and social assistance policy settings.[38]

This section however goes a little beyond description by providing information on trends in some key variables which clearly impact on the income distribution. These trends provide the basis for a high-level account of changes in the middle and at the lower end of the distribution in line with the main themes and focus of this paper.

At a high level, the trend in real GDP per capita sets the context, although the relationship of the GDP trend to that of disposable household income is not simple or direct. There are many mediating and modifying factors that impact on how the cake is divided up across households, independent of the size of the cake itself.

From a distributional perspective a rough rule of thumb is that median household incomes for the population as a whole generally follow the trend for incomes of two-parent-with-dependent-children households. This group dominates the income distribution from P20 to P60. It made up around half of those in the second-from-bottom quintile and 45-50% of the third quintile from the mid 1990s to 2015. and an even greater proportion during the 1980s. Income changes for this group therefore impact quite significantly on overall household income trends. The median income of this household type is very close to the overall median income from 1982 to 2016 (see Figure D.9 in the next section).

The two factors that impact the most on the incomes of two-parent-with-dependent-children households are average wage rates and the total hours worked by the two parents. The total number of hours worked is in turn related to the overall employment rate and to social norms, in relation to labour force participation for mothers and fathers of dependent children. This section therefore reports on the employment rate (by sex), net average ordinary time weekly earnings (NAOTWE), and the hours worked in two-parent-with-children-households. The trend in median household income is strongly influenced by trends in these factors.[39]

The lower part of the income distribution includes those from households whose main income is from paid employment ("the working poor") and those from households whose main income is from income-tested benefits or New Zealand Superannuation (NZS). Trends in the numbers below typical low-income thresholds (ie trends in income poverty rates) are therefore strongly influenced by three sets of factors: (a) average wage levels and employment rates; (b) (trends in) the levels of social assistance; and (c) trends in the numbers in receipt of social assistance. Social assistance is taken here to refer to the main income-tested benefits for those under 65, together with the Family Tax Credit (FTC) (formerly Family Support (FS)) and In-Work Tax Credit where there are dependent children, and NZS for those aged 65+.

This section therefore also reports on trends in the total number receiving a main benefit, the real value of the main benefits plus FTC/FS where relevant, and the unemployment rate.

This report promotes the value of using household incomes after deducting housing costs (AHC) as the preferred approach for comparing the material wellbeing of different subgroups of the

[38] For more detailed analysis and explanation see, for example, Easton (1996), Dixon (1998), O'Dea (2000), Hyslop and Maré (2001), Singley and Callister (2003), Hyslop and Yahanpath (2005), OECD (2011c), Nolan et al (eds) (2013), Salverda et al (eds) (2013).

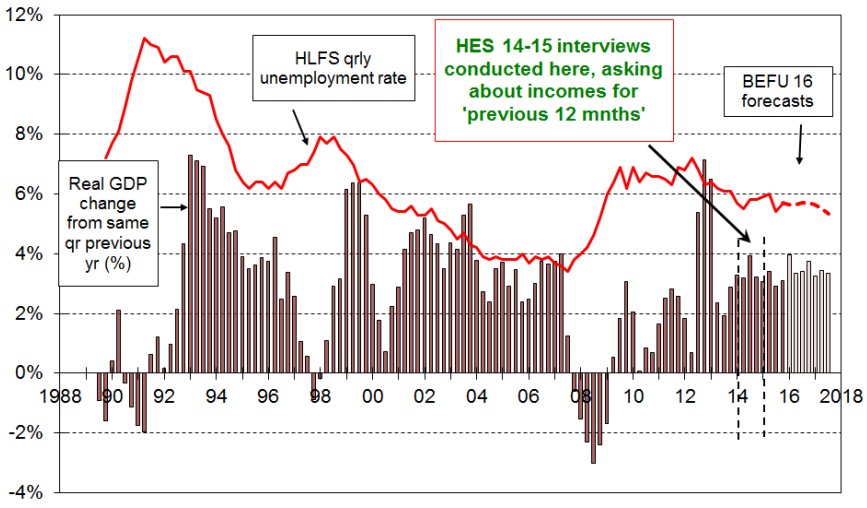
[39] Changes in tax credits or other forms of state cash assistance for families with children (such as the Working for Families package introduced over the 2004 to 2007 period) can also have significant impacts on the incomes of two-parent families, but generally do not have a great impact on the median itself as they are usually targeted at families below or well below the median.

population. This section therefore also reports on trends in gross expenditure on accommodation as proportion of household income.

Trends in GDP, employment, unemployment and weekly earnings

Figure C.1 shows the pattern of the business cycle from 1982 to 2015 in terms of annual GDP growth and the HLFS unemployment rate. The 2015 HES interviews were carried out from July 2014 to June 2015. The incomes reported by households in the survey are for the twelve months prior to the interview. Those interviewed in July 2014 would therefore be reporting on incomes in the period from August 2013 to July 2014, and so on. The household incomes data in the 2015 HES, as in the previous two surveys, could be expected to reflect the impact of the ongoing recovery after the economic slowdown associated with the GFC and the Christchurch earthquakes and other factors.

Figure C.1
Real GDP annual changes and unemployment rates, 1990 to 2015



Year labels are for June quarters

Figure C.2
Employment rate (15-64yrs), 1987 to 2016

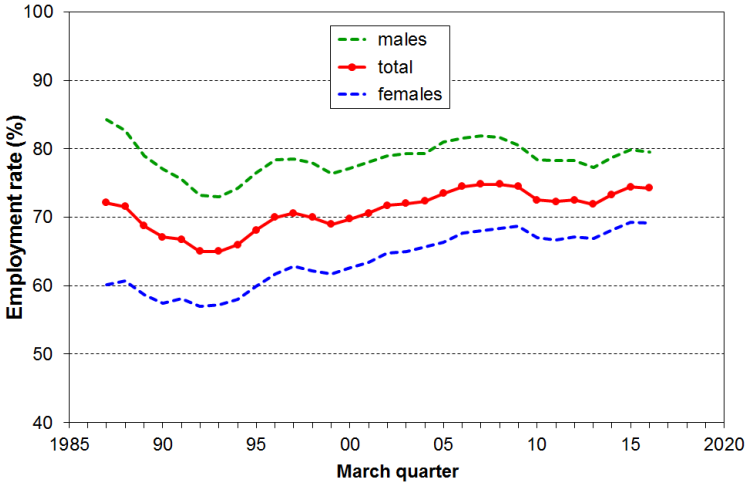
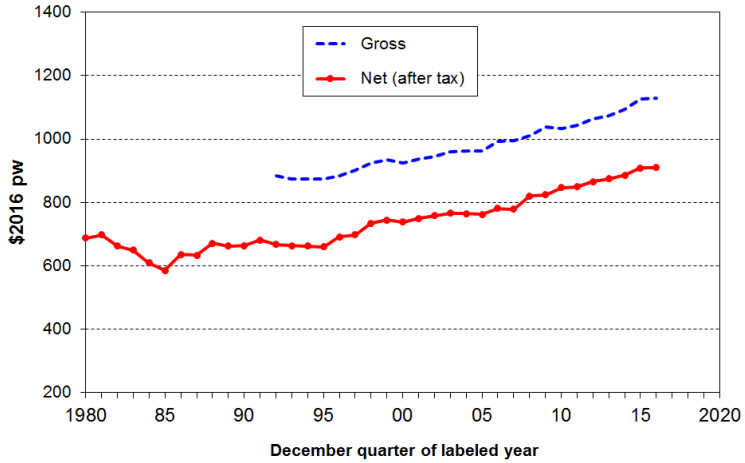


Figure C.3 shows the trend in before-tax (gross) and after-tax (net) wages in real terms. From 1994 to 2016 they grew 29% and 37% in real term. Median household incomes grew 61% in real terms in the period.

Figure C.3
Gross and net average ordinary time weekly earnings ($ Dec 2016)

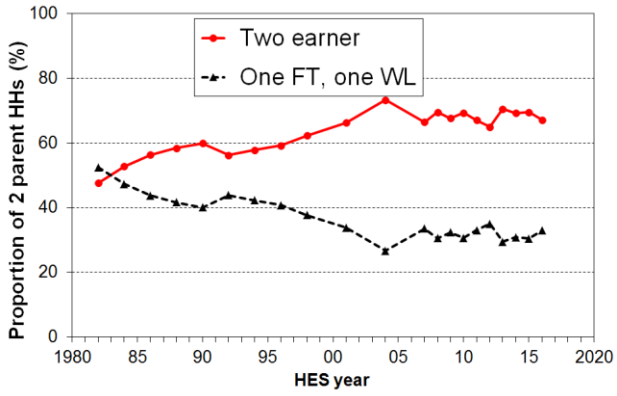


Incomes around the median: the longer-term trend

Figure C.2 shows the trend in the proportion of the population aged 15-64 who are in paid employment for at least one hour per week (the "employment rate"). After falling to a low in 1992 the employment rate rose through to 1996, faltered for two years then rose each year through to 2007, with a slower growth rate from 2004 to 2007. Overall employment rates fell from 2007 to 2010, returning to 2002 levels, and remained flat for three years to 2013 before rising through to 2016. The female employment rate was considerably higher in 2016 (69%) compared with the mid 1980s (60%) whereas male employment in 2016 (80%) was below what it was in the mid 1980s (84%). The overall rate in March 2016 was back to the 2008 pre-recession high of 75%, and by March 2017 was at 77%.

Figure C.4 shows the increased work intensity in two-parent-plus-dependent-children households, since the mid 1990s. The two-earner proportion in recent years (68%) is around the OECD average (65%) for the 21 countries for whom comparable data is available.[40]

Figure C.4
Proportion of two parent HHs by hours of paid employment (where at least one is FT)



These factors together point to median household incomes falling away in the early 1990s as employment declined, and rising from the mid 1990s through to 2004, with reasonably strong growth from 2001 to 2004 when all three factors lined up together to drive up income of two parent with dependent children households. From 2004 to 2007, the median incomes of two-parent

[40] OECD (2011), Figure 1.10, p38.

households could be expected not to change as greatly as their employment hours remained steady overall (Figure C.4), and the WFF package had only an negligible impact on the median.

The rise in the median over the last five surveys (from HES 2011 to HES 2016) is consistent with the rising real average wage, higher employment rates and relatively steady average employment hours for two parent families whose incomes influence the median more than others.

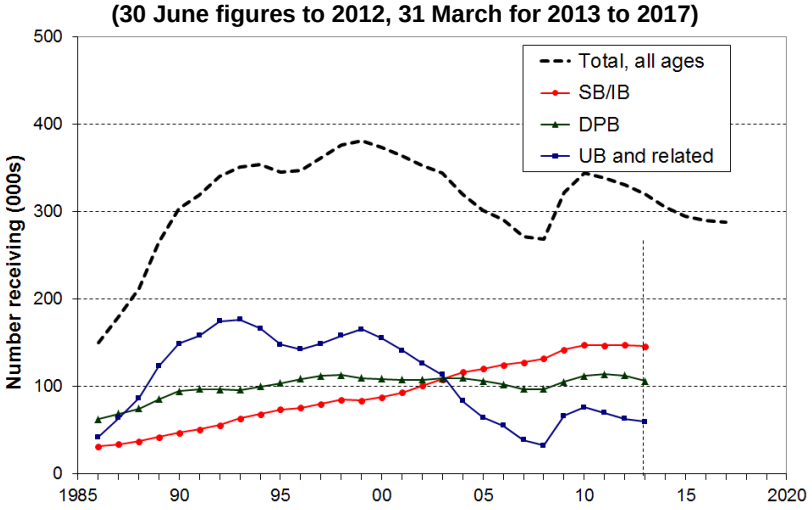
See Figure D.1 in the next section for the trends in median household incomes.

Incomes at the lower end of the income distribution

Incomes at the lower end of the distribution are significantly affected by trends in the levels of social assistance delivered through income-tested benefits and child-related support, and trends in the numbers for whom social assistance income is their primary source of income.

Figure C.5 shows the rise in the total number of EFUs (benefit units) receiving a main benefit through to 1994, the further rise through to 1999, the steady decline to June 2008, the rise through to June 2010 reflecting the recession and the global financial crisis, and the subsequent fall to 288,000 in March 2017. Numbers in receipt of the (former) unemployment benefit follow a trend that is a rough mirror image of the employment rate (Figure C.2).

Figure C.5
Number of families / benefit units in receipt of income-tested benefits (all ages), 1986 to 2017: (30 June figures to 2012, 31 March for 2013 to 2017)



Note: The changes to benefit categories and names in 2013 means that the time series for the specific benefit types in the chart above cannot be continued – a new series will be developed for future reports. See http://www.msd.govt.nz/about-msd-and-our-work/publications-resources/statistics/benefit/index.html#Datatables6 for detailed information on benefit numbers.

Whereas Figure C.5 above is based on the number of EFUs receiving an income-tested benefit, **Figure C.6 and Table C.1** reports trends for the number of individuals in beneficiary families (EFUs) and the number of individuals receiving New Zealand Superannuation or the Veterans Pension (NZS/VP).

Since 2011 there have been more NZS/VP recipients than “working-age” beneficiaries and their children. This was first the case briefly for 2007 and 2008 before the negative impact of the GFC on employment led to a rising number receiving a main benefit.

Figure C.6
Number of individuals in EFUs receiving a main benefit or NZ Superannuation or Veterans' Pension: (30 June figures to 2012, 31 March for 2013 to 2017)

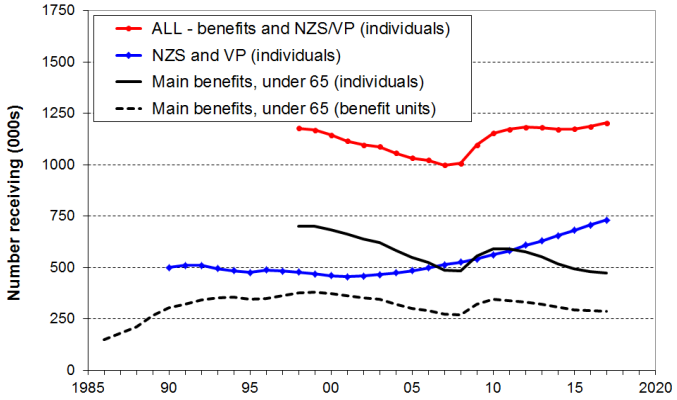


Figure C.7 uses the same benefit and NZS/VP information as in Figure C.6, but compares the numbers with the relevant (growing) total population numbers.

The proportion of the population under 65 who are in a benefit unit receiving a main benefit (12%) is now just a little less than what it was just before the GFC (13%), while the proportion of all children in a beneficiary family is 16%, down from 19% just before the GFC, and 30% in the late 1990s.

Figure C.7
Proportion of under 18s, under 65s and the whole population receiving a main benefit or NZS/VP

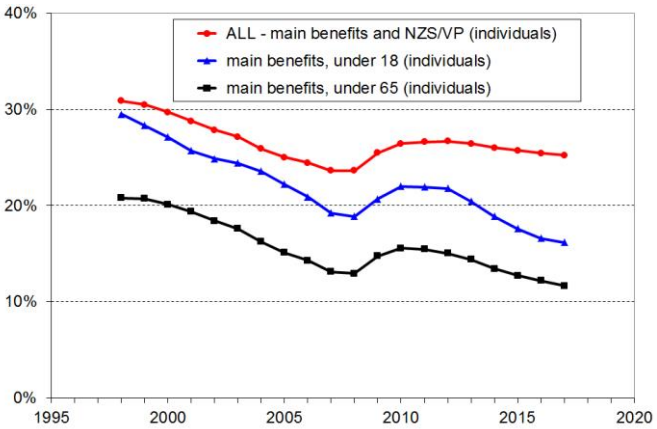


Table C.1
Individuals in EFUs in receipt of an income-tested benefit or NZS (30 Jun to 2012, 31 Mar thereafter)

	Total working age EFUs in receipt of an income-tested benefit (000s)	All people (adults and children) where prime recipient of an income-tested benefit is under 65 (000s)	Children (<18) dependent on a recipient of an income-tested benefit (all ages), (000s)	NZS/VP recipients (000s)	Proportion of children (<18) dependent on a recipient of an income-tested benefit (%)	Proportion of all people under 65 in an EFU in receipt of an income-tested benefit (%)	Proportion of whole popln in an EFU in receipt of an income-tested benefit or NZS/VP (%)
1998	368	701	281	477	30	21	31
1999	372	701	277	468	28	21	30
2000	364	684	271	461	27	20	30
2001	354	662	263	454	26	19	29
2002	343	638	256	458	25	18	28
2003	334	622	253	467	24	18	27
2004	309	584	245	473	24	16	26
2005	290	548	233	484	22	15	25
2006	280	523	221	498	21	14	24
2007	261	485	205	513	19	13	24
2008	258	482	200	525	19	13	24
2009	310	554	221	542	21	15	25
2010	333	591	233	561	22	16	26
2011	328	591	232	581	22	15	27
2012	320	575	227	608	22	15	27
2013	310	552	217	628	20	14	26
2014	295	518	200	655	19	13	26
2015	284	493	187	681	18	13	26
2016	280	480	179	706	17	12	25
2017	278	473	174	731	16	12	25

Sources: Columns 1-4, MSD Statistical Reports and Information Analysis Platform
Columns 5-7 use population estimates from Statistics New Zealand for the denominator

The average size of working-age beneficiary units has declined from 1.9 in 1998 to 1.7 in 2017.

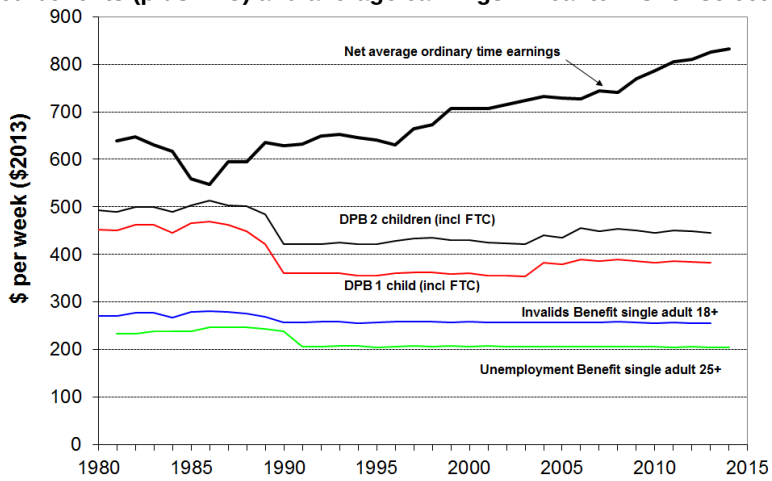
Note:

The next short section, which compares trends in income support levels (main benefits plus WFF where relevant) with wages and household incomes, is not updated this time. It will be updated next time when it will incorporate the April 2016 benefit and WFF increases. **Figure C.9D** is a placeholder for rates from 2007 to 2016 until next year.

The 1 April 2016 changes have minimal impact on the 2015-16 HES data as the new rates were in force only for the last three months of the 2015-16 survey. For the three quarters of respondents who were interviewed before 1 April there is no impact. For the one quarter interviewed after 1 April, the increases are zero to small.

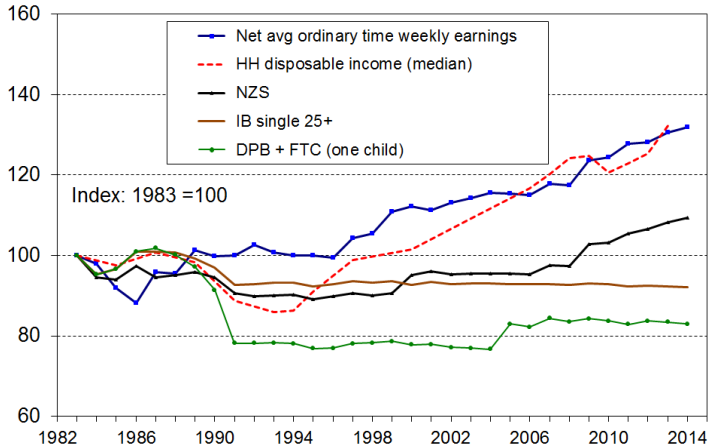
Figure C.8 shows the trend in real terms of average earnings and of income-tested benefits for the period. The earnings measure is net average ordinary time weekly earnings (NAOTWE) and the income-tested benefit measure is the value of the main benefit plus the Family Tax Credit (or Family Support prior to 2007) for which the respective families are eligible in relation to the dependent children in their care.[41] None of the scenario lines include the Accommodation Supplement or the subsidy received by those on income-related rents vis-à-vis market rents.

Figure C.8
Income-tested benefits (plus FTC) and average earnings in real terms for selected HH types



Figures C.9A, C.9B and C.9C expand the comparisons above by including NZS and median disposable household income. They show the different trajectories for the different income measures by using an index set to 100 in 1983, 1994 and 2007 respectively. These three starting points are for before the 1991 benefit cuts, after the benefit cuts and when the economy was growing and benefit numbers had fallen considerably, and after the introduction of the Working for Families package. The three different starting points are shown as for this sort of analysis a different picture can emerge depending on the starting point used.

Figure C.9A
Relativities between main benefit levels, NZS, average wage and median household income, 1983 = 100



[41] Note that if the household incomes derived from social assistance were equivalised, there would be much less of a difference in income between the different household and benefit types used in the graphs.

Figure C.9B
Relativities between main benefit levels, NZS, average wage and median household income, 1994 = 100

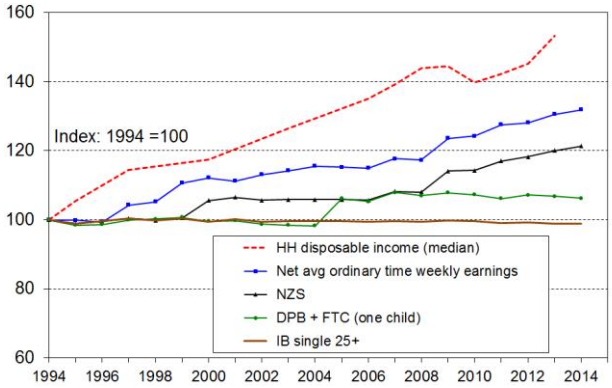
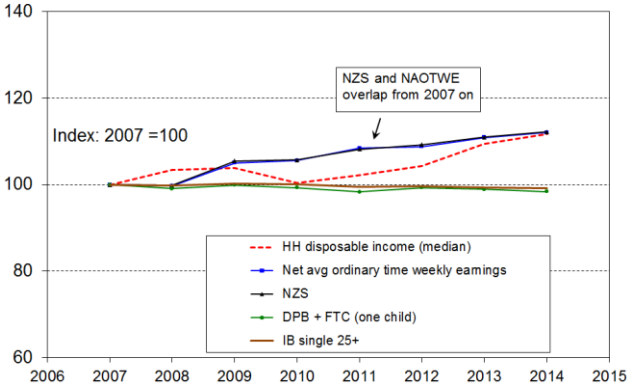
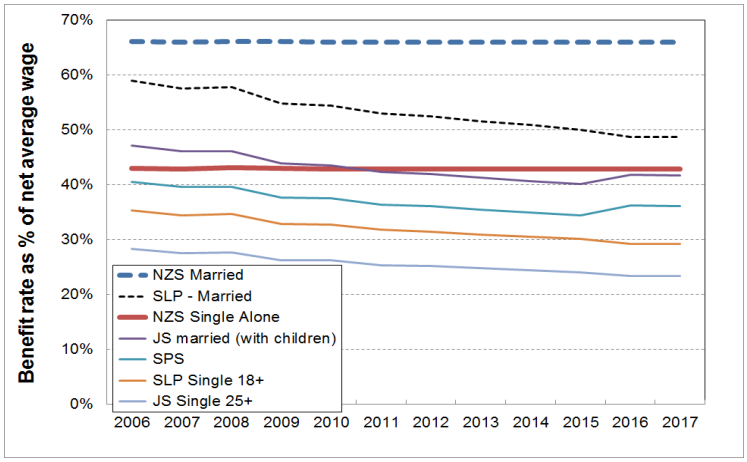


Figure C.9C
Relativities between main benefit levels, NZS, average wage and median household income, 2007 = 100



Note: the vertical scale for Fig C.8C is a little different from the one used for both 8A and 8B.

Figure C.9D
NZS and selected main benefits relative to net average wage



SLP: Supported Living Payment JS: Job-seeker SPS: Sole-parent Support

Housing costs

High housing costs relative to income are often associated with financial stress for low- to middle-income households. Low-income households especially can be left with insufficient income to meet other basic needs such as food, clothing, transport, medical care and education for household members.

Housing affordability can be measured in a number of different ways. From the perspective of potential homeowners the simplest measure is the ratio of average house price to annual household disposable income, which in effect gives the number of years needed to cover the purchase price of a house (on average). Other more sophisticated measures incorporate the cost of financing as well (eg Massey University's Home Affordability Index).

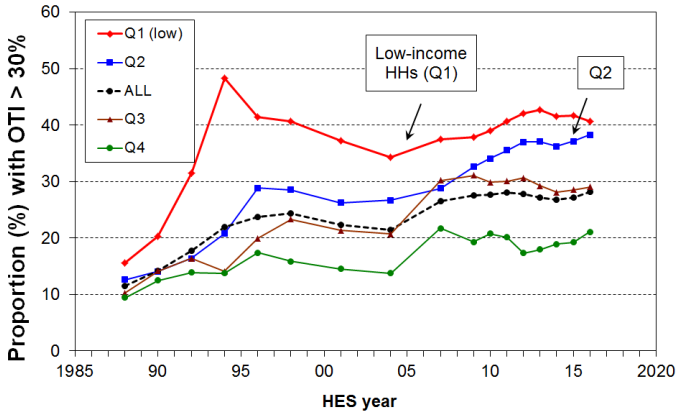
The recently released Housing Affordability Measure from the Ministry of Building Innovation and Employment uses a mix of administrative and survey data and covers both renters and aspiring first home buyers. It is based on the notion of 'residual income' for households, very similar to this report's income after deducting housing costs (AHC) measures.

This section on housing costs and housing affordability uses a measure which is relevant to both homeowners and renters, and takes the perspective of households already in the own homes or renting. The ratio used is that of gross (unequivalised) housing costs to (unequivalised) household disposable income, in much the same way that home-loan lenders do for assessing risk.

The figures and trends in the summaries that follow are national average figures. There are regional differences that a relatively small sample survey like the HES cannot pick up (see, for example, pp73ff in Johnson (2015) for regional differences).

Figure C.10 and **Table C.3** show the trends by income quintiles for households with high "outgoing-to-income ratios" (OTIs), using 30% as the benchmark for high OTIs.

Figure C.10
Proportion of households with housing cost OTIs greater than 30%, by BHC income quintile



Note: from HES 2008 on, the graph shows the smoothed trends using a rolling two-year average.

In 2015 and 2016, 29% of households had high housing OTIs (>30%), compared with one in five in the early 1990s, and one in ten in the late 1980s. These are national average figures, and there are variations regionally.

For the bottom income quintile, the proportion with high OTIs steadily reduced from 48% in 1994 to 34% in 2004, as unemployment fell, employment and income rose, and income-related rental policies were introduced in 2000 for those in HNZC houses. It then rose steadily from 2004 to a 41-43% plateau for 2011-2016.

For households in the second quintile there was a strong rise from the 1980s through to the mid 1990s, followed by a relatively flat trend to 2004. From 2004 to 2011 there was a strong rise from

27% to 36%. The rate of increase has slowed since with the rolling two year average rate was much the same from 2012 to 2016 (37-38%).

The rise for the third quintile from just over 20% in the late 1990s and early 2000s to a new plateau of around 30% from 2007 to 2016 is also noteworthy.

Table C.3
Proportion of households with housing cost OTIs greater than 30%, by income quintile

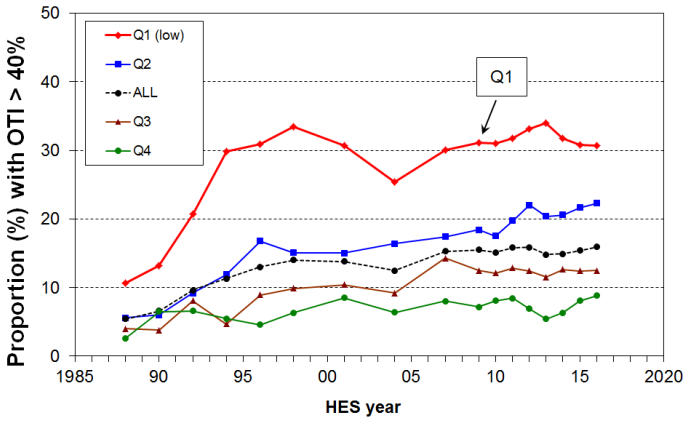
HES year	Q1	Q2	Q3	Q4	Q5	ALL
1988	16	13	10	9	9	11
1990	20	14	14	13	10	14
1992	32	16	16	14	11	18
1994	48	21	14	14	13	22
1996	42	29	20	17	11	24
1998	41	29	23	16	13	24
2001	37	26	21	15	12	22
2004	34	27	21	14	12	21
2007	38	29	30	22	14	27
2009	38	33	31	19	17	28
2010	40	36	29	22	12	28
2011	41	36	31	18	15	28
2012	43	39	30	17	9	27
2013	43	36	29	19	9	27
2014	41	37	28	18	10	27
2015	43	37	30	20	9	28
2016	39	39	29	22	15	29

OTIs greater than 40%

From 2007 to 2016, around 15% of households had an OTI greater than 40% - up from 5% in the late 1980s (see **Figure C.11** below).

For those in Q1 (lower quintile), the proportion with these higher OTIs peaked in the late 1990s at 34%, declined to 25% in 2004, then rose again to be close to the 1994 rate in 2011 (33%) and is similar in 2016. The proportion in the second quintile rose from 15% in 2001 to just over 20% in 2011 to 2016.

Figure C.11
Proportion of households with housing cost OTIs greater than 40%

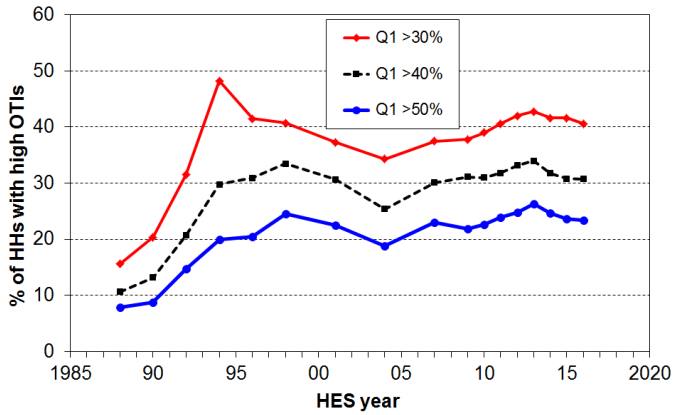


Note: from HES 2008 on, the graph shows the smoothed trends using a rolling two-year average.

OTIs greater than 50%

From HES 2011 to HES 2016, around one in four Q1 households reported spending more than half their income on accommodation (**Figure C.12**). This is similar to what it was briefly in the mid 1990s, but is otherwise historically high.

Figure C.12
Proportion of Q1 households with housing cost OTIs greater than 30%, 40% and 50%



The bottom quintile has three groups of interest in it in relation to OTIs:

- those living in HNZC houses and receiving an income related rent subsidy such that their housing costs are less than 25% of income
- older New Zealanders receiving NZS, many of whom have low housing costs through their mortgage-free homes
- low-income working and beneficiary households in private rental accommodation, many of whom receive the AS.

NZS has been rising in real terms in recent years which in part explains the apparent flattening of the OTI lines as it acts as a counter to the rising trend for low-income working-age renters.

OTI trends by household type

Table C.4 provides a breakdown by household type. The analysis uses the "30-40 rule" that is common in Australia and elsewhere – that is, it looks at the those in the lower two quintiles (40%) who have OTIs greater than 30%.

Sole parent households have the highest housing stress on this measure. As most sole parent households are at the lower end of the income distribution it makes little difference as to whether all sole parent households are considered (rate is 63%) or just those in the lower two quintiles (rate is 68%). Taking only the lower two quintiles only does however have an impact on the relativities between household types compared with taking all households into account. For example, using the 30-40 rule, all working-age households except for sole parent households have much higher reported housing stress.

Around one third of sole parent families live in larger households with other adults. The sole parent household figures in Table C.4 do not therefore fully represent the situation for all sole parent families, a good portion of whom are captured in the "Other family households with some dependent children" row.

Table C.4
Proportion (%) of households in lower two income quintiles and in all quintiles with housing cost OTIs greater than 30%, by household type, average for HES 2012 to HES 2014

Household type	Q1 & Q2	ALL
Single 65+	15	13
Couple only maxage 65+	12	9
Single <65	58	44
Couple only maxage<65	53	21
SP household with some dependent children	68	63
2P household with some dependent children	45	30
Other family households with some dependent children	41	28
Family households with no dependent children maxage <65	46	21
Non-family households	56	32
ALL households	39	27

OTI trends using the individual rather than the benefit unit or household as the unit of analysis

Figures C.9 to C.11 above use the household as the analysis unit. For some purposes, such as examining the different levels of housing stress by age, analysis needs to be done using individuals rather than households. **Table C.5** provides a breakdown by age group. The proportions with high OTIs in 2016 (or even 2015 and 2016 on average) are much higher than in the late 1980s for all age groups (doubling or even tripling for some), although still remaining relatively low on average for older New Zealanders.

Table C.5
Proportion of individuals in households with housing cost OTIs greater than 30%, by age group

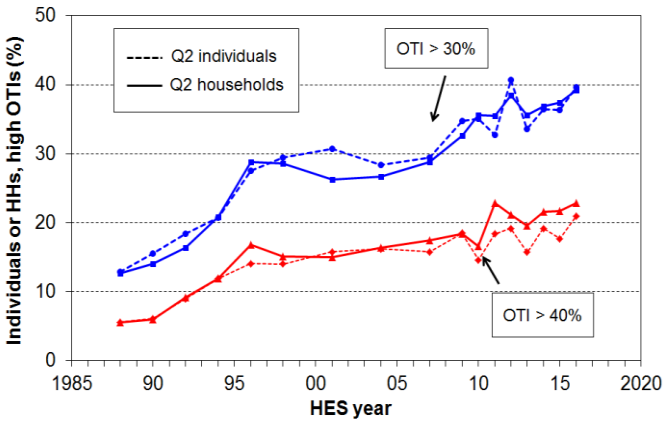
	0-17	18-24	25-44	45-64	65+	ALL
1988	12	12	15	5	3	11
1990	16	16	18	7	2	14
1992	22	21	24	8	3	18
1994	27	22	28	10	5	22
1996	32	24	28	14	6	24
1998	33	26	31	14	7	26
2001	32	29	28	16	7	25
2004	26	28	25	15	6	22
2007	32	33	33	20	9	27
2009	39	26	35	22	8	29
2010	35	31	34	22	10	28
2011	33	35	34	23	8	28
2012	37	32	35	20	10	28
2013	34	28	35	20	9	27
2014	34	35	32	21	11	27
2015	34	32	34	23	10	28
2016	38	31	35	26	10	30

Trends using households and individuals compared

Long-run trends are very similar whichever unit of analysis is used (compare, for example, the "ALL" columns in Tables C.3 and C.4). There can however be some divergence from survey to survey especially for sub-groups, mainly because the bottom quintile (20%) of households has only around 17% of the total population in it, reflecting in particular the high proportion of small households in decile 2 (the top half of the bottom quintile). As a consequence of this difference, the second quintile of households does not perfectly coincide with the second quintile of individuals.

Figure C.13 compares the trends for second quintile individuals and second quintile households and shows that despite the wobbles and divergences that are evident at times from survey to survey, the overall trends are much the same.

Figure C.13
Proportion of Q2 individuals and households with housing cost OTIs greater than 30% and 40%



OTIs for those receiving the Accommodation Supplement (AS) – information from administrative data

- In February 2016, 44% of AS recipients were receiving the maximum payment, up from 25% in February 2007.

Table C.6 shows the proportions of AS households that have high OTIs – those that are spending more than 30%, 40% and even 50% of their income on accommodation:

- In June 2016, almost all renters receiving the AS spent more than 30% of their income on housing costs (94%), three in four (76%) spent more than 40% and half (52%) spent more than 50%.
- These figures were all up on what they were in June 2007 (90%, 67%, 40% respectively).
- 55% of those who receive the AS are single adults – their figures are close to those for renters noted above.

Table C.6
Housing stress for AS recipients using three OTI thresholds (30%, 40% and 50%)

Group	This group as a proportion of all who receive AS		housing costs as a proportion of income					
			>30%		>40%		>50%	
	2007	2016	2007	2016	2007	2016	2007	2016
All	100	100	87	92	59	69	34	44
Renters	63	66	90	94	67	76	40	52
Single adult	45	55	90	94	65	73	40	50
2 parent with dependent children	11	9	74	89	40	56	21	29
One parent with one child	19	14	86	89	60	67	33	42
One parent with 2+ children	17	14	84	88	55	64	23	34
NZS/VP	9	13	81	86	48	54	23	27

Source: MSD Information Analysis Platform, iMSD

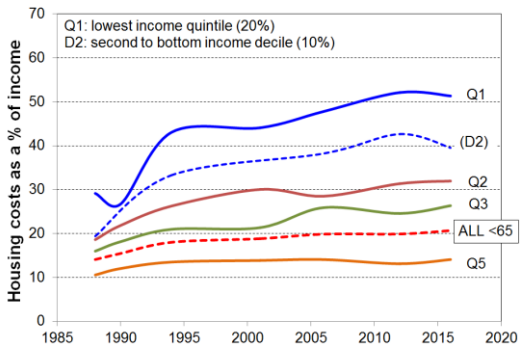
The provisions in the 2017 Budget package (higher incomes across most low to middle income households and higher AS rates and area changes) can be expected to improve these figures for the 2020 Incomes Report.

Housing costs now a much larger component in the household budget

All the above analysis is a reflection of the fact that housing costs these days make up a much greater proportion of the household budget than they used to. **Figure C.14** shows the trends in the average housing costs as a proportion of average income for each quintile of households (under 65s):

- up from 14% in the late 1980s to 21% on average in 2015 and 2016 for under 65s[42]
- up from 29% to 51% on average for the bottom quintile, and 19% to 32% for Q2.

Figure C.14



[42] Statistics New Zealand reports that housing costs took up 17% of household income on average in the 2016 HES. The difference in the numbers occurs because (i) Statistics New Zealand uses gross (before tax) income whereas the Incomes Report uses after-tax income, and (ii) the Statistics New Zealand figure is for all ages, rather than the under 65s as above.

Section D
Household incomes and income inequality, 1982 to 2016

This section reports on:

- changes in equivalised household incomes for the whole population
- changes for different parts of the distribution
- changes in medians for different household types
- the changing shape of the household income distribution
- trends in inequality using income shares, percentile ratios[43] and the Gini coefficient.

[43] When the income distribution is divided into 100 equal groups each group is called a percentile (P). The top of the first decile is labelled P10 as it is also the top of the 10th percentile.

Income changes in real terms, 1982 to 2016

Whole population, overall trends

Figure D.1 shows the trends in real equivalised household disposable income (BHC and AHC) from 1982 to 2016.

After 15 years of steady growth in median household income (3% pa in real terms from HES 1994 to HES 2009), the impact of the economic downturn on household incomes showed in the HES 2010 and 2011 figures in which both the BHC and AHC medians declined or were flat year on year. The 2012 HES picked up the beginning of the recovery with both the BHC and AHC medians rising each year through to 2016 HES.

Prior to 1994, the BHC median fell 15% in the six years from 1988. It took until 2001 to restore it to its 1988 level.

The general trend for the AHC median is similar to that for the BHC median, although the AHC median fell from 90% of the BHC median in 1982, to 86% in 1988, and 80% in 1998. Since 2007 the relativity has been steady at around 78-79%. This reflects how accommodation costs have risen as a proportion of household income for low- to middle-income households since the 1980s.

Figure D.1
Real equivalised household disposable incomes, 1982 to 2016 (2016 dollars)

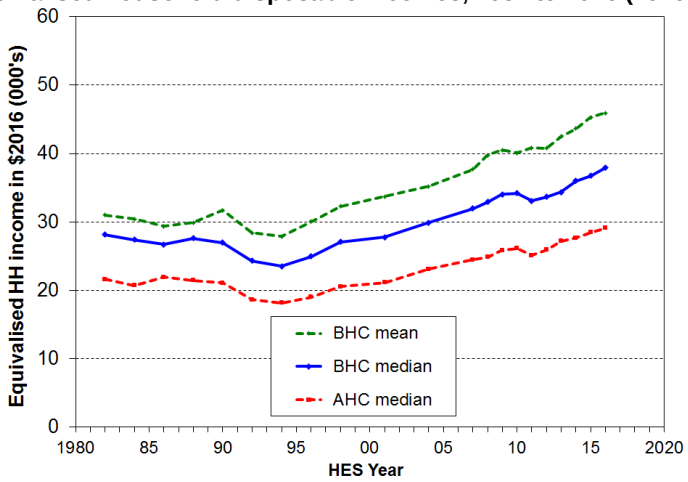


Table D.1
Real equivalised household disposable incomes, 1982 to 2016 (2016 dollars)

	1982	1986	1990	1994	1998	2001	2004	2007	2009	2011	2013	2014	2015	2016
BHC mean	31,000	29,300	31,700	27,900	32,300	33,700	35,200	37,700	40,500	40,800	42,500	43,700	45,300	46,000
BHC median	28,100	26,700	26,900	23,500	27,100	27,800	29,900	31,900	34,000	33,100	34,300	36,000	36,800	37,900
AHC median	21,600	21,900	21,100	18,100	20,600	21,100	23,100	24,500	25,900	25,100	27,200	27,700	28,500	29,100

Note: See Tables D.2 and D.4 for figures for a fuller range of years.

The mean and median generally move in the same direction. The most notable exception is for the period 1988 to 1990 during which the mean rose but the median fell. In this period, average incomes for households in the top quintile of the income distribution rose in real terms but those in the other four quintiles fell (cf Figure D.5). This lowered the median but raised the mean as the impact of the rises of those with higher incomes was the dominant effect.

See **Appendix 10** for median household incomes in 'ordinary' (unequivalised) dollars.

Differing trends for different parts of the distribution (BHC)

Trends in the overall median or mean household income provide useful high-level summaries, but they tell only a part of the story as different parts of the income distribution (can) show quite different relative movements over time.

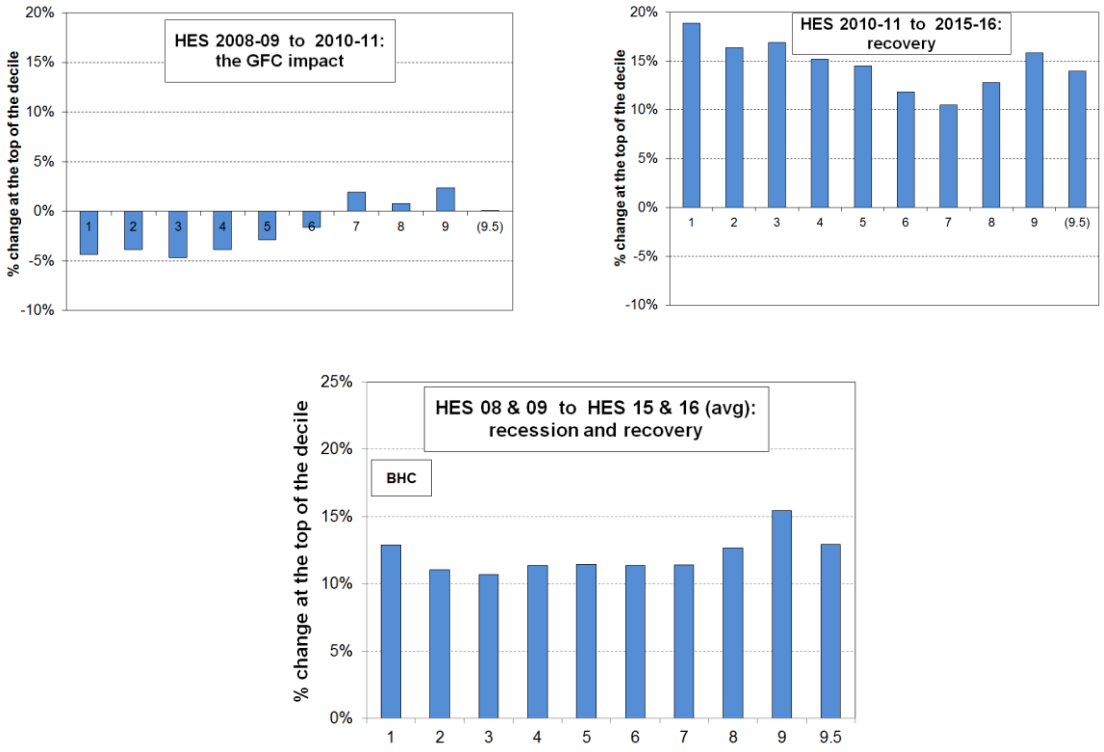
One way to show these differing changes is to divide the population into ten equal groups (deciles) and show the trends in real incomes for the median, mean or top of each decile. This part of the analysis uses the latter as it fits well with the use of percentile ratios for summarising trends in inequality, which is done later in this section. Changes for incomes at P95 (the median of the top decile) are also included. Decile means are reported in **Appendix 9**.

Recent changes (GFC impact and recovery)

Figure D.2 show the changes for the decile boundaries from HES 2009 to HES 2016, broken down into the GFC impact, the recovery and the net changes from just before the impact to the latest HES (2016). The impact of the GFC is clearly evident in the HES 2009 to 2011 graph, with net declines for deciles 1-6 and small gains for the higher income deciles (7-10). The other graph in the top row shows the impact of the recovery on household incomes across the distribution.

The bottom graph shows the net impact of recession and recovery. It uses the average of the 2008 and 2009 HES data as the start point and the average of the 2015 and 2016 HES data as the end point. This reduces the measurement error and increases the robustness of the finding about the changes. From just before the GFC to 2015/16 there was a reasonably even increase of around 11 to 13 percentage points in real terms (ie above inflation) across the bulk of the distribution, with a larger gain for the top of the ninth decile, though not for the median of the top decile (P95). The rises at P10 (top of bottom decile) mainly reflect the strong increases in real terms for NZS in recent years – there is a strong bunching of 65+ households, whose income is NZS and little more, at the top of the bottom decile and the bottom of the second decile. The minimum wage rose around 7% in real terms in the period. Beneficiary incomes were flat or declining in real terms.

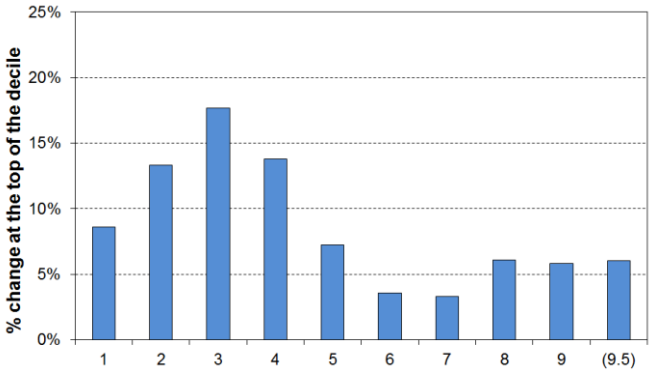
Figure D.2
Real equivalised household incomes (BHC): changes for top of deciles, HES 2008 to HES 2016



The Working for Families impact (2004 HES to 2007 HES)

The changes from 2004 to 2007 reflected the major part of the impact of the Working for Families package (**Figure D.3**). The transfer of an extra approximately $1.6b pa to low- to middle-income households with children made a tangible difference to the income distribution.[44] The general pattern for some years up to 2004 had been for the income of higher-income households to rise more quickly than those of lower- to middle-income households. The 2004 to 2007 period was the only one in the 25 years to 2007 in which the incomes of low- to middle-income households grew more quickly than those of households above the median.

Figure D.3
Real equivalised household incomes (BHC): changes for top of deciles, 2004 to 2007

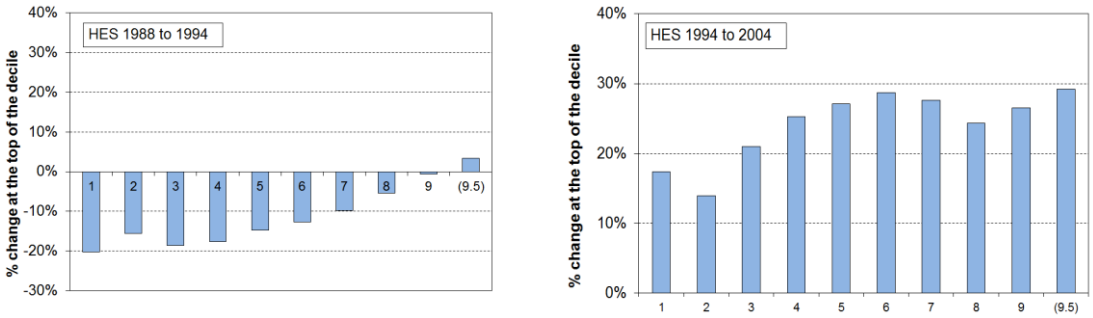


Longer term trends

Figure D.4 shows the differing changes for different parts of the income distribution (top of deciles 1 to 9, plus P95) from 1988 to 2004. The period is divided at 1994 when incomes were at their lowest in real terms.

The graphs show the very large falls in real household income from 1988 to 1994 for all but the very highest income group, followed from 1994 to 2004 by steady and fairly even income growth across the bulk of the income distribution, although the growth for lower income households (bottom 20 to 30%) was not as strong as for the rest.

Figure D.4
Real equivalised household incomes (BHC): changes for top of deciles, 1988-94, and 1994-04



The net effect of the changes from 1988 to 2004 is captured in **Figure D.5** which shows the large net increase in inequality that took place in that period. Most of the increase occurred from the late 1980s to the mid 1990s.

[44] When using equivalised household income, virtually all the new money for WFF went to households at or below the median. When using unequivalised income, some of the WFF transfers go to higher-income families who have more dependent children.

Figure D.5
Real equivalised household incomes (BHC): changes for top of deciles,1988 to 2004

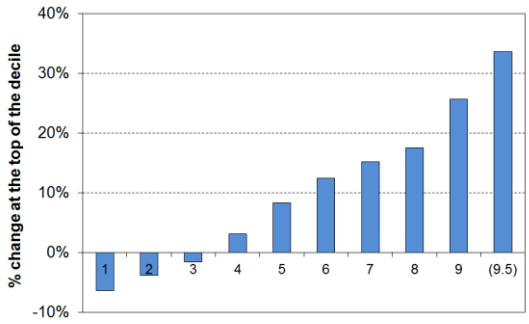


Figure D.6A shows the net changes for the full period from HES 1982 to 2016. All income groups gained in real terms, with the highest income group gaining much more than the rest, and the lowest income group gaining the least. The different growth rates show that income inequality is higher in HES 2016 than in 1982, though most of the change occurred from the late 1980s to the mid 1990s. **Figure D.6B** shows that from 1994 to 2016 the real growth across the income distribution was reasonably even.

Figure D.6A
Real equivalised household incomes (BHC): changes for top of deciles, 1982 to 2016

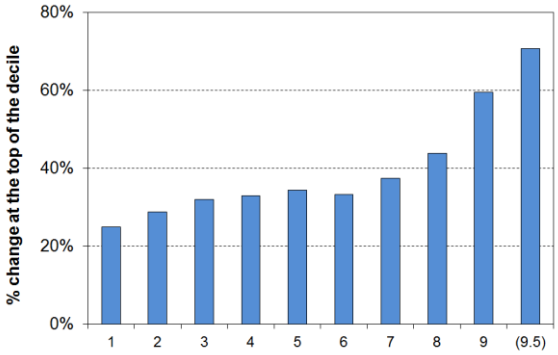
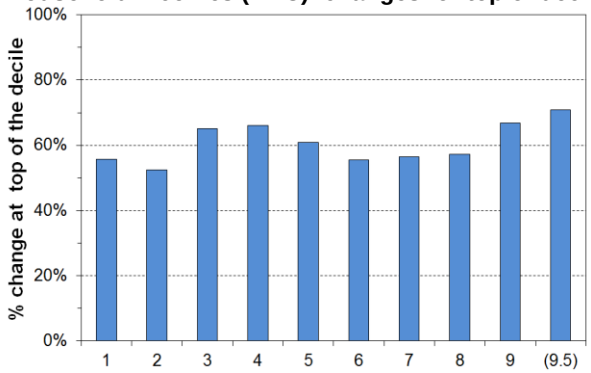


Figure D.6B
Real equivalised household incomes (BHC): changes for top of deciles, 1994 to 2016



Static and dynamic analysis

In interpreting the time series analysis that is based on the HES data (as above), it is important to understand that the HES provides repeat cross-sectional data with different people interviewed each survey. The HES does not follow the same individuals across time. Some individuals do stay in roughly the same income band for many years, some move up and some move down. **The degree of income mobility in New Zealand is discussed in Section K** using longitudinal data from Statistics New Zealand's Survey of Family, Income and Employment (SoFIE).

Figure D.6 and Table D.2 show the above analysis in a different way. The greater dispersion of household incomes in HES 2015 compared with the 1980s is clear. For the period as a whole, incomes for households in the higher deciles increased proportionately and in absolute terms much more than did the incomes of households in the lower-income deciles (see also Figure D.6A above).

Figure D.6
Real equivalised household incomes (BHC): decile boundaries, 1982 to 2016

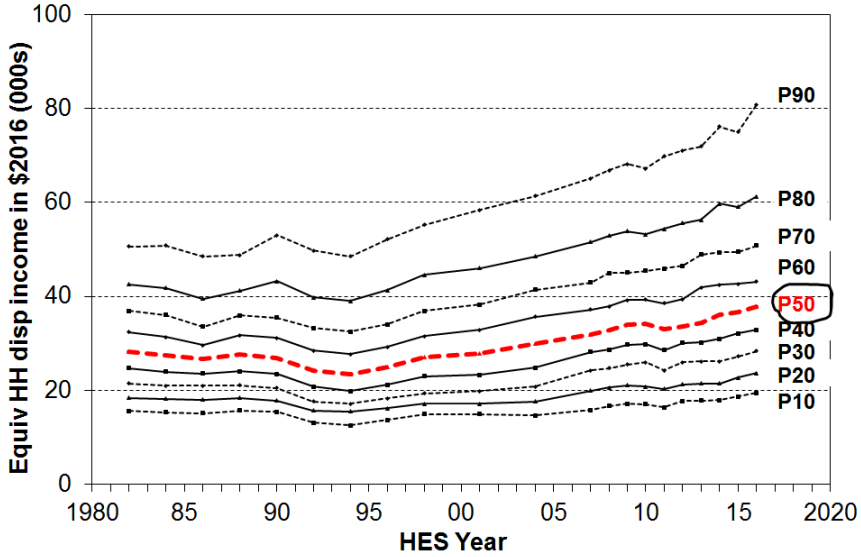


Table D.2
Real equivalised household incomes (BHC): decile boundaries and mean (2016 dollars)

	P10	P20	P30	P40	P50 (median)	P60	P70	P80	P90	mean
1982	15,600	18,400	21,500	24,700	28,100	32,400	36,900	42,600	50,600	31,000
1984	15,300	18,300	21,000	24,000	27,400	31,400	36,000	41,800	50,800	30,400
1986	15,200	18,000	21,000	23,500	26,700	29,700	33,600	39,500	48,500	29,300
1988	15,700	18,400	21,100	24,100	27,600	31,700	36,000	41,200	48,800	29,900
1990	15,500	17,800	20,500	23,500	26,900	31,100	35,500	43,200	53,000	31,700
1992	13,100	15,800	17,600	20,800	24,300	28,500	33,200	39,800	49,700	28,400
1994	12,500	15,500	17,200	19,800	23,500	27,700	32,500	39,000	48,500	27,900
1996	13,700	16,200	18,300	21,200	24,900	29,200	34,000	41,400	52,100	30,100
1998	15,000	17,200	19,400	23,000	27,000	31,500	36,900	44,500	55,200	32,300
2001	14,900	17,100	19,800	23,300	27,800	32,900	38,200	46,000	58,400	33,700
2004	14,700	17,700	20,800	24,800	29,900	35,700	41,400	48,000	61,300	35,200
2007	15,800	19,900	24,300	28,100	31,900	37,200	42,900	51,600	65,100	37,700
2008	16,700	20,600	24,800	28,700	32,900	37,800	44,900	53,000	66,800	39,700
2009	17,100	21,100	25,500	29,700	34,000	39,200	45,100	53,900	68,200	40,500
2010	17,100	20,800	25,900	29,800	34,200	39,300	45,400	53,200	67,200	40,100
2011	16,400	20,300	24,300	28,600	33,100	38,500	45,900	54,300	69,800	40,800
2012	17,700	21,300	26,000	30,100	33,700	39,400	46,500	55,600	71,100	40,800
2013	17,900	21,400	26,100	30,200	34,300	41,900	48,900	56,300	71,900	42,500
2014	18,000	21,500	26,200	31,000	36,000	42,500	49,400	59,700	76,100	43,700
2015	18,700	22,700	27,200	32,100	36,800	42,700	49,500	59,100	75,000	45,300
2016	19,500	23,600	28,400	32,900	37,900	43,100	50,800	61,300	80,800	46,000

Table D.3 translates the income information in Table D.2 into index form using various base years. The numbers in the body of the table indicate the percentage gains or losses over a given period (119 means a 19% rise; 84 means a 16% fall, and so on).

A disadvantage of using upper decile boundaries is that the top of decile 10 (P100) is very volatile and it is not sensible to report that trend. In line with the graphs above, Table D.3 incorporates information on changes for P95 to give some indication of trends for the top decile, while avoiding the misleading picture that reporting on P100 would give. The inequality part of **Section J** gives information on trends for very high incomes based on tax records.

Table D.3
Changes in real equivalised household incomes (BHC) relative to selected base years: index = 100 in base year

HES period	base HES year	P10	P20	P30	P40	P50	P60	P70	P80	P90	P95
1982-2016: overall											
1982 - 2015	1982	125	129	132	133	134	133	137	144	160	171
Relative to low point in 1994											
1988 - 1994	1988	80	84	81	82	85	87	90	95	99	103
1994 - 2016	1994	156	152	165	166	161	156	156	157	167	171
Relative to 2001, the year the median returned to what it had been in the late 1980s											
1988 - 2001	1988	95	93	94	97	101	104	106	111	120	124
2001 - 2016	2001	131	138	143	141	136	131	133	133	139	143
The Working for Families impact (as seen in the greater gains for low to middle income HHs)											
2004 - 2007	2004	107	112	116	112	106	102	102	104	104	104
After the WFF implementation through to impact of the GFC on incomes and to the recovery from HES 2011 to HES 2015											
2007 - 2009	2007	108	107	105	106	107	107	107	106	106	110
2009 - 2011	2009	95	96	95	96	97	98	102	101	102	100
2011 - 2016	2011	119	116	117	115	115	112	111	113	116	114
2009 - 2016	2009	114	112	111	111	111	110	113	114	119	114

Notes 1 P10 = top of decile 1, and so on.

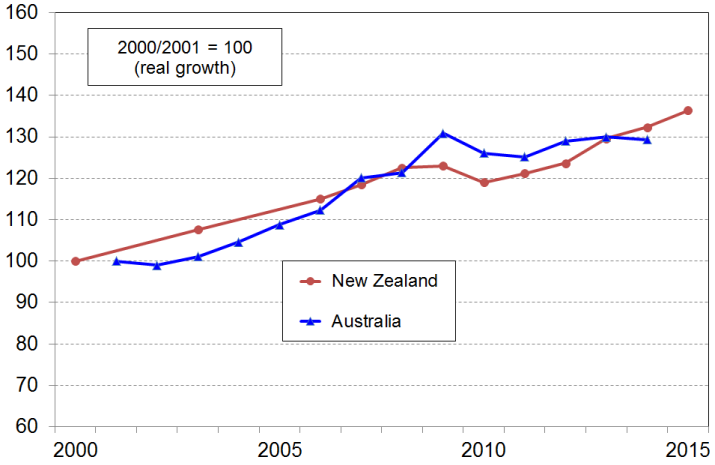
2 Recall that HES 2004 is really HES 2003-04, and that the incomes reported are on average from ~ calendar 2003, and so on.

New Zealand's post-GFC gains compared with other OECD countries

New Zealand's net gains (in real terms) from HES 2008 to HES 2015 are better overall than for many OECD countries – the negative impact was more muted here and the recovery has been stronger than for many:

- the UK median fell through the GFC and only returned to its pre-GFC level in 2014-15
- Italy, Spain, France and Germany were flat through the GFC and have remained so since
- the US median in 2014 was much the same as in 2008 before the GFC, and was 4% lower than in 2000
- in Australia household incomes across all parts of the distribution have been relatively flat since 2007-08, just as the GFC began to have an impact (see chart on next page for a New Zealand / Australia comparison of the trend at the median)
- New Zealand's post-GFC gain of 12% at the median (HES 2011 to 2015) is more like that of the top performers such as Finland and Sweden (10-12%), though they did not have the fall in median during the GFC that New Zealand did (-3%).

Figure D.7
Growth in median disposable household income (equivalised): New Zealand and Australia compared, 2000 to c 2014-15



Source for Australia: Wilkins (2016).

- The New Zealand median has grown in real terms at around 3% pa since just after the GFC (ie from c 2009). The Australian median has been relatively flat in that period.

Trends in the median for different household types

Figure D.7 shows the trends in real equivalised household disposable income (BHC) from HES 1982 to 2015 for selected household types.

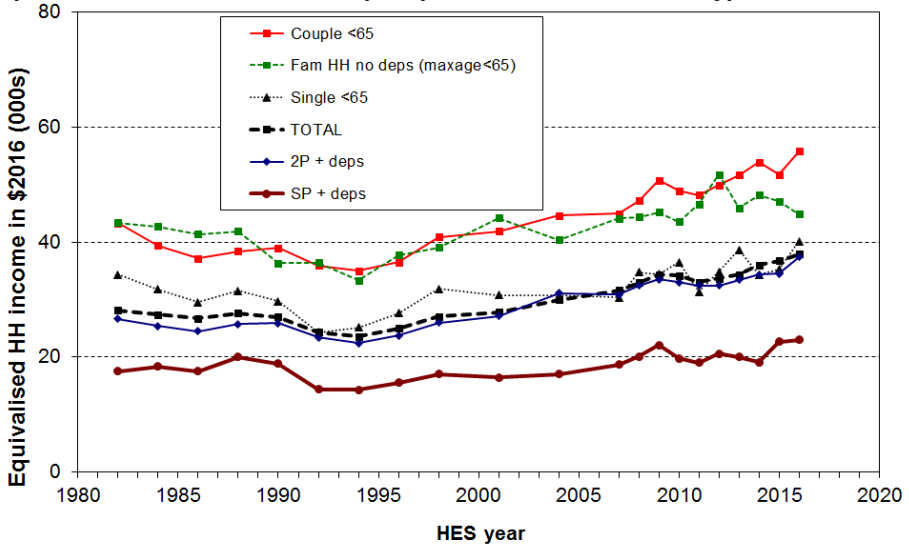
Working-age couple only and two parent households show solid recovery after the downturn.

The median income trend for sole parent households has been fairly flat from 2008 to 2014 (are 2015 and 2016 blips or not?) and is much lower than for other household types. This low level of the sole parent median reflects both the more limited employment hours available to the household compared with others with more than one adult, and the lower earning potential on average of the sole parent adult (lower educational attainment on average than other working age adults in other multi-adult households). Around one third of sole parent families live in larger households with other adults. The sole parent household figures in Figure D.9 do not therefore fully represent the situation for all sole parent families.

Trends for those in single and couple 65+ households are omitted from Figure D.9 to avoid clutter, but are shown in **Table D.4** (next page):

- For those in one-person 65+ households, median incomes ($2016) remained relatively steady at around $16,500 to $17,500 pa from 1982 to 1998, with a small rise to $19,000 by 2007, and then to $22,500 on average for HES 2015 and 2016. A good part of this latter rise reflects the personal income tax changes in October 2008, April 2009 and October 2010 which have an impact on NZS via the net wage benchmark.
- Median incomes of those in 65+ couple households remained reasonably steady from 1992 to 2001 at just under $20,000 pa. From 2004 to 2010, median incomes for these households grew 37% in real terms to $28,000 pa. This rise reflects the increase from 65% to 66% of the average wage for the floor[45] for the married couple rate for NZS (starting in 2006), the increased employment income for some 65+ couples, and the personal income tax changes in October 2008 and April 2009. In HES 2011 and 2012 their median income was around $26,000 but in the three years from 2014 and 2016 it had risen to $32,000 on average. $32,000 (equivalised) is close to $50,000 pa in unequivalised terms (ie “ordinary dollars”).
- See **Section I** for more information on the incomes of older New Zealanders.

Figure D.7
Median equivalised household incomes (BHC) for selected household types, 1982 to 2016 ($2016)



Note: The median incomes in Figure D.9 are equivalised household incomes. Table B.2 gives median household incomes in ordinary (unequivalised) dollars.

[45] See Section I for details of the NZS ‘floor’.

Table D.4
Median equivalised household incomes (BHC) for selected household types, 1982 to 2016 ($2016)

	Single < 65	Couple < 65	Other multi-adult fam HH <65, no dep ch	Two parent	Sole parent	Couple 65+	Single 65+	ALL
1982	34,300	43,300	43,400	26,600	17,500	20,900	17,500	28,100
1984	31,800	39,400	42,700	25,400	18,300	21,100	17,700	27,400
1986	29,500	37,200	41,400	24,500	17,500	20,800	16,800	26,700
1988	31,500	38,400	41,800	25,700	20,000	20,900	16,800	27,600
1990	29,700	38,900	36,300	25,900	18,800	21,500	16,100	26,900
1992	24,300	35,900	36,400	23,400	14,400	20,000	16,400	24,300
1994	25,100	35,000	33,400	22,400	14,200	19,200	16,400	23,500
1996	27,600	36,500	37,700	23,700	15,500	19,900	17,400	24,900
1998	31,900	40,900	39,000	25,900	17,000	19,600	17,700	27,100
2001	30,700	41,900	44,200	27,100	16,400	19,600	18,400	27,800
2004	30,700	44,600	40,400	31,100	17,000	20,500	18,300	29,900
2007	30,400	44,900	44,100	30,800	18,600	22,900	18,900	31,600
2008	34,800	47,100	44,400	32,400	20,000	23,100	19,400	32,900
2009	34,400	50,800	45,200	33,500	22,000	27,600	20,600	34,300
2010	36,500	48,900	43,500	33,000	19,800	28,100	20,800	34,200
2011	31,300	48,200	46,600	32,400	19,000	26,800	20,100	33,000
2012	34,800	49,900	51,700	32,400	20,600	25,800	22,000	33,700
2013	38,700	51,600	45,900	33,500	20,000	30,900	21,800	34,300
2014	34,300	53,900	48,200	34,400	19,000	32,800	20,500	36,000
2015	35,300	51,700	47,100	34,500	22,600	32,900	22,300	36,800
2016	40,100	55,800	44,900	37,400	23,000	30,300	22,600	37,900

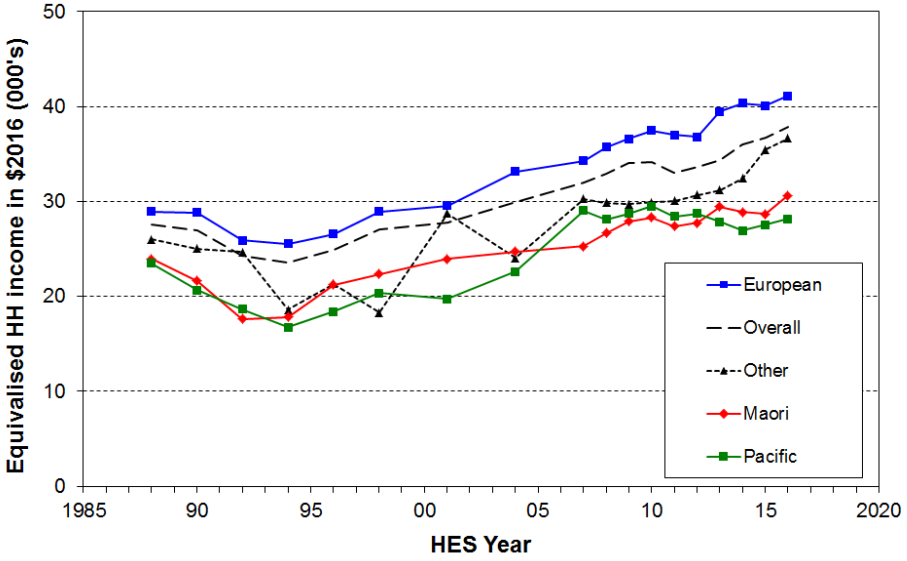
Trends in the median by ethnicity

Ethnicity of individuals aged 15 and over is as reported by the individual, and children under 15 are attributed with the ethnicity of the survey respondent. If a respondent reports more than one ethnicity, the ethnicity attributed is determined according to a hierarchical classification of Māori, Pacific Island, Other and then European/Pākehā.[46] The household's equivalised disposable income is attributed to the individual for ranking purposes, just as it is for analysis by age.

Figure D.8 and Table D.6 show the trends in real equivalised household disposable income (BHC) from the 1988 HES to 2015 by ethnicity.[47]

The overall impact of the GFC, the economic downturn and recovery is still emerging for the Maori and Pacific ethnic groups. The trend in the median has been flat for Pacifika from 2007 to 2016, with a modest rise for Maori. In contrast, median income for European/Pakeha and for those of "Other" ethnicity have risen strongly.

Figure D.8
Real equivalised median household incomes (BHC) by ethnicity, 1988 to 2016 ($2016)



Note: For Maori, Pacific and Other, the graph shows the rolling two-year average from 2008 on.

[46] Using a "total counts" ethnicity approach makes no significant difference to the findings in this report (see Section G).

[47] See the discussion in Section A on the issue of sampling error and the care needed in interpreting estimates for small subgroups like Pacific (6%) or slightly larger subgroups like Other (13%) that are very diverse groups. The issue is addressed in part here by using a rolling two survey average from HES 2008 on for these groups and Maori for Figure D.8.

Table D.5
Real equivalised median household income (BHC) by ethnicity, 1988 to 2016 ($2016)

	European / Pakeha	NZ Maori	Pacific	Other	ALL
1988	28,934	23,973	23,496	26,019	27,585
1990	28,823	21,647	20,636	25,049	26,941
1992	25,922	17,646	18,679	24,682	24,295
1994	25,547	17,820	16,777	18,596	23,519
1996	26,573	21,201	18,390	21,329	24,936
1998	28,935	22,356	20,360	18,292	27,067
2001	29,533	23,967	19,727	28,707	27,779
2004	33,171	24,746	22,615	24,066	29,930
2007	34,282	25,290	29,046	30,288	31,948
2008	35,708	28,071	27,221	29,414	32,911
2009	36,572	27,724	30,277	30,016	34,037
2010	37,496	28,894	28,753	29,824	34,168
2011	37,002	25,870	28,113	30,277	33,058
2012	36,779	29,640	29,351	31,092	33,654
2013	39,482	29,268	26,338	31,322	34,343
2014	40,326	28,507	27,513	33,572	36,009
2015	40,076	28,864	27,590	37,389	36,752
2016	41,129	32,366	28,735	35,893	37,898

The incomes reported in Te Ao Marama

Statistics New Zealand regularly publishes Te Ao Marama, a small collection of statistics relating to Maori. Te Ao Marama reports the incomes of individuals not of households. This is why the Te Ao Marama trends can be different from those reported in this Incomes Report (which uses household incomes).

Te Ao Marama (2016) reports that median (individual) income from all sources declined for Maori from 2008 to 2011, rose a little through to 2013, then more strongly to 2014 (~$510 pw). The median was much the same in 2015.

Differing trends for different parts of the distribution (AHC)

The trends for different parts of the distribution of income after deducting housing costs (AHC income) have some similarities and key differences from the BHC trends.

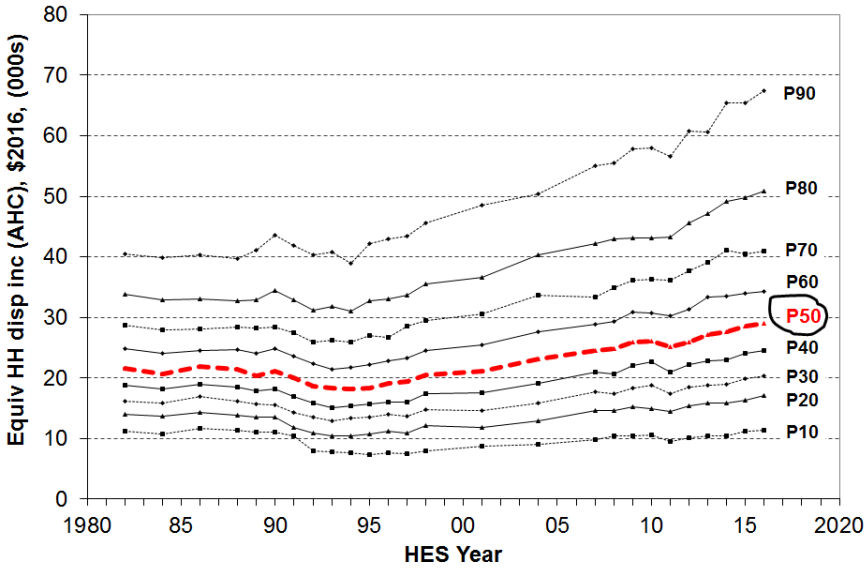
Figure D.9 and Table D.6 show the trends in real incomes (AHC) for the top of each decile.[48]

- From HES 2009 to 2011, the impact of the economic downturn, global financial crisis and rise in rents is clear in the fall in AHC incomes across the income range. The decline for the median was 3% in real terms. There were more substantial falls (-5%) for the P30 and P40 regions, that is, for households below the median but above the usual poverty lines.
- The impact of the recovery is evident in the rises across all income deciles from HES 2011 to 2016, though the P10 figure in 2016 was only a little above what it was prior to the GFC.

From a longer-term perspective:

- In HES 2016, household incomes at the top of the bottom decile were no better than they were in the 1980s. This is the only decile for which this is the case, though for P20 the gain is small.
- As is the case for BHC incomes, AHC incomes became much more dispersed between the late 1980s and the mid 1990s, though the increase in inequality was greater than for BHC incomes. Unlike the case for BHC incomes, there is evidence that inequality is higher in 2011 to 2016 than in the mid 1990s, though the increase is small compared with the changes from the late 1980s to mid 1990s (5.5 to 6.0 compared with the earlier 3.5 to 5.5, for the 90:10 ratio).

Figure D.9
Real equivalised household incomes (AHC): decile boundaries, 1982 to 2016 (2016 dollars)

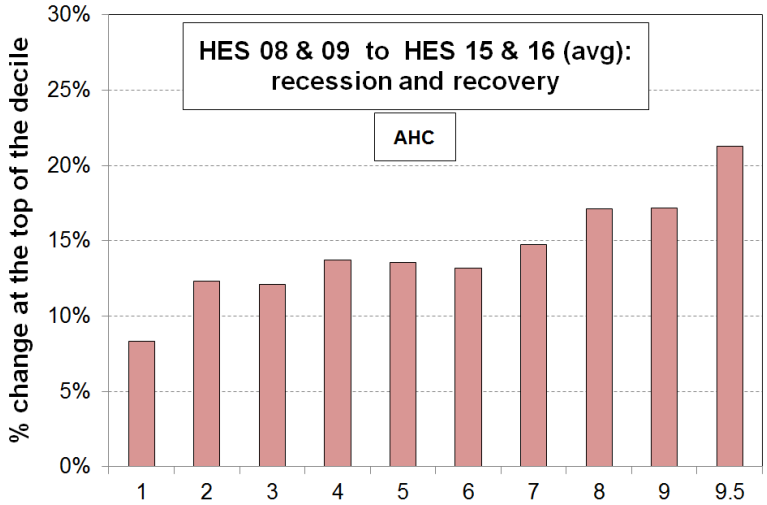


[48] When the income distribution is divided into 100 equal groups each group is called a percentile (P). The top of the first decile is labelled P10 as it is also the top of the 10th percentile.

Table D.6
Real equivalised household incomes (AHC): decile boundaries (2016 dollars)

	P10	P20	P30	P40	P50 (median)	P60	P70	P80	P90	mean
1982	11,191	14,054	16,196	18,856	21,588	24,767	28,699	33,793	40,533	23,983
1984	10,794	13,713	15,809	18,142	20,709	24,119	27,976	32,839	39,824	23,416
1986	11,717	14,325	16,913	18,950	21,918	24,499	28,004	32,973	40,390	24,085
1988	11,398	13,831	16,207	18,489	21,445	24,743	28,449	32,723	39,633	23,796
1990	10,968	13,534	15,545	18,138	21,083	24,785	28,466	34,363	43,626	25,060
1992	7,984	10,875	13,543	15,899	18,646	22,381	25,880	31,227	40,279	21,975
1994	7,554	10,384	13,380	15,367	18,131	21,803	25,850	30,998	38,977	21,571
1996	7,683	11,140	14,008	16,020	19,015	22,781	26,725	33,096	42,996	23,341
1998	7,961	12,169	14,759	17,431	20,558	24,525	29,401	35,468	45,667	25,200
2001	8,709	11,800	14,587	17,561	21,125	25,522	30,551	36,551	48,498	26,301
2004	9,046	12,932	15,822	19,044	23,080	27,657	33,667	40,335	50,375	27,871
2007	9,777	14,629	17,636	20,956	24,487	28,799	33,423	42,108	55,010	29,858
2008	10,382	14,614	17,437	20,698	24,820	29,298	34,930	42,882	55,526	31,269
2009	10,393	15,194	18,346	21,989	25,857	30,889	36,062	43,079	57,878	32,129
2010	10,537	14,905	18,712	22,667	26,112	30,660	36,336	43,177	57,993	32,034
2011	9,508	14,379	17,450	20,914	25,064	30,319	36,121	43,252	56,620	32,286
2012	10,064	15,328	18,426	22,247	25,883	31,311	37,677	45,595	60,754	32,513
2013	10,370	15,852	18,777	22,811	27,192	33,271	39,159	47,122	60,591	34,145
2014	10,426	15,873	18,937	22,988	27,678	33,577	41,149	49,119	65,373	35,217
2015	11,135	16,374	19,801	24,097	28,478	33,904	40,479	49,848	65,470	36,899
2016	11,372	17,113	20,314	24,459	29,081	34,221	40,977	50,825	67,431	36,850

Figure D.10
Real equivalised household incomes (AHC): changes for top of deciles, HES 08 & 09 to HES 15 & 16 (avg)



Household Type (AHC medians)

Figure D.11
Median equivalised household incomes (AHC) for selected household types, 1982 to 2016 ($2016)

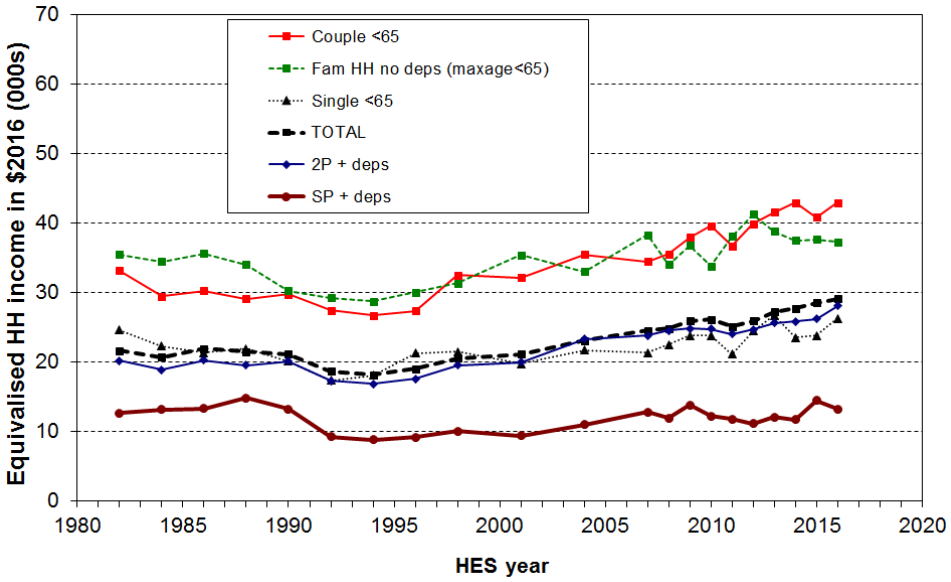


Table D.7
Median equivalised household incomes (AHC) for selected household types, 1982 to 2016 ($2016)

	Single < 65	Couple < 65	Other multi-adult fam HH <65, no dep ch	Other multi-adult fam HH 65+, no dep ch	Two parent	Sole parent	Single 65+	Couple 65+	ALL
1982	24,566	33,143	35,456	24,917	20,158	12,654	13,812	17,301	21,588
1984	22,255	29,483	34,441	29,224	18,831	13,124	14,271	17,098	20,709
1986	21,305	30,278	35,630	24,170	20,216	13,240	13,647	17,660	21,918
1988	21,908	29,093	34,051	32,906	19,536	14,830	13,664	17,700	21,445
1990	20,063	29,712	30,245	25,020	20,071	13,188	13,670	18,914	21,083
1992	17,360	27,410	29,241	20,508	17,229	9,185	13,944	17,250	18,646
1994	18,036	26,684	28,728	21,682	16,808	8,804	13,965	16,650	18,131
1996	21,265	27,352	30,059	22,451	17,566	9,134	14,566	17,541	19,016
1998	21,460	32,477	31,336	21,741	19,499	10,019	15,182	17,470	20,558
2001	19,704	32,172	35,379	29,383	19,978	9,344	15,375	17,278	21,135
2004	21,708	35,481	33,038	22,168	23,303	10,920	15,607	18,167	23,080
2007	21,363	34,468	38,307	27,477	23,827	12,731	15,894	20,138	24,491
2008	22,479	35,555	34,013	28,749	24,501	11,869	16,428	20,789	24,820
2009	23,775	37,912	36,768	29,840	24,831	13,775	17,584	25,421	25,870
2010	23,778	39,597	33,837	30,765	24,711	12,211	17,310	25,224	26,112
2011	21,109	36,705	38,099	36,247	23,980	11,770	17,285	23,928	25,079
2012	24,442	39,893	41,283	31,882	24,641	11,124	18,424	22,019	25,883
2013	26,711	41,546	38,847	29,784	25,634	12,047	18,586	27,192	27,192
2014	23,496	42,974	37,532	32,936	25,840	11,652	17,939	29,084	27,678
2015	23,761	40,884	37,631	34,568	26,225	14,447	19,088	29,134	28,478
2016	26,229	42,962	37,298	36,704	28,058	13,222	19,545	27,021	29,081

Inequality

There are many types of inequality that are relevant to public policy

Income inequality is about how dispersed incomes are, what the size of the gap is between those on 'higher' and those on 'lower' incomes.

There are however many types of inequality other than income inequality that are of relevance to public policy formulation and debate, and it is useful to be clear about which sort of inequality is being discussed at any time.

Some of the main inequalities often discussed are:

- market income inequality for individuals:
  - wage differentials across all wage earners
  - focusing on total market income for the very top 1% or so, compared with the rest
- inequality of disposable household income (income from all sources after taxes and transfers):
  - across all households
  - focusing on the very high income households, compared with the rest
- inequality in consumption[49]
- inequality in job quality
- inequality of wealth (total assets less liabilities).
- inequality of community resources and amenities available to local residents in different areas
- inequality of educational outcomes
- inequality of access to health care and inequality in health outcomes
- inequality of socio-economic status (combining education, occupation and income)
- inequality of opportunity.[50]

For inequality, the main focus of the Incomes Report is on inequality of household disposable income and on inequality as indicated by the shares of total market income received by top income earners. There is some information on wealth distribution and wealth inequality though the data is more limited.

It is important to maintain a clear distinction between wage inequality, household income inequality and wealth inequality. They are quite different concepts, each with their own particular characteristics.

Inequality and income poverty are sometimes used as if they are interchangeable ideas. While there are some links between them for some income poverty measures, they are quite different notions and need to be kept distinct as far as possible.

Inequality is essentially about the gap between the better off and those not so well off (on whatever measure) – it is about having "less than" or "more than". Income poverty is about household

[49] Trends in consumption inequality would be a valuable addition to the suite of inequality measures used in public policy debate. Unfortunately, conceptualising and implementing a strategy to create robust consumption data for households is a very challenging exercise. Many therefore settle for expenditure inequality which is a different thing. The Gini trend for inequality of household expenditure is different than that for income (flatter and perhaps a little lower in 2015 than in the late 1980s (see Ball and Creedy , 2015).

[50] Inequalities within households (intra-household inequality) are also important dimensions of inequality. They are outside the scope of the Incomes Report.

resources being too low to meet basic needs – it is about "not having enough" when assessed against a benchmark of "minimum acceptable standards".

- A major difference between income inequality and income poverty is that a certain degree of inequality is considered by almost everyone to be inevitable and acceptable, and even desirable, whereas there is no similar widely held view about unacceptably low incomes and material deprivation. Income poverty and material deprivation are by definition unacceptable states of affairs. There can be and is legitimate debate over the meaning of poverty and hardship in more economically developed countries. There is debate, for example, as to where to set the low-income and deprivation thresholds, and over the relative merits of different approaches to the income concept used (eg BHC or AHC). There are however very few who advocate for "acceptable levels" of income poverty or hardship. On the other hand, when it comes to income (or wealth) inequality a part of the debate is about what is an acceptable or at a least tolerable level of income (or wealth) inequality. Unlike any debate around income poverty or hardship, there are very few calls for the elimination of income or wealth inequality.[51]

- There is no link between trends in income poverty using an anchored line approach and standard inequality measures.

- There is no evidence of any robust statistical link between the income share received by the top 1% and income poverty rates.

- The strongest conceptual and statistical link between income poverty and income inequality is between the P50:P20 or P50:P10 percentile ratio inequality measures and standard fully relative income poverty measures in which the threshold is set at a selected proportion of the current median (eg 50% or 60%). All these, both the percentile ratios referred to and the poverty measures, are about inequality in the lower half of the household income distribution and are therefore highly correlated, as expected.

- On the other hand, there is only a modest correlation between inequality as measured by the Gini and income poverty measured using the fully relative approach. The relationship is a little stronger when using percentile ratios as the inequality measure. The lack of very strong correlation arises because standard income inequality measures do not focus just on the lower half of the distribution but on both higher and lower incomes (percentile ratios and share ratios) or on all incomes (eg the Gini).

Maintaining as clear as possible a distinction between poverty (low income) and hardship on the one hand and income inequality on the other means that:

- we cannot easily avoid having to make the judgement call about minimum acceptable standards, even if we use two or three of differing severity
- we are better placed to seek to understand the relationship (if any) between the two, rather than blurring them into being talked about as if they were much the same thing.

[51] In practice, it would be very difficult to have a zero measured income poverty rate for a country. This is so, even if a government set out to ensure that all household incomes were topped up to be at least, say, 50% of median household income and this was the single official poverty measure. People change households over the data collection period and therefore change the size and composition of households and therefore the equivalised disposable income of their households. It is also difficult to envisage a policy and associated agency apparatus that could ensure the sort of household income top-up required. There is always measurement error too.

Income inequality: summary indicators

Income inequality is about how dispersed the income distribution is.

Figures D.2 to D.9 (above) give a visual impression of how the income distribution in 2015 and 2016 is more dispersed compared with 1982, with most of that increased dispersion occurring from the late 1980s to the mid 1990s.

There are several ways that are used to summarise the amount of income dispersion or inequality in a single statistic. No one statistic has emerged as the generally accepted way, mainly because each one captures a different aspect of the way the dispersion of incomes changes over time, and each one has its own limitations and value. It is now common to report on more than one indicator and to compare and discuss the trends produced by each.

This section uses three types of measure of household income inequality:

- percentile ratios
- the Gini coefficient
- quintile and decile share ratios.

It also reports on the share of taxable income received by very high income individuals based on tax records. This is further elaborated in the International Section (Section J).

For the much longer run (30 to 100 years), see Section J.

Percentile ratios

When individuals are ranked on the equivalised income of their respective households and divided into 100 equal-sized groups, each group is called a percentile. If the ranking starts with the lowest income then the income at the top of the 10th percentile is denoted P10, the median or top of the 50th percentile is P50 and so on. Ratios of values at the top of selected percentiles, such as P80:P20, are often called percentile ratios. Percentile ratios summarise the relative distance between two points in the income distribution.

The report uses four percentile ratios to provide a succinct picture of trends in income inequality.

- The P90:P10 ratio provides a good indication of the full spread of the distribution, going as far as possible to the extremes without running the risk of being overly influenced by unrepresentative very high incomes or by the difficulties with bottom decile incomes.
- The P80:P20 ratio gives a reasonable indication of the degree of dispersion for the range within which the majority (60%) of the population fall and has less volatility than the P90/P10 ratio.
- The P80:P50 and the P20:P50 ratios give an indication of how higher and lower incomes compare with the midpoint.

For the P90:P10, P80:P20 and P80:P50 indicators, the higher the ratio the greater is the level of inequality. For the P20/P50 indicator, the higher the ratio the lower is the level of inequality in this part of the distribution.

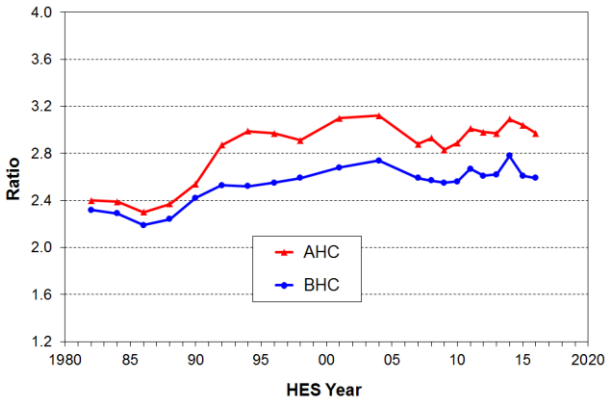
Figure D.12 shows the trends for the 80:20 ratio. Incomes after adjusting for housing costs (AHC) are more dispersed than BHC incomes.

The most rapid rises in inequality occurred from around 1988 to 1994. There was a further net rise for BHC incomes in the decade from 1994 to 2004 but the rate of increase was slower. From 2004 to 2010, the 80:20 ratio fell, indicating decreasing inequality on this measure in the period, mainly as a result of the Working for Families package (2004 to 2007) and improving employment prior to the GFC.

The impact on incomes of the GFC and the associated downturn and recovery has led to some volatility in the index between the 2009 and 2016 HES:

- For BHC incomes: there is no evidence of any net rise in BHC inequality from the mid 2000s to 2016 on this measure. The 2016 rate is similar to what it was on average in the mid 2000s.
- For AHC incomes: there is evidence of a rise in the 80:20 measure for AHC incomes from the mid 2000s to 2016, heading towards the previous high point in the early 2000s.

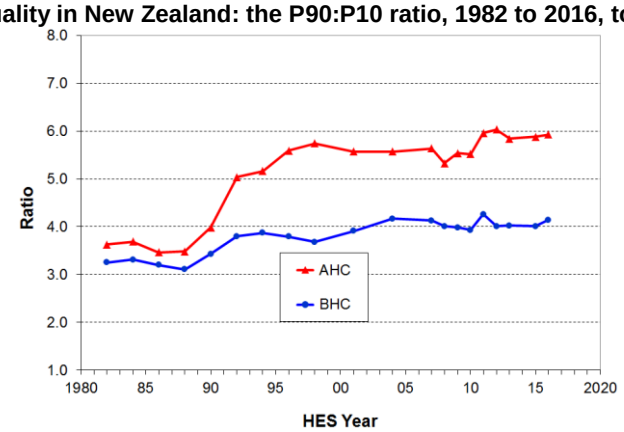
Figure D.12
Income inequality in New Zealand: the P80:P20 ratio, 1982 to 2016, total population



The 90:10 ratio covers a greater portion of the population than does the 80:20 (80% compared with 60%). **Figure D.13** shows the trends for the 90:10 ratio. As for the 80:20 ratio, incomes after adjusting for housing costs (AHC) are more dispersed than BHC incomes.

BHC household incomes at the 90th percentile are around 4 times the level of incomes of households at the 10th percentile (5.3 times higher without equivalisation). Apart from a blip in HES 2011, the 90:10 ratio was flat from 2004 to 2016. There is no evidence of any sustained medium-term or even post-GFC rise in inequality on this measure for BHC incomes.

Figure D.13
Income inequality in New Zealand: the P90:P10 ratio, 1982 to 2016, total population



For AHC incomes, there was a much larger rise in the 90:10 inequality ratio from the late 1980s to the mid 1990s and, in contrast to the flat BHC trend since 2004, the AHC trend was consistently a little higher in HES 2011 to HES 2016 than it was in the mid to late 2000s (around 6.0 compared with 5.5), but the main rise from 3.5 to 5.6 occurred earlier.

Tables D.8 reports the trends in all four percentile ratios from 1982 to 2015 for the whole population and for individuals in households with children.

Table D.8
Income inequality in New Zealand: percentile ratios, 1982 to 2016

	BHC									AHC			
	All				Individuals in HHs with children					All			
	P90:P10	P80:P20	P80:P50	P50:P20	P90:P10	P80:P20	P80:P50	P50:P20	P50:10	P90:P10	P80:P20	P80:P50	P50:P20
1982	3.25	2.32	1.51	0.65	3.25	2.07	1.42	0.68	1.8	3.63	2.40	1.57	0.65
1984	3.31	2.29	1.53	0.67						3.69	2.39	1.59	0.66
1986	3.20	2.19	1.48	0.68	2.7	1.92	1.37	0.71	1.67	3.46	2.30	1.51	0.65
1988	3.11	2.24	1.49	0.67						3.48	2.37	1.53	0.65
1990	3.43	2.42	1.60	0.66	3.11	2.11	1.51	0.71	1.65	3.98	2.54	1.63	0.64
1992	3.80	2.53	1.64	0.65						5.04	2.87	1.67	0.58
1994	3.87	2.52	1.66	0.66	3.44	2.41	1.61	0.67	1.77	5.16	2.99	1.71	0.57
1996	3.79	2.55	1.66	0.65						5.59	2.97	1.74	0.58
1998	3.68	2.59	1.65	0.64	3.19	2.19	1.46	0.67	1.79	5.74	2.91	1.73	0.59
2001	3.91	2.68	1.66	0.62	3.49	2.4	1.57	0.65	1.83	5.57	3.10	1.73	0.56
2004	4.17	2.74	1.62	0.59	3.81	2.49	1.62	0.65	1.88	5.57	3.12	1.75	0.56
2007	4.13	2.59	1.61	0.62	3.49	2.06	1.45	0.70	1.87	5.64	2.88	1.72	0.60
2008	4.01	2.57	1.61	0.62	3.52	2.26	1.53	0.68	1.91	5.33	2.93	1.73	0.59
2009	3.98	2.55	1.58	0.63	3.31	2.13	1.46	0.68	1.79	5.54	2.83	1.67	0.59
2010	3.93	2.56	1.56	0.61	3.58	2.24	1.5	0.67	1.86	5.52	2.89	1.65	0.57
2011	4.26	2.67	1.64	0.62	3.62	2.38	1.56	0.65	1.91	5.96	3.01	1.73	0.58
2012	4.01	2.61	1.65	0.63	3.55	2.2	1.53	0.69	1.85	6.03	2.98	1.76	0.59
2013	4.02	2.62	1.64	0.63	3.67	2.34	1.58	0.68	1.87	5.84	2.97	1.73	0.58
2014	-	2.78	1.66	0.60	-	2.42	1.59	0.66	-	-	3.09	1.77	0.57
2015	4.01	2.61	1.61	0.62	3.70	2.26	1.51	0.67	1.86	5.88	3.04	1.75	0.57
2016	4.14	2.59	1.62	0.63	3.66	2.19	1.52	0.69	1.84	5.93	2.97	1.75	0.59

Note for Table D.8:

The 90:10 and 50:10 ratios are not reported for HES 2013-14 because of concerns about the reliability of the income data at the very low end of the distribution – see Section A for more on this.

The “modified OECD scale” (1.0, 0.5, 0.3) is used for the “households with children information” to enable better comparisons with EU analysis for this group..

Gini coefficient – discussion of factors driving volatility

In contrast to the percentile ratios the Gini coefficient takes the (household) incomes of all individuals into account. It gives a summary of the income differences between each person in the population and every other person in the population.

The Gini scores (x100) range from 0 to 100 with scores closer to 100 indicating higher inequality and those nearer zero indicating lower inequality (ie greater equality).

The widespread use of the Gini can give the impression that it is "the" measure of inequality and that it is a solid objective measure. In fact, the Gini has an implicit value judgement behind its mathematical formulation. A difference of, say, $1000 between two high-income people contributes as much to the index as a difference of $1000 between two low-income people. This reflects an implicit value judgement. A case can be made that the difference at the lower end is of "greater significance" than the same difference nearer the high end. The Atkinson Index is one that makes the impact of these types of assumptions visible, but is beyond the scope of this report, in part because there is no easily available international time series data using the measure.[52]

The fact that the Gini takes the incomes of all households into account seems at first sight to be an advantage it has over the percentile ratio approach, which at best takes into account only 80% of the population (the 90:10 ratio). There is however a downside to taking all households into account when using data from sample surveys. There are well-known issues with the reliability of both very high and very low incomes from sample surveys.

- At the high end, there are two issues:
    - First, very high income households are under-represented in most sample surveys – this is a well-known issue and there is a technical adjustment than can be made for the Gini (see the inequality sub-section in the International Section (Section J)).
    - Second, from survey to survey the number of very high income households captured in the sample, and the size of their reported incomes, can vary considerably. This factor can have a very large and misleading impact on the reported trends in top decile shares of total household income and in inequality measures which take account of all incomes in the sample (eg the Gini coefficient). The resulting fluctuations simply reflect the challenges of consistently achieving a representative sample of very high income households, not real-world changes. The analysis below examines this issue in more detail.
- At the low end, the issue for the use of the Gini is mainly around how to treat negative incomes (delete or set to zero?). There are some HES years with next to no negative incomes reported (eg the last four surveys) and some with a relatively large number of reported negative incomes (eg HES 2009-10 and 2010-11). Deleting the negatives in these latter years certainly smooths out some of the bumps shown in such years, though the impact is much less than that for the method suggested below for addressing the very high income issues.
- There are also issues around the fact that some households declare implausibly low incomes given what else the data shows about them – for example, many very low income households report expenditure several times their income. This means that the incomes of some very low-income households cannot be taken as an indication of their material wellbeing (see **Appendix 8** for more on this).

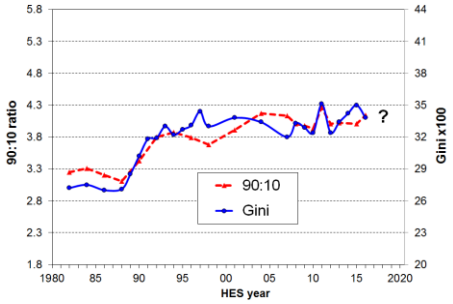
An unstable Gini?

The following analysis was first prepared for the 2016 report. Its point of departure was the observation that while the 90:10 percentile ratio shows the same large rise in inequality from the late 1980s to the early 1990s as the Gini does, the 90:10 ratio was very flat from HES 2012 to HES 2015 (and indeed from 2004 to 2015), but the Gini increased each survey in the same period and was clearly higher in 2014 and 2015 than in the mid 2000s (see **Figure D.14**).

[52] See Creedy and Edrah (2014) for a recent New Zealand analysis and discussion.

The analysis has been updated using the 2016 HES data. There are fewer (closer to a normal number of) very high income households in the 2016 HES than in the 2015 HES, and the Gini has declined as expected. The overall conclusions of the special analysis remain unchanged.

Figure D.14
Inequality in New Zealand: the Gini coefficient and the 90:10 percentile ratio, 1982 to 2016



Given that the Gini uses all incomes, including the very high ones that are not used in the 90:10 ratio, the question arises:

> *is the difference in the trends of the two measures (2012-15) due to large variations in sampled high incomes, and if so, are these random or do they reflect real-world changes?*

(a) Large variations in top incomes in the HES?

Figure D.15 plots the average household income received by the top 1% of households using the HES data, showing its considerable fluctuation from 2007 on. It was 30% higher in real terms in HES 2008 than in HES 2007, a very large jump. From HES 2010 to 2011 it jumped 30% again, then fell by an even larger amount in the next survey. From HES 2014 to HES 2015 it rose again by around 30%, but has fallen back a little in HES 2016.

Figure D.15
Large fluctuations in the average total income received by the top 1% of households in successive HES surveys

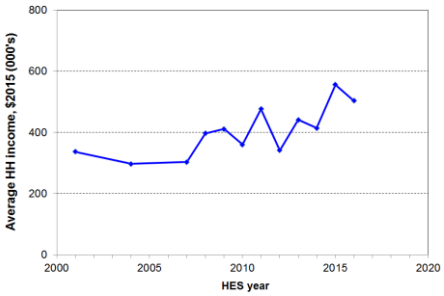


Figure D.16 shows the number of households with (unequivalised) disposable incomes of more than $350k (in $2015), once weights are applied. The numbers are unusually high in 2011 and especially in 2015, which are the two years for very high Ginis.

Figure D.16
Large fluctuations in the number of very high income households in successive HES surveys

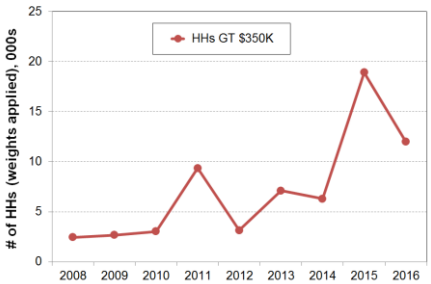


Figure D.17 shows that the share of total income received by high income households in the HES is very stable, except for the top 2%. Fig D.15 shows the instability for the top 1%.

Figure D.17
Large fluctuations in the share of total income received by the top 2% of households in successive HES samples, compared with flat lines for other high income households

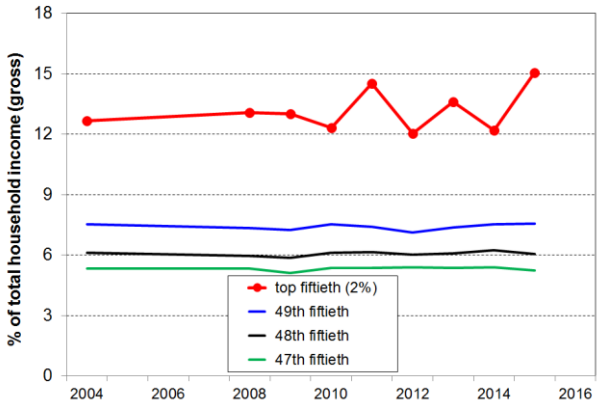
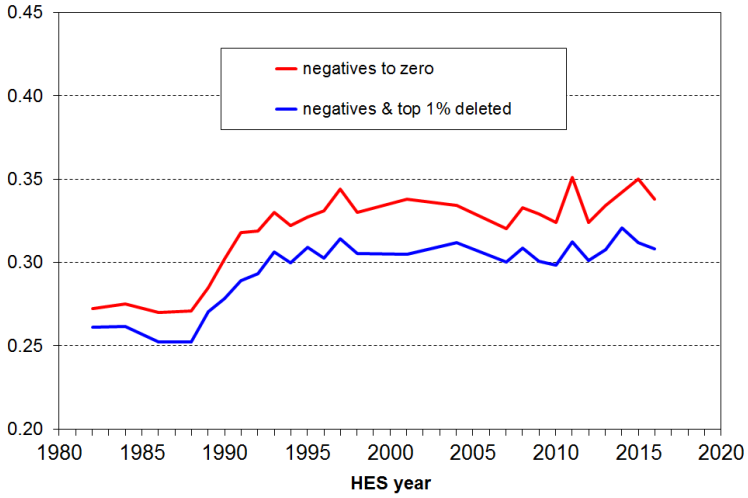


Figure D.18 shows the Gini trend when the top 1% and negatives are removed compared with when all are left in. The large rise from the late 1980s to the mid 1990s is still very clear, but there is a marked difference in the observed trend for the Gini measure of inequality from the mid 1990s to 2015:

- the blips in 1996 and 2011 are much smaller
- the net fall from the 2001 to the 2007 HES all but disappears
- the reported rise in the Gini from HES 2014 to 2015 becomes a fall
- the evidence of a net rise in Gini inequality in the decade from the mid 2000s to 2015 disappears – there is in fact no evidence from the Gini of any sustained rise or fall in the dispersion of incomes (inequality) for the lower 99% of the population over the two decades from 1994 to 2016.

Figure D.18
The impact on the trend in the Gini of removing very high income households and those declaring negative incomes



Do the fluctuations in the size and number of very high incomes in the HES represent real-world changes or are they random?

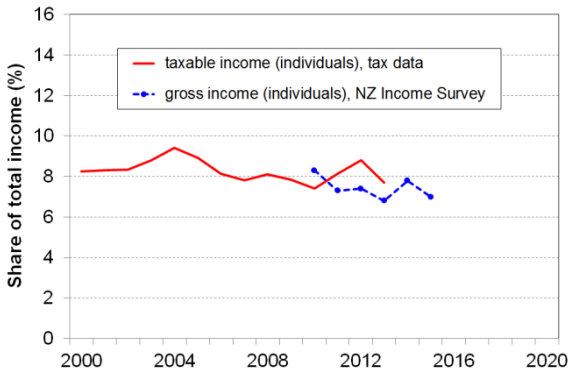
The evidence within the HES itself shows that income shares for other high income groups are stable over the last decade. It is only the very high household incomes that bounce around (see Figures D.15 to D.17 above).

Looking at individual taxable income from tax records (ie going outside the HES itself), there is no evidence of any sustained rise (or fall) in the share of total income received by the top 1% in New Zealand in the last 10-15 years. This is shown in **Figure D.19** below.

At the most, it could perhaps be said that the New Zealand figure declined a little from 9% in 2004 to 7% in 2010, before returning to 9% in 2012, then falling in 2013. Essentially though, the trend has been steady within the 7-9% range since 2001. These figures are based on IRD tax data and are not subject to random sampling fluctuations.

The more recent trend using the Income Survey is also flat.[53]

Figure D.19
Trends in the share of total pre-tax market income received by the top 1% of individuals from tax records (2001 to 2013), and of the gross income of the top 1% (2009 to 2015) from the Income Survey



Sources: World Top Incomes database accessed on 21 June 2016, and customised data from Statistics New Zealand using their Income Survey.

This all raises the question as to whether the Gini is a useful measure for monitoring trends in income inequality, when based on a sample survey that has large fluctuations in sampled very high incomes.

Conclusion

The random fluctuation in very high income households captured in the surveys means that the Gini numbers are likely to fluctuate considerably too, continuing an unsatisfactory situation of not being able to report with confidence on the direction of the Gini trend beyond a point several years before the latest survey. The differing numbers and sizes of the reported negative incomes (and deleting them) also impacts the trend but in a lesser way.

The Incomes Report will therefore from now on monitor the Gini for the whole population as in the past, but it will also report the Gini for the 99% as well. It will continue to monitor the top 1% through independent but more reliable data (such as tax records) to see if there is any evidence of change in trend at the very top. This should increase the chances of being able to report with more confidence on the trends, and also to give more up to date trends using the Gini, though even this approach cannot guarantee the latter.[54]

---

[53] The Income Survey has a sample of around 15,000 households (28,000 adults), much larger than the HES (5600 households in 2014-15, but usually around 3500).

[54] The 2014-15 HES differed in two ways from other HES: it collected wealth data and it was some 60% larger. It is possible that either or both these factors had an impact in the number of very high income households in the sample. However the focus of the analysis here is on addressing the issues presented in the received data, not on an explanation as to why an unusual sample emerged for a particular year.

Trend in the Gini measure of income inequality for New Zealand

Following the new reporting protocol described above, the following can be said.

Figure D.20 shows the trend in the Gini for the whole sample, and for the bottom 99%.

- The first main feature of **Figure D.20** is the steep rise in the Gini from the late 1980s to the early 1990s for both the 100% and the 99% lines. This is a similar trend to that shown by the 80:20 and 90:10 ratios (Figures D.12 and D.13 above) and the Q5:Q1 share ratio (Figure D.22 below). This is a clear and uncontested finding.
- The second main feature is the relative flatness of the Gini trend line from the mid 1990s through to 2012-13 for both the 100% and the 99% line, with a slight dip and rise for the 100% line but very flat for the 99%.

Figure D.21 shows the trend in the top 1% income share through to 2015 using independent data from outside the HES. The trend there is relatively flat, if anything declining slightly.

All this points to the HES 2015 Gini figure for the 100% line being an outlier created by the unusually high number of very high income households in the 2015 HES. The decline in the Gini for the 99% line for 2015 points to the same conclusion. The new 2016 data supports this conclusion.

Using this combined analysis (the Gini for the 99% together with the trend in the income share for the top 1% from more reliable sources), there is no evidence of any sustained rise or fall in BHC household income inequality for the last 20 years.

Figure D.20
Inequality in New Zealand: the Gini coefficient for the whole population and the lower 99%

The Gini can sometimes bounce around from one survey to the next. This is due in part to the impact of major events (eg GFC and recovery, Chch 'quakes), and in part to random fluctuations in the number of very high income households captured in the sample. The underlying trend becomes clear only on looking back some years later.

The percentile ratio measures do not face the same challenges as they are not dependent on what happens at the very top (or bottom) of the income distribution.

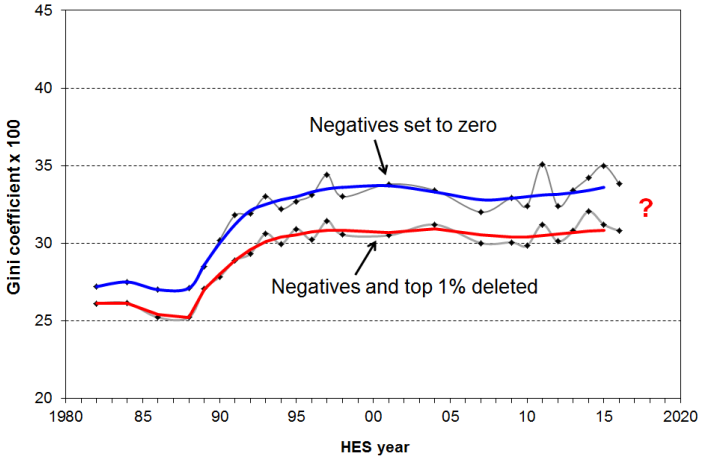


Figure D.21
Share of total income received by the top 1% of individuals

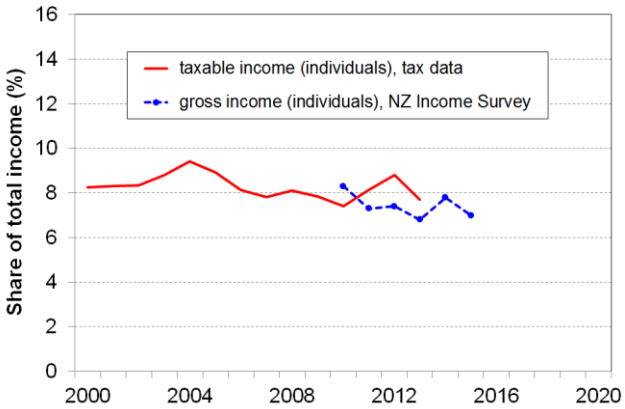


Table D.9 shows that inequality is greater for AHC incomes than for BHC, as is the case when using percentile ratios and share ratios. This reflects the fact that housing costs generally make up a greater proportion of household income for lower-income households than for higher-income households, thus increasing the spread of AHC incomes.

The BHC row uses the "square root" equivalence scale as is standard in OECD publications. The trends are the same whether the Jensen or the square root scale are used (See **Appendix 3**).

Table D.9
Income inequality in New Zealand: the Gini coefficient (x100)

	82	84	86	88	90	92	94	96	98	01	04	07	08	09	10	11	12	13	14	15	16
BHC (OECD)	27.2	27.5	27.0	27.1	30.2	31.9	32.2	33.1	33.0	33.8	33.4	32.0	33.3	32.9	32.4	35.1	32.4	33.4	34.2	35.0	33.8
AHC	28.0	28.5	27.4	28.5	32.1	34.9	35.6	37.2	37.5	38.1	37.0	36.2	38.5	37.6	37.1	40.3	37.7	38.3	39.2	40.5	39.1

For information on longer-run inequality, when looking only at very high incomes, see **Section J**.

Quintile and decile share ratios

A third way of looking at income inequality is to compare the shares of total household income received by higher and lower groupings. This approach is becoming more common: the top to bottom quintile share ratio is used by the EU as one of their top tier formal inequality measures, and the OECD regularly reports on the top to bottom decile share ratio; the Palma ratio (see below) is becoming more commonly used too.

There are two measurement challenges for this inequality measure:

- First, as discussed above in the Gini section, very high income households are generally under-represented in sample surveys. This means that measured upper income shares understate the true shares at the top. Similarly, low income shares understate the shares actually received as there are always households with implausibly low reported incomes in the bottom decile (see **Appendix 8 and 9** for more on this issue). The percentile ratio approach does not face these challenges.
- In addition, for determining the direction of trends, the luck of the draw as to which very high and very low income households actually end up in the sample and are interviewed, introduces a significant element of volatility and uncertainty to the mean incomes reported for D10 and Q5 especially, and also to some extent for D1. This impacts on the reported trend in the shares and share ratios, as discussed above in relation to the Gini. The percentile ratio approach is not impacted to anywhere near the same degree.

Figure D.22 shows the trend for the top to bottom quintile share ratio for the last three and a half decades, 1982 to 2016. Over recent years the 20% of households with higher incomes have on average received around 5.5 times the income of the 20% with lowest incomes. The spike in HES 2011 and the large rise to HES 2015 are similarly reflected in the Gini (see above). The analysis in the Gini section pointed strongly to the HES 2015 figure being an outlier because of the unusually high number of high income households in the sample. When the top 1% are removed the share ratios smooth out too.

Table D.10 shows the trends in three income share ratios from 1982 to 2016, including the Palma ratio. Further detail on the Palma ratio is provided below.

Figure D.22
BHC income inequality in New Zealand: quintile share ratio for Q5 to Q1, 1982 to 2016

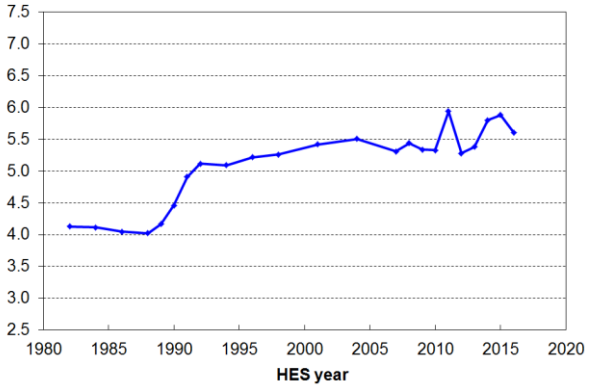


Table D.10
BHC income inequality in New Zealand: decile and quintile shares, 1982 to 2016, total population

	82	86	90	94	98	01	04	07	08	09	10	11	12	13	14	15	16
Q5:Q1	4.13	4.04	4.46	5.09	5.26	5.42	5.51	5.31	5.34	5.34	5.33	5.94	5.28	5.38	5.80	5.88	5.61
D10:D1	6.15	6.06	6.35	8.03	8.66	8.32	9.15	8.10	8.53	8.53	8.62	9.75	8.23	8.29	9.59	9.82	9.10
D10:D1-4 (Palma)	0.91	0.91	1.10	1.21	1.31	1.34	1.31	1.20	1.28	1.28	1.25	1.44	1.23	1.30	1.36	1.45	1.36

Note: this analysis uses the square root equivalence scale as used by the OECD to ensure harmony with the figures used in the international comparisons in Section J.

The Palma: the ratio of the top decile share to the share for the lower four decile shares

The Palma measure or ratio is a relatively new addition to the suite of inequality measures used for international comparisons. It is named after Chilean economist Gabriel Palma whose 2011 paper brought the measure and its rationale to light.[55] The OECD now reports the Palma in its Income Distribution database.

At one level, the Palma is just another share ratio in the wider family of share ratios. It has several features however that make it worth a second look:

- Palma found that among middle income and richer countries those in deciles 5-9 receive around 50% of the total income share, and that this share size seems reasonably stable over time as well as over countries. These are the middle to upper-middle income households between the “rich” and the “poor”. **Figure D.23** shows the share for New Zealand was fairly stable at around 55% from 1990 to 2014, followed by the blip in 2015 for the reasons detailed in the Gini discussion above, and a return towards “normal” in 2016.
- He also found that the remaining 50% or so (45% for New Zealand) of total income was split between the top 10% and bottom 40% in quite different ways across the countries he looked at. This inspired the first part of the title for his 2011 paper – “Homogeneous middles and heterogeneous tails".
- He found that the correlation between the Palma and the Gini is close to perfect across the 150 countries in the World Bank dataset he used.
- Given that the Palma is much easier to explain than the Gini, and that it ranks countries in the same order, then he and others are proposing that it might be a useful alternative to the Gini for international comparisons.[56] For example, what does it mean in practice to say that one country has a Gini of 42 and another 31? On the other hand, a Palma of 2.1 compared with a Palma of 1.7 has specific and easily grasped meaning in terms of the ratio of higher incomes to lower incomes, with the ”middle” remaining constant. The jury is

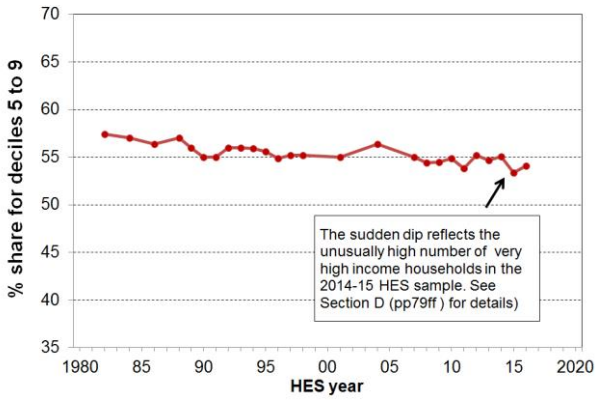
[55] See Palma (2011).

[56] Cobham and Sumner (2014)

still out on whether it can / ought to / will replace the Gini, but it certainly has the communication edge over the Gini.

- In the international section (Section J), New Zealand is ranked relative to other OECD countries on the Palma ratio.

Figure D.23
Proportion of total income received by deciles 5 to 9, 1982 to 2016



- See **Figure J.6B** for the impact on the Palma of the fluctuating numbers of sampled very high income households.

Summing up:

- There is no evidence of any sustained rise or fall in BHC household income inequality in the last 10-15 years (90:10 ratio) or the last 20 years (Gini for 99%, plus top 1% share for the rest) or the last 25 years (top 1% share from tax records).
- AHC incomes are much more dispersed than BHC incomes and there is evidence of higher AHC income inequality in the last few years as compared with the mid 2000s and earlier.

Inclusive Growth

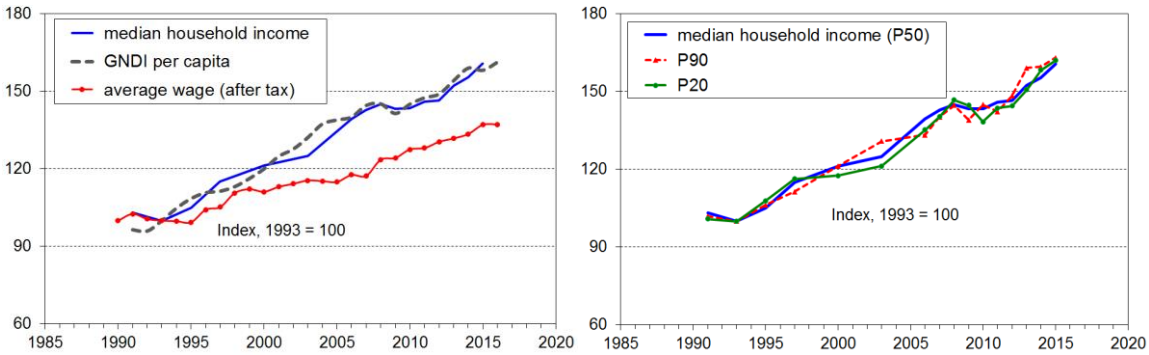
- The idea of "Inclusive Growth" (IG) has gained traction in recent years, especially since the GFC. At the heart of the IG notion is the goal of simultaneously promoting economic growth and reducing (or at least not increasing) various inequalities. It is about policy approaches that simultaneously drive growth and inclusiveness.

- For example, the OECD launched its IG initiative in 2012 in association with the Ford Foundation, and defines IG as "economic growth that creates opportunity for all segments of the population and distributes the dividends of increased prosperity, both in monetary and non-monetary terms, fairly across society".

- By definition, the notion of inclusiveness requires a focus on individuals and households, not just on the system as a whole and "averages". IG is also multi-dimensional, covering not only income and wealth, but also jobs, education, health and access to healthcare. Some include many other dimensions too in a broader notion of "living standards".

- One of the motivations for the IG approach is the observation that for many countries in the years leading up to the GFC, the dividends of economic growth were not fairly shared across the whole income distribution. In particular in the US and the UK a small group of very high income earners vacuumed up the bulk of the new income coming from economic growth, leaving little or none for the rest to share.

- The graphs below show one aspect of New Zealand's IG experience from the mid 1990s to 2016 – the growth in real terms of household incomes (not equivalised) and Gross National Disposable Income per capita (GNDI pc).[57] They show that:
    - median disposable household income tracked very closely with GNDI pc, showing "inclusive growth" (left hand graph)
    - the P20 and P90 incomes tracked close to the median (P50), thus showing that the "inclusive growth" extended to higher and lower incomes (right hand graph)
    - average wages (after tax) fell behind GNDI pc growth, consistent with lowish productivity growth or higher returns to capital than to labour, or both
    - in the post GFC years, average wage growth (after tax) has been only a little less than the growth in median household incomes and GNDI per capita.



- One of the reasons for the higher growth rate for household incomes compared with wages (from the mid 1990s to 2008 (just before the GFC impact)) is the increase in total hours in paid employment per household for many multi-adult households. In general this reflects the increased female labour force participation in the period. For example:

[57] GDP is a measure of the production of final goods and services in the domestic economy. The income available to the nation for consumption or investment is wider than GDP and includes net income flows with the rest of the world. GNDI measures this wider concept. It is a measure of the volume of goods and services New Zealand residents have command over. The per capita (ie per individual) measure is used as it is a rising per capita trend that indicates rising living standards. Straight GDP or GNDI can increase just because of population growth, and the increase may or may not indicate rising living standards.

- out of all two parent families that had at least one parent in FT employment, the proportion with 2 earners increased from 58% in 1994 to 67% in 2008 (69% in 2015)
- one consequence of this is that the ratio of median two parent income to median sole parent income has increased from 1.57 in 1994 to 1.66 in 2008 (1.67 in 2015).

- The growth in household incomes at P10 (ie at the top of the bottom decile) has been variable across the period 1994 to 2016. Part of that variability will be due to sampling error, though from P10 up this is not so much of an issue as it is for below P10. The net gain at P10 is less than for the median or P20. The fact that there was any real income growth at all at P10 mainly reflects rises in real terms for NZS. Those whose incomes are almost entirely from NZS are at the top of the lower decile and the bottom of the second decile. Incomes for beneficiaries and those reliant only on minimum wage employment (plus WFF if eligible) remained steady in real terms so did not contribute to the rise at P10.

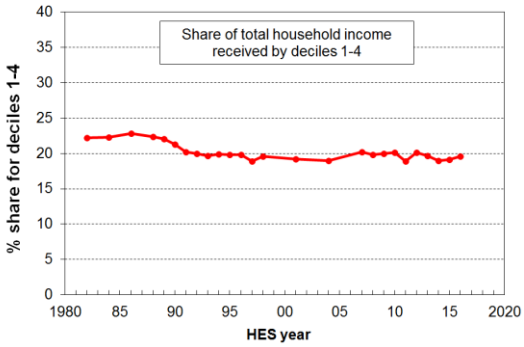
- For assessing the degree of Inclusive Growth in New Zealand's experience, the above is just a small contribution.[58] For example, the largely positive analysis of IG for household incomes does not address the question as to whether the current range of incomes is "optimal" or considered "fair and reasonable" by the population, nor whether those households with low incomes have enough to live on at an acceptable minimum standard.[59]

UN's Sustainable Development Goals: Inequality Goal #10.1

- On September 2015 all 193 UN member states formally adopted the 2030 Agenda for Sustainable Development which includes a new set of global goals (the Sustainable Development Goals (SDGs)) which replace the Millenium Development Goals (MDGs). One of the differences between the SDGs and MDGs is that the SDGs are universal rather than just focussing on "developing countries".

- SDG #10 is about reducing inequality within and between countries, and covers a wide range of inequalities. It has an Inclusive Growth approach. One of the targets for Goal #10 is that member states "by 2030, progressively achieve and sustain income growth of the bottom 40% of the population at a rate higher than the national average" (Goal 10.1). This refers to BHC income.

- The graph shows the share of total household income for the bottom 40% for New Zealand, 1982 to 2016. The generally flat trend from the early 1990s through to 2016 shows that the income growth of the bottom 40% has been much the same as that for the national average in that period. If the growth for the bottom 40% had been greater than that for average incomes, the trend line would slope up.



- A limitation of this UN target is that it simply commits individual countries to improve on their base position, but there are no guidelines or expectations about what an "acceptable" target range is for the ratio by 2030.

[58] See OECD (2015) and Carey (2015) for an OECD view of New Zealand's performance against "Inclusive Growth" criteria across a range of domains, and on their view as to how New Zealand might have its economic growth (even) more inclusive.

[59] See Nolan, B., M. Roser, & S. Thewissen (2016) for a recent analysis of the different patterns of divergence between household income and GDP per capita for 27 OECD countries.

The squeezed middle (class)?

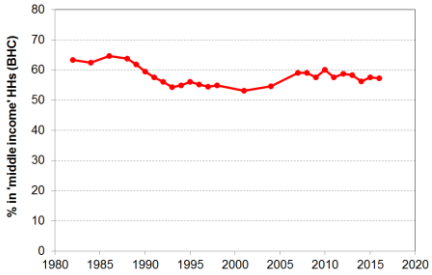
- The idea of "the squeezed middle" is related to the Inclusive Growth (IG) theme. One of the starting points for the IG discourse is the observation that in some countries the dividends of economic growth have not in recent years been fairly shared across the whole income distribution.
    - The experience of a "squeezed middle" comes in different degrees of severity. Perhaps the most severe has been for the US where median household incomes in real terms are lower now than in 2000, where wage growth has fallen behind productivity growth, and where employee wage and salary compensation made up only 43% of GDP in 2013 compared with 47% in 2000. This all indicates a shift in income from labour to capital, and shows up in for example the rapid rise in the share of all income received by the top 1 % (currently 23%, up from 15% in 2000, and 10% in the 1960s).
    - A less severe version occurs when middle incomes grow in real terms but not fast enough for middle class households to be as well-off as they had anticipated, and with parents coming to realise that unlike previous generations there is little chance of their children doing better than they did. This is more the UK experience.

- Does New Zealand have a squeezed middle? Clearly not in the US sense as middle incomes are still growing strongly in real terms, and the proportion of income received by the top 1% is steady and much lower at 7-8%. But is there evidence of a less severe version?

- How to define middle incomes for quantifying changing patterns is challenging, defining the middle class more so. As a part of its Inclusive Growth work programme the OECD has investigated the number of people in households with incomes between 75% of the median and double the median (their call on a notion of "middle income"):
    - On average over all OECD member countries, around 62% of people are in middle income households on that definition.
    - Norway and the Netherlands top the list at around 72%, and Chile, Brazil and India have the smallest group (~40-45%).
    - New Zealand (58%) is a little below the OECD average and is similar to the UK, Italy, Canada and Australia (60%).
    - The USA is lower at 50% which is down from 60% in the early 1980s and 53% in the early 2000s.

- **Figure D.24** shows some evidence of a "hollowing out of the middle" in the mid-1990s to the mid-2000s, but with some recovery since 2007 (65% to 55% to 58%). This aspect is similar to the UK experience, but in New Zealand middle incomes have grown strongly since the GFC / recession whereas in the UK that have not. This latter aspect is part of what has driven the middle income angst in the UK.

Figure D.24
Proportion of households with incomes between 75% and 200% of the median, 1982 to 2016



- Defining "middle income" is challenging enough. "Middle class" is an even more fluid concept, with no commonly agreed definition – income is a part of it, so are aspirations, education level and type of employment. The question of whether the "middle class" is squeezed or not is beyond the scope of this report.

Section E
Low incomes, poverty and material hardship: conceptualisation and measurement issues

For the analysis of trends in income poverty, this report uses low-income thresholds set at 50% and 60% of median household income, adjusted for household size and composition.

Individuals and groups below such lines can be described in a bland analytical way as "low-income populations", but it is now very common practice in New Zealand and internationally for the 50% and 60% thresholds, and others in that general part of the distribution, to be referred to as "poverty lines" and those below them as "poor" or "in poverty" or "at risk of poverty".

The growing acceptability of "poverty" language in more official contexts in the more economically developed countries (MEDCs) is reflected in recent OECD and UNICEF publications of international comparisons of poverty rates, and in decisions by the European Union (EU) to regularly publish income-based poverty indicators as part of a wider social reporting by Eurostat.

The positions taken by governments of OECD countries have been mixed with respect to a poverty discourse and whether or not to adopt any official measure or measures of poverty. In the United States, the War on Poverty announced in 1964 and the associated establishment of an official poverty line shortly thereafter have done much to ensure that poverty language has been and still is an accepted part of economic and social policy discourse in the United States. By contrast, in the United Kingdom, a Conservative government in the 1980s and the first half of the 1990s did not approve of poverty language and did not adopt an official measure. "Margaret Thatcher, supported by Helmut Kohl in Germany, … successfully banished the word "poverty" from the political lexicon for a generation. Tony Blair rehabilitated its use in a keynote speech in 1999 [where he] committed the government to eradicating child poverty [within a generation]" (Tomlinson and Walker, 2009:8). The UK now has official measures of child poverty, enshrined in the Child Poverty Act 2010 and supported by the Cameron-Clegg coalition government, albeit the chances of achieving the targets now seem remote.[60] Ireland adopted official poverty measures and a National Anti-Poverty Strategy in 1997. Canada has an elaborate low income measurement regime using low income cut-offs (LICOs), low income measures (LIMs) and a Market Basket Measure (MBM), but Statistics Canada has consistently noted that these are not poverty lines. Neither Australia nor New Zealand have official poverty measures.

As recently as 1996, the government of the time in New Zealand was openly disapproving of any poverty discourse.[61] However, in 2002, in the context of the Agenda for Children, the Labour-led government made a commitment to eliminate child poverty, and in the Speech from the Throne in November 2005, the Governor-General described the Working for Families package as "the biggest offensive on child poverty New Zealand has seen for decades". In its response to the Children's Commissioner's Expert Advisory Group's 2012 Report on Solutions to Child Poverty, the current National-led government declined to take up the recommendations for a suite of official measures and a set of official targets for reducing child poverty. On the other hand, the government response used "poverty" language throughout its report, setting out its general approach to addressing child poverty. The current National-led government, like the previous Labour-led government, espouses the principle that paid work is the best way to reduce child poverty.

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[60] In April 2011, following the government-commissioned Independent Review on Poverty and Life Chances by Frank Field, the coalition proposed an expanded set of child poverty and life chance indicators. These included the measures prescribed in the Child Poverty Act but included many more. The response was generally positive although some were concerned that it meant that there was a heightened risk that the core measures would be downplayed. More recently (November 2012), the UK government proposed a new single measure of child poverty which incorporated a wide range of dimensions into the one measure. The proposal met with widespread and stringent criticism for its naivety and intellectual incoherence, not least because of the muddling together in the one measure of causes and consequences as well as the core concepts of poverty and hardship.

[61] *New Zealand Herald 13 April 1996*.

Researchers, advocacy groups and others in all the MEDCs have used poverty language and a range of poverty measures for a long time. The growing acceptance of the discourse by governments and their agencies can be seen as helpful to the extent that it represents official recognition that some citizens are experiencing unacceptable material hardship. It can serve to remind us all that behind the statistics are real people who are to varying degrees experiencing the stressful and demoralising exclusion from ordinary life that financial strictures and material hardship bring.

It is however very easy for such language to be used in a way that ignores the fact that the conceptualisation and measurement are contested. For example it used to be said that "one in three children in New Zealand are below the poverty line".[62] This claim is really short-hand for "using an income measure after housing costs have been deducted, around one in three children are below a threshold set at 60% of the median". If another measure were used, the summary sound bite would be different. For example, on the most common measure used by the OECD, using income without deducting housing costs and a lower threshold of 50% of the median, around one in seven children were "below the line" at that time, less than half the one in three rate that was commonly referred to. These observations underline the importance of always being clear as to what measure is being used when reporting poverty rates.

All income poverty measures, even official ones, are constructs requiring judgement calls. These calls have to be made on a range of matters which can at first sight appear to be just technical decisions but which in fact reflect or imply underlying assumptions. There is no clear delineation between the poor and the non-poor that science can identify independent of judgment. This is not to say that any measure will do nor that all measures are equally suspect – some are clearly more defensible and reasonable than others. What is crucial in discussing poverty rates and trends is to identify what measure is being used, and to be aware of the different rationales for and pictures presented by the different measures. One of the goals of this report is to encourage and contribute to that sort of discussion and awareness in measuring, monitoring and better understanding "poverty and hardship" in New Zealand.

This section and the ones that follow:

- Outline key issues involved in conceptualising and measuring poverty using household incomes.
- Report on trends in proportions of people below various low-income thresholds, by:
  - age group
  - ethnicity (to a limited extent)
  - highest household educational qualification
  - household and family type
  - labour market status
  - tenure.
- Summarise findings on income mobility and poverty persistence from recent research using longitudinal income data from the Survey of Families, Income and Employment.
- Report international comparisons of income poverty.
- Provide an integrated account of the findings on child poverty and hardship using both household incomes and non-income measures.

What is meant by "poverty" in the more economically developed countries?

Despite the current wide use of poverty language in MEDCs, there is considerable disagreement and at times confusion about what "poverty" actual means or could mean for citizens in the richer nations. The lack of consensus and clarity is to a large degree driven by two fundamental aspects of "poverty". In the first place, whatever else poverty is understood to be it is in its essence an unacceptable state-of-affairs. Properly understood, "use of the term "poverty" carries with it an implication and moral imperative that something should be done about it" (Piachaud, 1987:161). This makes it very different from other related issues such as inequality which is not in itself considered unacceptable, although there is legitimate debate about what an acceptable level of inequality might be, whatever the measure used.

[62] For one of the earliest examples, see *New Zealand Herald 12 April 1996 Section 1(5)*.

> Disagreements over the definition of poverty run deep and are closely associated with disagreements over both the causes of and solutions to it. In practice all these issues of definition, measurement, cause and solution are bound up together, and an understanding of poverty requires an appreciation of the interrelationships between them all.
>
> Alcock (1993:57)

The second main reason for the lack of consensus and clarity is that there is a *prima facie* incongruity about using the same word (or concept) to describe both the circumstances of the less-well-off in richer nations, as seriously debilitating and demeaning as these circumstances may be, and also the life-and-death struggles of many in "third world" countries or the deprivations experienced by our forebears in past centuries.

The relative-absolute distinction

A common approach to address this latter point is to make a distinction between absolute and relative poverty.

Absolute poverty is generally based on the notion of subsistence, the minimum needed to sustain life. For example, the UN's World Summit on Social Development in 1995 in Copenhagen defined absolute poverty as "a condition characterised by severe deprivation of basic human needs, including food, safe drinking water, sanitation facilities, health, shelter, education and information. It depends not only on income but also on access to social services". Advocates of an "absolute" definition have often claimed a degree of objectivity about the resulting definition, with the focus being on attempts to clearly define subsistence and minimal needs.

A relative approach on the other hand requires many a judgement call. Relative poverty is about the standard of living (actual or potential) of those identified as poor compared with that of those declared to be non-poor. It is about a state of relative disadvantage that is deemed to not meet minimum acceptable community standards. It is now sometimes asserted that in MEDCs there is little or no absolute poverty but that there are varying degrees of relative poverty depending on the stringency or generosity of the threshold used.

While the relative-absolute distinction seems at first sight to be a useful starting point for discussion, it is not only not a clear-cut distinction, it is also an over-simplification that can mislead.

First, the absolute notion turns out to have unavoidable relative aspects, or at least aspects that require a judgement call. For example, there can be legitimate debate as to what the subsistence notion actually covers. Is it just mere physical survival, or do the basics of life include access to basic education and information as in the UN definition above? Even a basic notion such as adequate shelter has to be understood relative to local climate and social convention. Adequate nutrition for adults varies depending on the energy requirements of their daily work, and even in "third world" countries, minimum standards have changed over time.

Furthermore, the absolute concept is also used to describe MEDC income poverty lines held fixed in real terms (starting in a reference or anchor year). This dilutes and muddies the concept. The UK's annual Households Below Average Income series uses "absolute" in this way. The US poverty line is another, even though the value of the poverty line in the reference year (1965) was derived in a different way than the UK's absolute line now anchored in 2010-11.

None of this means that the relative approach is therefore correct or even "better". It too has its challenges. For example, if the real dollar value of the poverty line increases as a society becomes more affluent, and if "today's comforts and conveniences are yesterday's luxuries and tomorrow's necessities" (Fuchs, 1967), then it is difficult to distinguish between the "poor" and those who are just less well-off in an unequal social order. In other words, relative poverty becomes hard to distinguish from inequality.

Adding to the challenges of making sense of and using the relative-absolute distinction is the fact that the notion of "relative" itself has several dimensions. The inherent comparisons required in a relative approach can be about relativities over time (minimum standards change) or relativities between countries (different countries have different minimum standards). As noted above, even

an assessment of basic notions such as what adequate nutrition or adequate shelter mean cannot be separated from their social, historical and cultural contexts.

These and other critiques of the relative perspective and the undisputed relative aspects of so-called absolute approaches have led some to conclude that there is no coherent basis for making any sensible claims about poverty in MEDCs, as it is all allegedly just about judgements and assumptions and constructed social needs. Assuming that poverty is about a person or household not having adequate resources to meet their basic human needs, many would argue that nothing definitive can be said about poverty in MEDCs as "the quest for universal and objective needs is [considered to be] a search for a will-o'-the-wisp" (Doyal and Gough, 1991: 21). Thus, some conclude that poverty in MEDCs should simply be seen as a form of inequality.

The relative-absolute synthesis

There is however a way forward. Over the last twenty or thirty years there has been a growing acceptance among many that the way in which the relative-absolute distinction has traditionally been constructed and spoken about is itself a large part of the problem. Rather than seeing them as competing theories, it is proposed that there are grounds for re-stating the relationship between the absolute and relative aspects of poverty. In so doing, it becomes possible to integrate in the one framework the notion of poverty for MEDCs, "third world" and "developing" countries.

The new synthesis was given impetus through the very public debate in the mid 1980s between Townsend (an advocate of the relative perspective[63]) and Sen (there is an "irreducible absolutist core in the idea of poverty" (Sen, 1983: 159)). Progress continued through Doyal and Gough's work on a theory of human need (Doyal and Gough, 1991), and by further publications from both Townsend and Sen (separately) that articulated an integrated perspective. Townsend, for example expressed support for the definitions adopted by the 1995 UN World Summit on Social Development in Copenhagen which reflect the integrated approach (see Gordon and Townsend (eds) (2000: 17f)). Rather than outlining the synthesis here, it is incorporated into the following section (especially in a) to f)) which lays out the approach taken in this report.[64]

Poverty and hardship in MEDCs: the approach taken in this report

Building off this new synthesis, this report uses the following framework to underpin its rationale, analysis and findings. It is laid out in a structured way to facilitate discussion and debate about each step of the argument.

a) The over-arching concept is that poverty is about resources being inadequate to meet basic human needs. This is a very standard concept.

b) Humans are social as well as physical beings and the basic human needs that the resources must meet must reflect both aspects.

c) There is a set of basic human needs that are reasonably universal (the absolutist core). See the box below for a list of basic material needs for New Zealand citizens in 2014.

d) The way these needs are met varies over time and between countries and cultures (one aspect of relativity).

e) To meet these basic needs to minimum acceptable standards in MEDCs often requires many times more dollars per week than for households in "third world" countries. This is because of the different way in which MEDCs are structured in terms of food supply, property rights, transport, labour market, the legal requirements that govern minimum

[63] Townsend's conceptualisation of poverty is illustrated in the following:
"Individuals, families and groups in the population can be said to be in poverty when they lack the resources to obtain the type of diet, participate in the activities and have the living conditions and amenities which are customary, or at least widely encouraged, or approved, in the societies to which they belong. Their resources are so seriously below those commanded by the average individual or family that they are, in effect, excluded from ordinary living patterns, customs and activities." (Townsend 1979:31)

[64] For useful summaries of the transition from relative and absolute as alternatives to the new synthesis, see chapter one in Lister (2004), and chapter 4 in Gordon and Townsend (eds) (2000).

standards for housing, and more generally a mixed economy for the provision of goods and services and different social norms and expectations for citizen participation, and so on. Households, and especially households with children, cannot simply opt out of the structures and expectations of their MEDC society and "go bush" or "live off the land". The basics set out in c) above, and the societal expectations and human need for some participation above mere physical survival, all place unavoidable minimum demands on the family budget.

f) Poverty and hardship in MEDCs are real issues in relation to basic human needs not being met. They are about relative disadvantage within a given society, but there is an "absolutist core" (Sen) of needs that must be met. This is what makes poverty about more than just inequality. Poverty is about "not enough", not just about "less than".

g) Household income is an important resource for meeting needs in the mixed economy of an MEDC, albeit there are other resources available to or required by households to meet basic needs (for example – household appliances and furnuiture, financial assets, government services).

h) There is value in looking at poverty from both an adequacy of resources perspective as well as more directly in terms of the degree to which basic needs are being met in practice. The use of non-income measures of material deprivation is an essential part of a comprehensive monitoring of poverty and hardship.[65]

i) There is room for debate about where to "draw the line" for any measure of poverty or material hardship, but in practice there is a reasonably narrow range for credible and defensible thresholds. Drawing on the views of ordinary citizens (for example, through focus groups and surveys) as well as those of experts greatly assists with the setting and legitimisation of poverty thresholds and of lists of things that everyone should have and no one should have to go without.

j) Poverty and hardship exist on a continuum from less to more severe.

k) Assumptions and judgement calls must be clearly declared and sensitivity testing reported to show what difference, if any, the different assumptions make.

l) The overall poverty and hardship narrative is not one-dimensional: the story that integrates the trends for several measures needs to be clearly told in a coherent way.

List of basic material needs for New Zealand citizens in 2016

- clean drinking water
- sanitation and waste disposal
- adequate food / nutrition
- hot running water
- suitable clothes and shoes
- adequate housing – shelter / warmth
- dental and medical care as required
- mains electricity or equivalent
- household durable goods:
  - food storage and cooking, sleeping, cleaning and maintenance, having people around, ……
- transport (for employment, supplies, 'helping', children …., leisure)
- ICT including a computer in the household and broadband internet access
- social engagement that involves financial cost
- financial resources to cope with unexpected essential expenses

See Doyal and Gough (1991), chapter 10, for a list of needs that goes wider than the material needs listed here.

[65] See **the separate NIMs report** for more on the use of non-income measures using data from the HES and MSD's Living Standards Surveys.

Poverty – narrow or wide?

Poverty and hardship are multi-dimensional. Different contexts and different purposes require a focus on one or other dimension or indeed on multiple disadvantage across several dimensions. When talking about "poverty" it is important to be clear about which dimension is being discussed, or if the wider notion of multiple disadvantage is in scope that that too is made clear.

Poverty is primarily used to refer to the status of those in households that have income below a given low-income threshold, however determined. This is a narrow but legitimate perspective.

At other times "poverty" is used to describe those whose actual living conditions are very restricted and below minimum acceptable levels. This is a slightly wider perspective as these outcomes are determined by more than just income alone. The report uses "material hardship" or "deprivation" for this aspect.

"Poverty" is also used almost as a catch-all term to refer to any serious disadvantage or cluster of disadvantages experienced by households or geographical areas (for example, low education, poor quality housing and local amenities, poor health, high unemployment).

It is important to be clear just which of these concepts is being used in any given context. This report is about the first notion mainly with a little on the second.

Poverty experienced

The understanding of poverty and the associated measurement approach used in this report is narrowly focused. It is about "unacceptable financial or material hardship" and the insights about this that can be gleaned from a large-scale national survey.

This is a legitimate focus, but in pursuing it it is important to be aware that there is much more to "poverty" than what can be measured (albeit imperfectly) through analysis of data from income or deprivation surveys. These can tell us about the material core ("unacceptable material hardship"), but a different type of research is needed to give insight into how this unacceptable hardship is experienced and understood.

> What is at issue here is the non-material as well as the material manifestations of poverty. Poverty has to be understood not just as a disadvantaged and insecure economic *condition* but also as a shameful and corrosive social *relation* … [The non-material aspects include] … lack of voice; disrespect, humiliation and assault on dignity and self-esteem; shame and stigma; powerlessness; denial of rights and diminished citizenship … They stem from people in poverty's everyday interactions with the wider society and from the way they are talked about and treated by politicians, officials, the media and other influential bodies. Lister (2004:7)

> What people on low incomes report is a situation of great complexity in which the pressures they face are cumulative. Basics become luxuries that have to be prioritised and saved for. Solutions to one problem create problems of their own, as when saving on heating exacerbates illness and borrowing from the rent money generates arrears and threats of eviction. Poverty feels like entrapment when options are always lacking, the future is looming and unpredictable, and guilt seems ever present, arising from an inability to meet one's children's needs, one's own expectations and society's demands. Tomlinson and Walker (2009:16)

Some common misunderstandings

There are some common misunderstandings about poverty and its measurement, especially income poverty. These derive in part from misunderstandings about the relative-absolute distinction discussed above and set aside as being more of a hindrance than a help to poverty discourse. The misunderstandings are briefly described below then discussed in the context of framework outlined above and of some empirical findings.

"Income poverty is essentially about inequality"

- This view derives from the old relative-absolute distinction rather than the synthesis described above. It misses the point about an absolute core of human need that must be met from resources. This latter means that poverty is essentially about "not enough" rather than "less than".

"Because (income) poverty is relative, no country can ever eliminate poverty"

- The assertion is based on the view that there will always be a group of households with incomes or living standards that are low relative to those in the middle. By definition, therefore, "the poor will always be with us".
- It misses the point that the incomes of the poor can be raised without raising the level of the median. This is what happened when the WFF package was rolled out from 2004 to 2007. The shape of the income distribution at the lower end is not fixed in stone – it can be changed.
- It is true that measured income poverty is not ever likely to reach zero, but this is because (among other things) there are always households that have very low incomes from time to time even if on average over several years their incomes are above the average poverty line, not because the notion of relative income poverty makes it a necessary conclusion.[66]

"Relative income poverty is an invalid and unhelpful measure – for example, if every household's income doubled then the same number are in poverty as before even though everyone is much better off"

- Assuming this hypothetical scenario could be carried out, then the day after the income rise everyone would have plenty.
- But the reality is that for wages and salaries and transfers to increase by this amount and stay that way then presumably firms would have to put up the price of their goods and services to be able to pay these new high wages and salaries.
- This would be highly inflationary and when a new equilibrium was reached citizens at the bottom of the distribution would once again be finding it difficult to make ends meet as prices would have gone through the roof.

See the Annex to Section H for more common misunderstandings, especially in relation to child poverty and hardship figures.

In this report poverty is understood as *exclusion from the minimum acceptable way of life in one's own society because of inadequate resources*.

While there is an explicit relative element in the definition, and while judgment calls are needed to establish what "minimum acceptable" means, the minimum acceptable way of life relates to an "absolute core" of things that everyone should have and no one should have to go without, as noted in the box on page 81.

The definition includes both resources and outcome elements – this double perspective is reflected in the use of both income measures and non-income measures in the report (though the focus of the report is on incomes).

[66] Another version of this misunderstanding is the claim that when low-income households have more income transferred to them in an attempt to reduce income poverty, the process is at least partially self-defeating, as this action raises the mean and therefore also raises a poverty line set as a % of the mean (unless there's a perfectly matching income reduction for those above the mean). The misunderstanding here is that poverty lines are only very rarely set as a % of the mean these days: the median is used as the reference for the middle and raising the incomes of low-income households has no impact on the median.

Constructing measures of income poverty

Reported levels of income poverty and the direction of trends over time depend not only on changes in the economic circumstances of families and households but also on the specific measure used to produce the poverty numbers.

Key decisions in constructing a measure

The general approach to using household incomes to give headcount measures of poverty and hardship is well-established. Each household member is assigned the equivalised disposable income of their household as an indicator of their (potential) living standards and individuals in the population are ranked accordingly. One or more poverty thresholds are decided on, the numbers below these cut-offs are counted and the numbers or proportions 'in poverty' are reported.

Within this general approach there are however a range of decisions on key issues that can make a significant difference to what is reported for levels or trends in poverty numbers, and in the composition of the group identified as poor. Different measures reflect the different decisions at key points on such matters as:

- whether to use incomes before or after deducting housing costs (BHC or AHC)
- which equivalence scale to use, reflecting different judgments about factors such as the strength of the economies of scale as household size increases, and the relative weight to be given to children compared with adults
- where to draw thresholds (poverty lines) that are consistent with a minimum acceptable standard of living, all else equal
- how to update the thresholds from one survey to the next.

Different decisions on the first three matters generally lead to different poverty levels being reported at a given time and some difference in the reported composition of those identified as poor. However the general trends over time tend to be not greatly affected by the choices made for these three factors. This paper reports sensitivity analysis for the different choices made on these issues.

One factor that does have a significant effect on reported trends in income poverty (and the level at a given time) is the decision about how to adjust the low-income threshold(s) over time. There are two common ways in which this adjustment is made and they differ in how they assess whether an improvement has occurred in a household's income circumstances:

- one approach considers that a low-income household has improved its situation when its income rises in real terms, irrespective of what is happening to the incomes of other households - the 'fixed line', 'anchored', or 'constant-value (CV)' approach;
- the other uses the median household as the reference and an improvement is considered to have occurred when a poor household moves closer to the median – the 'moving line' or 'relative (REL)' approach.

These two approaches are discussed below.

Using fixed line and moving line thresholds to adjust thresholds over time

The constant-value (CV), 'fixed line' or 'anchored' approach to adjusting thresholds over time maintains the real value of a chosen poverty line by adjusting it each year with the CPI. On this approach a household's situation is considered to have improved if its income rises in real terms, irrespective of whether its rising income makes it any closer or further away from the middle or average household.

The relative-to-contemporary-median (REL) or 'moving line' approach sets the poverty line as a proportion of the median income from each survey so that the threshold changes in lockstep with the incomes of those in the middle of the income distribution. On this approach the situation of a low-income household is considered to have improved if its income gets closer to that of the median household, irrespective of whether it is better or worse off in real terms.

Both approaches reflect the 'relative disadvantage' concept of poverty and hardship. The REL approach is self-evidently a relative approach. The CV approach has to be benchmarked against community standards in some way to start with, then after some years of being kept at the same level in real terms it has to be re-based – again relative to some estimate of community standards.

Both approaches are used in income poverty analysis in OECD-type nations. They each have a valid story to tell about the situation of people in lower-income households.[67]

In the short to medium term, the fixed line (CV) measure can be seen as the more fundamental measure in the sense that it reveals whether the incomes of low-income households are rising or falling in real terms. Whatever is happening to the incomes of the 'non-poor', if more and more people end up falling below a CV threshold, as happened in New Zealand from the late 1980s through to the mid 1990s, then in the population at large there is likely to be wide concern about increasing poverty.

In times of good economic growth with rising real wages, rising employment and declining unemployment, poverty rates measured on a CV approach can generally be expected to decline, as they have in New Zealand since the mid 1990s. There is however a limit to how low even CV rates can fall when there is a large beneficiary population on incomes that do not (often) rise in real terms.

The REL or moving line approach can produce counter-intuitive results over time. For example, in times of good economic growth with rising real wages, rising employment and reducing unemployment, median income (and therefore the poverty lines which are simply a proportion of the median) can rise more quickly than the incomes in the lower parts of the income distribution. In these circumstances a REL measure would report increasing poverty even if those in low-income households were experiencing real income growth.

This counter-intuitive result was observed in Ireland in the 1990s: the poor became 'richer' in real terms, but because the income growth of the middle income households was even greater, poverty rates grew considerably as measured using a REL threshold. This also happened for New Zealand from 1998 to 2004, albeit on a more modest scale.

The reverse is also possible. It was observed in the Czech Republic, Hungary and Poland in the early 1990s when each of these nations experienced large falls in national income. Real incomes fell, but poverty was reported as declining as measured by a REL approach as a result of the falling median and therefore the lowering poverty thresholds. In New Zealand, real incomes for many fell in the period from 1988 to 1994. Using a threshold held fixed in real terms, the CV approach clearly showed the worsening situation for many of the poor. Using a REL approach, poverty rates stayed reasonably constant in the period as both household incomes and the thresholds set as a proportion of the median were falling. (See Section F.) See also the case study for Ireland on p9 of the Overview and Summary.

[67] See also Notten and de Neubourg (2011).

This report provides trend information using both the CV and REL approaches, but considers the CV approach as the more fundamental measure for the purposes of tracking material wellbeing using household incomes in the short to medium term.

Two questions are sometimes raised in relation to updating thresholds over time.

- As median household incomes rise (or fall) in real terms, CV or fixed thresholds fall (rise) as a proportion of the contemporary median. How often should the reference year be re-set so that the value of the CV thresholds do not move too far from the implied reference level relative to the population as a whole?
- In times of economic growth, can poverty rates ever fall when measured using a moving line approach?

These are discussed below.

The reference year for measures using an anchored line approach

As median household incomes rise (or fall) in real terms over time, the anchored (CV) poverty lines can become unrealistically low (or high) relative to the contemporary median. The question arises as to how often to re-set the CV poverty lines. The decision on this depends to a large degree on the rate of change in median incomes: higher rates of change mean that the re-setting needs to occur sooner so that the thresholds do not move too far from (or get too close to) average incomes.

Until the 2010 report, the Household Incomes series (and its pre-cursors) used 1998 as the base or reference year for setting CV thresholds, adjusting back and forward using the CPI. Because of the way median incomes fell then rose from 1982 to 2008, 1998 CV measures were convenient and appropriate to use for the period – the CV threshold set at 60% of the 1998 median stayed within a band of 50% to 70% of the BHC median for 1982 to 2008, and within five to six percentage points of 60% for the bulk of the period.

The 2011 report shifted the reference year for 'anchored line' low-income (poverty) measures from 1998 to 2007. Moving the reference year only to 2004 ran the risk of requiring another move of reference year in a relatively few years. The decision to go to 2007 was made with a view to not having to change it again for some time**. Figure E.1** and **Table E.1** report the trend in the 2007 anchored line threshold relative to the contemporary median.

Figure E.1
CV or anchored threshold set at 50% of the 2007 median
expressed as a proportion of the contemporary median (BHC), 1982 to 2016

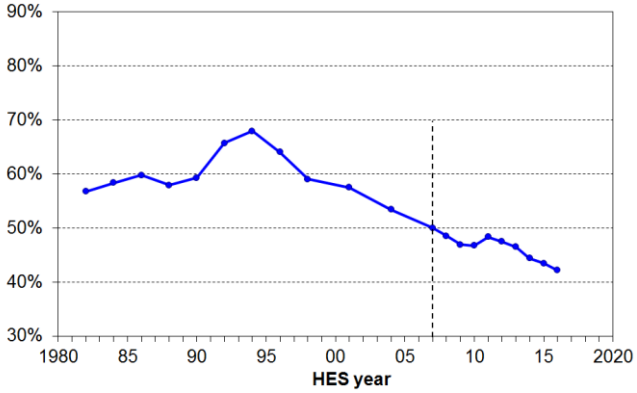


Table E.1
CV threshold set at 50% of the 2007 median
expressed as a proportion (%) of the contemporary median (BHC), 1982 to 2016

1982	84	86	88	90	92	94	96	98	01	04	07	08	09	10	11	12	13	14	15	2016
57	58	60	58	59	66	68	64	59	58	53	50	49	47	47	48	47	47	44	43	42

It turns out (serendipity) that the value of the 60% of the 1998 median is almost the same as the value of 50% of the 2007 median. So the trend paths for low-income rates using a 50% CV-07 threshold and those for a 60% CV-98 threshold are virtually indistinguishable. See **Appendix 13**.

Can poverty rates ever fall using a REL or moving threshold approach?

It has often been pointed out that measuring poverty using a REL or moving threshold approach makes it very difficult for poverty rates to decline during periods of sustained economic growth. During such periods, median household incomes are likely to rise, and unless incomes in the bottom decile or two show an equal or greater rise, then poverty rates using a REL approach will be reported as increasing because the poverty line (set as a proportion of the median) will rise more quickly than the incomes of these low-income households.

This means that to achieve a reduction in poverty using a REL approach there has to be a rate of increase in incomes for low-income households that exceeds the rate of increase at the median. In other words, to achieve REL poverty reduction requires a changing of the shape of the lower end of the income distribution such that it gets moved to the right, closer to the median.

The Working for Families (WFF) package, progressively introduced from 2004 to 2007, put an additional $1.6b per annum mainly into low- to middle-income families once fully implemented. Although a little of the new money went to families at or above the median, the bulk went to families below the median and especially to those well below it. The shape of the bottom end of the income distribution was changed by the WFF package, and child poverty rates were reduced from 2004 to 2007 as a result, even on moving line measures.

Reporting levels and trends for older New Zealanders (aged 65+)

Section B drew attention to the pensioner spike as a distinctive feature of New Zealand's BHC income distribution. The spike is a direct consequence of (a) New Zealand having a universal New Zealand Superannuation (NZS) that is neither income nor asset tested, and (b) there being a good proportion of superannuitants with little other income over and above NZS.

The spike has implications for reporting on income poverty both for the 65+ and more generally. In the period from 1982 to 2004 the value of NZS moved within a range of 56% to 67% of the median household income (BHC). This means that on a BHC basis income poverty rates for the 65+ in the period are reported as near to zero using a 50% threshold.[68] Using a 60% threshold they fell from 25% in 1988 to close to zero in the mid 1990s when the median fell in real terms and NZS was above the 60% threshold, and in 2007 were at 35% (36% in 2016) as the median had risen in real terms and the NZS value was well below the 60% threshold. These features (low for 50% then high, and very volatile for 60%) mean that a BHC approach for reporting trends in poverty rates for the 65+ is not useful. This is further discussed in **Section I**.

In 2009, the value of NZS relative to the median had fallen to just under 50%, so on a 50% of median measure, BHC poverty rates for older New Zealanders are reported as fairly rapidly rising from very low in 2001 to 19% in 2009. This leaves the misleading impression that the living standards of a sizeable group of older New Zealanders took a sudden turn for the worse over the few years up to 2009.

The AHC distribution still has some strong bunching but the pensioner spike is not as sharp. Furthermore, what remains of the spike is well above the 50% of median threshold for AHC incomes, and is mainly above the 60% of median threshold. Small shifts in the median or the threshold do not therefore have the same disproportionate and misleading effects on (trends in) poverty rates for the 65+ as they do when using BHC incomes.

This report therefore uses the AHC approach as the primary one for reporting on poverty rates for the 65+ and therefore for all subgroups so that the comparisons are on the same metric (see **Appendix 5** for more detail on this decision, or the **Introduction** for a summary of the key points).

[68] See Table I.2.

The low-income thresholds or poverty lines used in this report

Tables E.2 and **E.3** below give the value of the report's low-income thresholds ('poverty lines') in ordinary 2016 dollars pw for different household types. The values in 2017 dollars will be much the same as inflation has been low.

This report uses low-income thresholds for BHC incomes set at 50% and 60% of the median equivalised household income (BHC), using both 'moving' and 'anchored' thresholds (REL and CV (constant value)).

AHC thresholds are calculated by deducting 25% from the corresponding BHC threshold as an allowance for housing costs. Each household's AHC income is then assessed against the chosen threshold. There is a short discussion of the 25% allowance for housing costs below the tables. The rationale for the choice of thresholds (BHC and AHC) is discussed more fully in **Appendix 6**.

Table E.2
50% and 60% low-income thresholds or 'poverty lines' for various household types (BHC)
(2016 dollars, per week)

		REL ('moving')		**CV** ('anchored' /'fixed')	
Household type	Equiv ratio	50% of 2016 median	60% of 2016 median	50% of 2007 median in $2016	60% of 2007 median in $2016
One-person HH	1.00	365	435	305	370
SP, 1 child	1.40	510	610	430	515
SP, 2 children	1.75	640	765	540	645
SP, 3 children	2.06	750	900	635	760
Couple only	1.54	560	675	475	570
2P, 1 child	1.86	680	815	570	685
2P, 2 children	2.17	790	950	665	800
2P, 3 children	2.43	885	1065	745	895
2P, 4 children	2.69	980	1175	825	990
3 adults	1.98	720	865	610	730

Table E.3
50% and 60% low-income thresholds or 'poverty lines' for various household types (AHC)
(2016 dollars, per week)

		REL ('moving')		**CV** ('anchored' /'fixed')	
Household type	Equiv ratio	50% of 2016 median	60% of 2016 median	50% of 2007 median in $2016	60% of 2007 median in $2016
One-person HH	1.00	275	330	230	275
SP, 1 child	1.40	385	460	320	385
SP, 2 children	1.75	480	575	400	480
SP, 3 children	2.06	565	675	475	570
Couple only	1.54	420	505	355	425
2P, 1 child	1.86	510	610	425	510
2P, 2 children	2.17	595	710	500	600
2P, 3 children	2.43	665	800	560	670
2P, 4 children	2.69	735	880	620	745
3 adults	1.98	540	650	455	545

Note: AHC thresholds are calculated by deducting 25% from the corresponding BHC threshold as an allowance for housing costs. Each household's AHC income is then assessed against the chosen threshold. See the discussion above.

<u>The 25% allowance for housing costs</u>

The AHC median has been 18-22% lower than the BHC median for the last 20 years or so. This means that middle-income households spend on average 18-22% of their income on housing

costs (rent, rates and mortgages).[69] This is clearly a much lower proportion than for lower-income households. For those in HNZC houses ('state houses'), their rent is set at 25% of their income. We also know that for those renting in the private sector and receiving the AS, almost all pay more than 30% of their income (which includes AS) to rent, and just under half pay more than 50%.

If the AHC thresholds ('poverty lines') were simply set at 50% or 60% of the AHC median, this would in effect be allowing only 18-22% of income for housing costs for low-income households. This is unrealistically low compared with what is actually spent. This report sets the AHC thresholds at the BHC thresholds less 25% as an allowance for housing costs. There is a case that something more like a third (30-33%) would be a more realistic allowance. This issue and the general rationale for the choice of thresholds (BHC and AHC) are discussed in **Appendix 6**.

Poverty depth and persistence

Reporting on trends in headcount poverty rates provides valuable information for assessing our progress as a nation and for informing policy development and debate. However, such information tells only a part of the incomes story. Two other insights are needed to round out the picture: trends in the depth of poverty and in the persistence of poverty for individuals over time.

Understanding poverty depth is about knowing what is happening to the incomes of those identified as poor from survey to survey. Are the poor today in the main sitting just below, say, a 50% threshold, or are they on average much poorer than their counterparts in earlier surveys, generally having incomes below, say, a 40% threshold? There are issues around the quality of the data among households with very low incomes, and these present challenges to providing robust information on poverty depth. Subject to these limitations, measures of poverty depth are discussed and trends reported at the end of the next section (Section F).

Secondly, while surveys like the HES are very valuable they give only repeated snapshot information of a different sample of households each survey. They cannot tell us, for example, how many of the poor in one survey are still among those counted as poor in the next. A more comprehensive picture needs information from surveys which follow the same people over many years and thus enable information on the persistence of poverty and income mobility to be reported. Statistics New Zealand's longitudinal Survey of Families, Income and Employment (SoFIE) began data collection in 2002-2003 and analysis of the first seven waves is now available.[70] A summary of this, with international comparisons is reported in **Section K.**

[69] Middle-income households spend around 25% of their income on the full Housing Group expenditure category.
[70] Carter and Imlach Gunasekara (2012)

Interpreting and reporting differences and trends in the poverty figures which follow

Four sorts of analyses and comparisons are provided regarding headline trends in Section F and in the more detailed breakdowns in later sections:

- proportions and numbers of people 'in poverty' at a point in time
- changes from one survey to the next
- longer-term trends
- relativities between subgroups and composition of those identified as 'poor'.

The findings and summaries for proportions 'in poverty' depend crucially on the threshold and measure used. Where point-in-time poverty rates are being reported, it is strongly recommended that those using the figures from this report also explicitly state what measure is being used (always).

In most cases nothing should be read into small changes from one survey to the next, as sampling and non-sampling errors mean that such differences are unlikely to have any significance (see the Introduction, Section A).

In contrast, analysis of longer-term trends and relativities between subgroups generally produce robust and uncluttered summary findings. Although there is sometimes a difference in trend depending on the particular measure used, these differences are relatively easy to explain from first principles based on the different conceptualisations for the different measures.

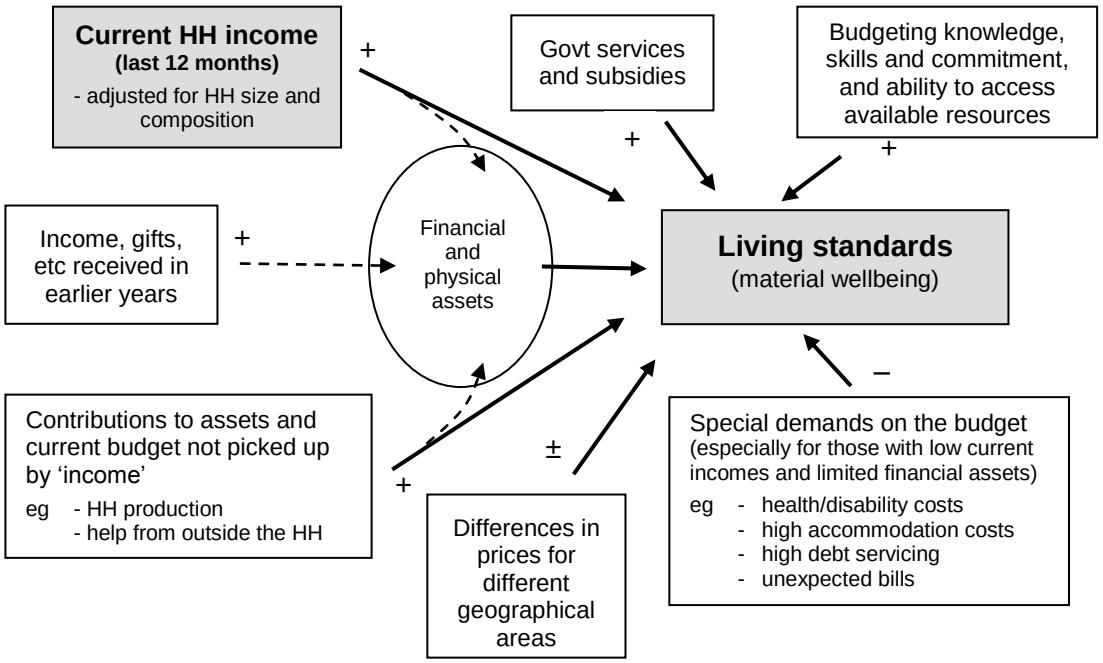
The reader is referred to the more detailed discussion and guidelines in:

- the Annex top Section H
- the Overview document (especially the table on page 26)
- the separate Guidelines document.

More elaborated version of the stylised diagram in Figure A.1

The diagram below shows at a high level the different factors that can impact on living standards. **Figure A.1** is the simplified version of this. The level and quality of financial and physical assets, assistance from support networks and government services, and special demands on the household budget can all have significant positive or negative effects on living standards, over and above the effect of current income. As these factors fall differently across different households, households with the same or similar equivalised incomes can have different living standards. For these reasons, current household income, even when adjusted for household size and composition, can only be a rough indicator of actual household living standards.

Same current income – different living standards (material wellbeing)



Another way of looking at the relationship between household income and living standards is to understand equivalised disposable income to be *an indicator* that allows comparisons *of the potential living standards* of different households – that is, comparison of the relative levels of consumption of goods and services that individuals could attain given the disposable income of the household in which they live, *all else being equal*. This recognises that equivalisation takes (reasonable) account of two major differences between households (size and composition), but not of other special demands on the budget, differences in wealth and assistance from outside the household, and so on. All else is in fact not equal.

Whether understood as a rough but readily available proxy for actual household living standards or as a measure of potential living standards (all else being equal), equivalised household disposable income is an important measure to understand and report on. For modern governments, direct income support is one of the most straightforward policy levers available for poverty alleviation. Changes over time in the overall distribution of household income and in the relative position of subgroups can give insight into changes in the social and economic fabric of the country and inform policy evaluation and development. Income information is regularly collected, easily manipulable and relatively easy to understand.[71]

[71] See Section K for selected findings based on non-income measures using data from the HES (2007 to 2011), and the Ministry's Living Standards Surveys (2000, 2004 and 2008).

Section F
Headline trends in income poverty, 1982 - 2016

This section reports on the trends in headcount poverty rates – the numbers and proportions of individuals who are in households with incomes below selected thresholds ("poverty lines").

Information on poverty trends is presented for both the whole population and for dependent children. A full range of low-income measures is used, as shown in **Table F.1** below.

Table F.1
Poverty (ie low-income) measures reported on in Section F

For both BHC and AHC measures (ie for HH incomes before and after deducting housing costs)				
"moving line" (relative)			"anchored line" (constant value)	
REL (from 82 on)			**CV-07** (from 82 on)	**CV-07** (from 01 on)
40%	50%	60%	50%	60%
AHC only	✓	✓	✓	✓

Notes: 1 'CV-07' indicates that 2007 is the reference year used.
2 The 50% CV-07 and the 60% CV-98 thresholds are close to identical because of the relative values of the median in 1998 and 2007. The 2007 median is 18% higher in real terms – it would need to be 20% higher for a perfect match. See **Appendix 13** for more on this.

For fixed or anchored line measures the poverty thresholds are set at 50% and 60% of the 2007 median and then held at a constant value (CV) in real terms for other years using the CPI.

The Incomes Report originally used 1998 as the reference year for the fixed or anchored line poverty measures. The median rose strongly in real terms from 1998 and by 2007 the 60% of 1998 median CV threshold was very close to only 50% of the 2007 median. The reference year was therefore changed to 2007, and 50% and 60% CV-07 thresholds are now used. Because the 50% CV-07 and 60% CV-98 thresholds are close to identical in dollar terms, the (previous) 60% CV-98 measure merges seamlessly into the 50% CV-07 measure in 2007, and the trend lines prior to 2007 are indistinguishable. See **Appendix 13** for more on this.

The thresholds used for the AHC measures are based on the corresponding BHC measure with 25% deducted to allow for housing costs. For example, what is referred to as "the 60% AHC threshold" is equal to the 60% BHC threshold less 25%. Those in households with AHC incomes below the threshold are counted up. The rationale for this approach is provided in **Appendix 6**.

While each of the measures used in this section has an important story to tell, this report recommends the AHC "anchored line" (CV) measure as the primary indicator especially for monitoring short to medium-term trends. In the longer run the story told by the "moving line" measures needs to be taken into account too. For example, if poverty rates on anchored line measures are falling while rates using a moving line measure are rising then that indicates rising inequality among low- to middle-income households, despite incomes improving in real terms for low-income households. This raises social cohesion and equity issues. No one measure is adequate on its own in the medium to longer term.

The report also recommends the use of an AHC measure for comparing the material wellbeing of various subgroups, as it gives a much more meaningful comparison between groups with very different housing costs (for example, people aged 65+ compared with households with children). A full account of the rationale for this is provided in Section E and **Appendix 5.**

Impact of changing incomes and housing costs on the different poverty measures

Table F.2 indicates how changes in poverty rates reflect the net impact of changes in:

- BHC incomes at the median
- BHC incomes for low-income households
- housing costs for low-income households.

For example, the top row in Table F.2 indicates that when the median rises, then both BHC and AHC "moving line" poverty rates will rise, provided everything else remains the same. A rising median has no impact on poverty rates measured using a 'fixed line' approach.

Table F.2
Impact of selected factors on different poverty measures, 2001 to 2016

when these increase ….	…. the impact on the measured poverty rate is …			
	BHC		AHC	
	anchored line (CV-07)	moving line (REL)	anchored line (CV-07)	moving line (REL)
BHC median / incomes around the median ↑	no impact	↑	no impact	↑
BHC incomes in the bottom quintile (20%) ↑	↓	↓	↓	↓
Housing costs (for low-income HHs) ↑	no impact	no impact	↑	↑

The moving line and the anchored line approaches reflect two quite different notions of poverty

The moving and anchored line approaches to updating the poverty line are both relative approaches – they have that in common. The difference between them is the choice of reference point that each uses to establish the standard against which incomes are assessed.

- ☞ The moving line approach sets a poverty line relative to the median, relative to the income of the middle household in the income distribution. This income changes from survey to survey – the poverty line "moves".
- ☞ The anchored or fixed line approach sets the poverty line relative to a fixed standard, set in the reference year relative to the median that year or to some other community standard. The poverty line is then held at that level in real terms – it is an "anchored" or "fixed" line, and its value is not influenced by the changing median in other years.

Each approach has its strengths and limitations, as discussed in Section E. This report takes the fixed line approach as the primary one for monitoring short to medium term trends, simply on the grounds that, at the very least, New Zealanders would want to know whether the incomes of low-income households are rising or falling in real terms, whatever is happening to the incomes of the "non-poor". The BHC moving line approach did not and could not pick up the rising hardship of the early to mid 1990s. The fixed line measures could and did.

"There are no poor children, just poor families"

Later in this section, the headline trends for child poverty are reported using a range of measures.

It is sometimes said that the idea of "child poverty" doesn't make sense as it's really about families with financial and material resources that are not adequate for meeting the basic needs of the family (ie it's not poor children, it's poor families).

In this report, when it is said that "the child poverty rate on a given measure is 18%", this is a short-hand for "18% of children live in families whose total income is below the threshold used in the given measure". It is too cumbersome to repeat this each time, so the shorthand version is used: "the child poverty rate is 18%".

Headline trends for whole population

- There is no evidence of any rising trend in recent years in income poverty using anchored line measures, whether AHC or BHC. The trends are either flat or falling, depending on the precise start point and the measure used.

- For the AHC 50% CV-07 measure the trend from before the GFC to 2015 was flat (~12%), apart from a sharp rise in one recession year. Another survey or two is needed to check whether the slightly lower 2016 figure is a real-world fall relative to pre-GFC days, or just a random fluctuation.

- For the AHC 60% CV-07 anchored line measure the low income rate fell from its pre-GFC rate of 18% to15-16% in HES 2015 and 2016.

- The BHC 60% CV-07 fixed line shows a very large decline from HES 2014 to 2016. This mainly reflects a very large fall in the low-income rates for older New Zealanders. This occurred not because of a sudden large rise in the level of incomes for older New Zealanders but because the steady rise in real terms of NZS has meant that NZS levels have come close to the 60% BHC CV-07 threshold.

<u>Before Housing Costs (BHC)</u>

- The overall trends from 1982 to 2016 in **Figure F.1** clearly show the value and need to monitor poverty rates using both ancvhored line and moving line approaches. This is well illustrated by looking at two periods: the first half of the 1990s, and from 1994 to 2004.

- The first half of the 1990s:
    - in this period there was a very large increase in the number of people in low-income households and a fall in median household incomes
    - on a moving line measure, the combined effect of these two changes meant that (relative) poverty rates remained fairly steady and provide no evidence of the growing extent of hardship among low-income households
    - on the other hand the fixed line measure gives a very clear indication that there were growing numbers of households with very low incomes.

- From 1994 to 2004:
    - there was a continuing decline in the poverty rate on the anchored line measure, but the moving line (relative) poverty rate steadily rose to a peak of 21% in 2004
    - the fall in the anchored line poverty rate reflects the falling unemployment, rising employment, rising real wages and increase in the number of two earner families with children
    - the rising moving line poverty rate reflects the fact that median income rose more quickly in real terms than the incomes of low-income households – the gap between middle-income and low-income households increased from 1994 to 2004.

- From 2004 to 2007, the upward trend of the moving line poverty rates reversed for the 60% measure and halted for the 50% measure (the WFF impact). The anchored line poverty rate continued to fall.

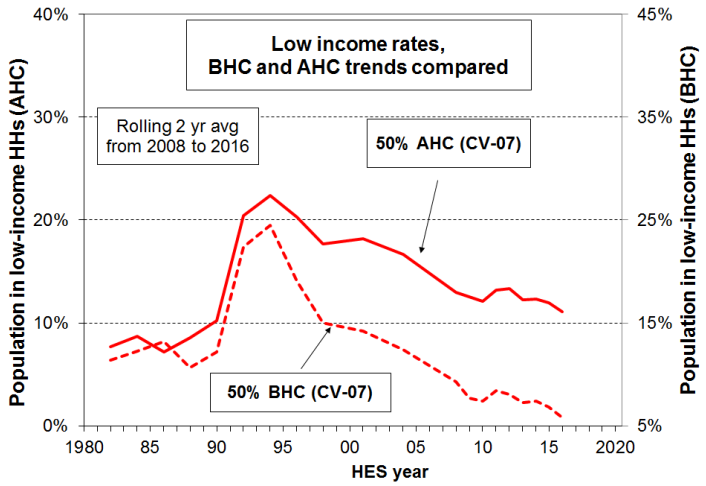
- For 2007 to 2009, BHC income poverty rates reduced on the fixed line measures, but remained much the same on moving line measures. This means that:
    - real BHC incomes rose for some low-income households, leading to fewer in poverty on the fixed line measure, and
    - this rise was about the same as the rise in the BHC median leading to no change in poverty rates on the moving line measure.

- Comparisons of moving and fixed line trends over a longer time-scale (1982 to 2007):

- the 50% fixed line CV-07 (≡ 60% CV-08) poverty rate in 2007 (11%) was a little below what it was in the 1980s (12 to 14%)
- the large decline in 50% CV-07 poverty rates from 1994 (26%) to 2007 (11%) reflects the significant rise of incomes in real terms for low-income households (see Tables D.2 and D.3)
- in contrast, moving line poverty rates were still higher in 2007 than in the 1980s and the 1990s (even after WFF), reflecting the net widening of the gap between middle-income and low-income households that occurred between 1994 and 2007.

After Housing Costs (AHC)

- Using the AHC anchored line measure (60% of median, reference year = 2007), the poverty rate for the population as a whole rose to 19% in HES 2011 following the GFC and economic downturn, then fell steadily to 14% in 2016.
- Anchored line AHC 50% CV-07 poverty rates were higher in 2016 than in the 1980s, even though BHC incomes were higher in real terms for low-income households. The reason for this is that housing costs made up a much greater proportion of household income for low-income households in 2016 than in 1982. This increase more than cancelled out the gains in BHC incomes for low-income households, leaving anchored line poverty rates higher in 2016 than in 1982, and higher in 2016 than 2016 BHC low-income rates.



- The three fully relative AHC trend lines show that whatever threshold is chosen, low-income rates at the different depths have tracked in reasonably similar ways over the last thirty years. These trend lines inform us about the degree of income inequality in the bottom half of the income distribution. This is valuable information, but it tells us nothing about trends in the number of New Zealanders with day-to-day real-life challenges to making ends meet. For that we need the information from the anchored line income graphs and from the material hardship graphs in the companion NIMs report.

- Using the AHC moving line (relative) measure (60%),the population poverty rate was in 2016 the same as what it was in the recession and in the early to mid 2000s. Rates in 2013 to 2016 were roughly double what they were in the 1980s.

- There is no evidence of any increasing depth of relative income poverty over the last two decades. Increasing depth means that for a given threshold, a greater proportion are further below the threshold than before. For example, increasing depth could show up as the 40% relative line moving closer to the 50% relative line, showing an increasing number in very low income households (under 40%) compared with the numbers between the 40% and 50% lines.

Proportion of all individuals below selected thresholds (BHC)

Figure F.1
Proportion of whole population below selected thresholds (BHC): fixed line (CV) and moving line (REL) approaches compared

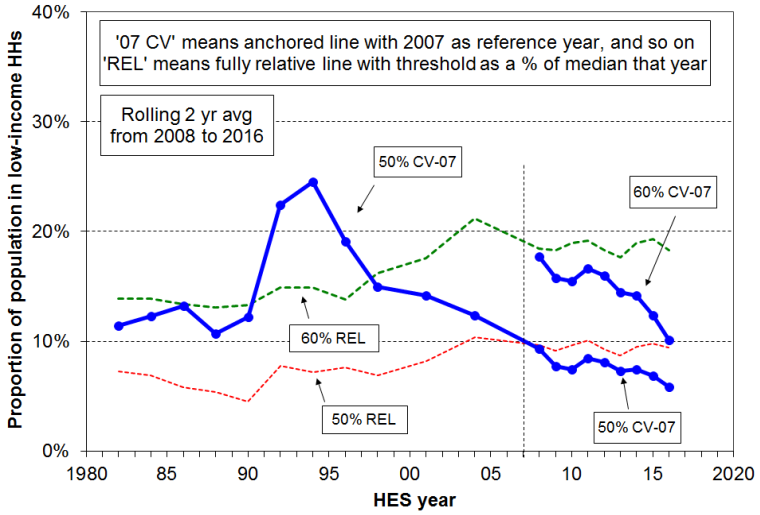


Table F.3
Percentage of whole population below selected thresholds (BHC)

	Constant value or "anchored"		Relative to contemporary median		Population (million)
HES year	50% 2007 median	60% 2007 median	50% contemp median	60% contemp median	
1982	11	-	7	14	3.03
1984	12	-	7	14	3.06
1986	13	-	6	13	3.07
1988	11	-	5	13	3.11
1990	12	-	5	13	3.15
1992	22	-	8	15	3.23
1994	25	-	7	15	3.32
1996	19	-	8	14	3.43
1998	15	-	7	16	3.54
2001	14	27	8	18	3.80
2004	12	25	10	21	3.96
2008	9	18	10	19	4.13
2009	8	16	9	18	4.21
2010	8	~~16~~	10	19	4.26
2011	9	17	10	19	4.31
2012	8	16	9	18	4.34
2013	7	15	9	18	4.37
2014	7	14	10	19	4.42
2015	7	12	10	19	4.46
2016	6	10	10	18	4.55

Proportion of all individuals below selected thresholds (AHC)

Figure F.2
Proportion of whole population below selected thresholds (AHC): fixed line (CV) and moving line (REL) approaches compared

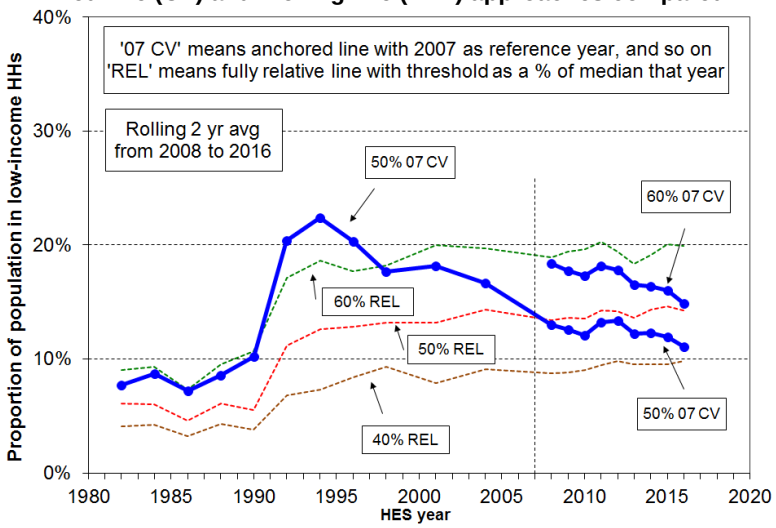


Table F.4
Percentage of whole population below selected thresholds (AHC)

Threshold type	Constant value or "anchored"		Relative to contemporary median			Population (million)
HES year	50% 2007 median	60% 2007 median	40% contemp median	50% contemp median	60% contemp median	
1982	8	-	4	6	9	3.03
1984	9	-	4	6	9	3.06
1986	7	-	3	5	7	3.07
1988	9	-	4	6	10	3.11
1990	10	-	4	6	11	3.15
1992	20	-	7	11	17	3.23
1994	22	-	7	13	19	3.32
1996	20	-	8	13	18	3.43
1998	18	-	9	13	18	3.54
2001	18	25	8	13	20	3.80
2004	17	22	9	14	20	3.96
2008	13	18	9	13	19	4.13
2009	13	18	9	14	19	4.21
2010	12	17	9	14	20	4.26
2011	13	18	9	14	20	4.31
2012	13	18	10	14	19	4.34
2013	12	17	10	14	18	4.37
2014	12	16	-	14	19	4.42
2015	12	16	10	15	20	4.46
2016	11	15	10	14	20	4.55

Note: AHC thresholds are calculated by deducting 25% from the corresponding BHC threshold as an allowance for housing costs. Each household's AHC income is then assessed against the chosen threshold.

Headline trends for children

- There is no evidence of any increases in measured child poverty using the anchored line AHC measures. Trends are either flat or falling depending on the starting point.
    - For the AHC 50% CV-07 measure the rolling average in 2015 (16%) was down on the peak in the GFC/recession (19%), but just a little lower than the pre-GFC rate (17%). The information from the next survey is needed before it is clear whether the reported fall to 14% in 2016 is a statistical blip or not. There is an unambiguous fall from the 2011 peak, and there is certainly no evidence of any increase over pre-GFC rates, most likely a small fall.
    - For the AHC 60% CV-07 measure the low-income rate for children fell from its GFC/recession peak of 25% to 22% in 2015, lower than the pre-GFC rate of 24%. The reported 2016 rate (20%) is even lower still, but the 2017 results are needed to remove uncertainty here. The fact of a decline from the pre-GFC rate is not in doubt, it's just a matter of being more sure about the size of the fall.
- The BHC 60% CV-07 anchored line shows clear downward trend from around 20% pre-GFC (2008) to 13% on average in 2015 and 2016, and for the 50% measure, 12% down to 7%. These are unambiguous falls.

<u>Before Housing Costs (BHC)</u>

- On a longer timescale for the moving line measure:
    - The rise in moving line child poverty rates from 1990 to 1992 was driven by two factors: the rise in unemployment, and the 1991 benefit rate cuts which decreased real incomes for beneficiaries by a greater amount than the median fell in the period.
    - From 1992 to 1998 the 60% of median moving line poverty rate for children fell as unemployment rates fell and incomes for those around the poverty line rose more quickly than the median in the period.
    - From 1998 the median continued to grow in real terms, but the incomes of many low-income households with children remained fairly static through to 2004. This meant that the moving line child poverty rate rose to 2004, indicating that low-income households with children were on average further from the median in 2004 than in 1998.
    - From 2004 to 2007, this trend was reversed, with rates falling from 26% to 20% (60% threshold), reflecting the impact of the WFF package which transferred considerable financial support to households with children on low to middle incomes. As almost all the extra WFF money went to households below the median, the median itself was largely unaffected.[72]
    - the 60% and 50% of median BHC moving line child poverty rates in HES 2013 were around the same as what they were in the early 1980s (21%, and 12% respectively).
- On the fixed line measure, poverty rates decline when fewer households have incomes below a threshold held fixed in real terms, irrespective of what is happening elsewhere in the distribution.
    - Using the 50% BHC fixed line threshold (2007 reference year), this is what happened from the mid 1990s to 1998 as a result of improving economic conditions, improving employment rates and reducing unemployment.
    - From 1998 to 2004 child poverty rates using the 60% threshold remained reasonably steady at 19-22%.
    - From 2004 to 2007, the poverty rate fell strongly from 19% to 13% - the WFF impact.

[72] Reports of WFF financial support going to above average and even to high-income households with children are normally based on incomes not adjusted for household size and composition.

After Housing Costs (AHC)

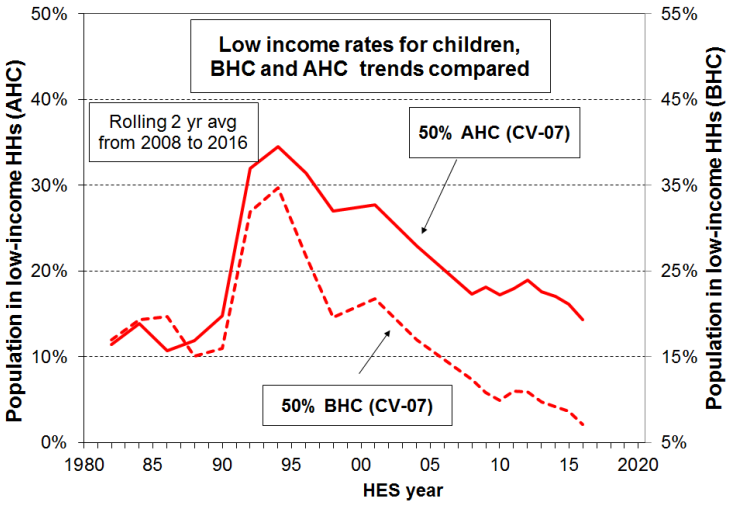
- On the AHC 50% CV-07 measure (≡ 60% CV-98), the child poverty rate fell significantly from 1994 to 2007 (35% to 16%).
- On the AHC 60% of median moving line measure, the child poverty rate in 2016 was 25%, double what it was in the 1980s (~12%).
- The trend for the AHC 40% of median moving line measure has been fairly steady since the benefit cuts in 1991 (11-13%).

Housing costs and the longer-run trends in child poverty (1982 to 2007, 2007 to 2016)

- The BHC 50% CV-07 anchored line rate was lower in 2015 and 2016 than what it was in the 1980s, around 7-8%, down from around 18-20% (see chart below), and the BHC moving line rates were around the same in 2016 as in the 1980s (see Figures F.3 and F.4 on the following pages).

- The AHC long-run trends are quite different: the AHC 50% CV-07 rate was still just a little above what it was in the 1980s, and the moving line rate in 2016 was much higher than in the 1980s.

- The graph below shows the different trends for children for BHC and AHC anchored line measures respectively.



- A key factor in explaining the longer-term differences between AHC and BHC rates is that housing costs in 2007 on average made up a higher proportion of household expenditure for low-income households than they did in the 1980s. For example, in 1988 16% of households in the bottom quintile lived in households that spent more than 30% of their income on housing. In 2007 there were 38%, after peaking at 48% in 1994. 43% in 2015.
- Both the income-related rental policies introduced in 2000 for those in HNZC houses and changes to the Accommodation Supplement (AS) settings in the mid 2000s helped to reduce net housing expenditure for some low-income households compared to what it would have been. This support contributed to the reductions in child poverty as measured on an AHC approach from 2001 to 2007.
- The policy settings for the AS have remained unchanged since 2005.[73]

[73] Increases to AS and changes to AS boundaries were announced in Budget 2017. The full impact of these changes and others in the Families Income package will first show in the 2018-19 HES, for reporting in the 2020 Incomes Report.

How many poor children are there in New Zealand?

(ie How many children live in households with incomes below selected thresholds?)

- New Zealand does not have an official measure of (income) poverty.
- Poverty and hardship are multi-dimensional and levels and trends cannot be captured in a single measure: the reports use a multi-measure approach.
- Poverty and hardship exist on a spectrum from less to more severe. There is legitimate debate about where the 'less severe' level starts. The reports use a multi-level approach.
- For reporting trends, the reports use a hierarchical approach, taking the material hardship and anchored line income measures as primary, especially in the short to medium term. The reports encourage users to look at movement over several years rather than making too much of year-on-year changes.
- Information on the composition of the poor and of those in hardship is an important aspect of monitoring child poverty and hardship.

Table F.5
Numbers of poor children in New Zealand: rolling two-year averages from 2008
(ie the number of children in households with incomes below the selected thresholds)

	BHC			AHC				
	BHC 'anchored line (2007)'	BHC 'moving line'		AHC 'moving line'			AHC 'anchored line (2007)'	
HES year	50% (07 ref)	50%	60%	40%	50%	60%	50% (07 ref)	60% (07 ref)
2001	225,000	120,000	250,000	115,000	215,000	310,000	285,000	380,000
2004	175,000	150,000	265,000	115,000	200,000	285,000	240,000	320,000
2008	130,000	135,000	210,000	105,000	190,000	260,000	180,000	250,000
2009	115,000	130,000	225,000	120,000	210,000	285,000	195,000	265,000
2010	105,000	135,000	240,000	130,000	210,000	295,000	185,000	265,000
2011	120,000	145,000	245,000	125,000	210,000	305,000	190,000	270,000
2012	115,000	135,000	230,000	130,000	210,000	285,000	200,000	260,000
2013	105,000	125,000	220,000	135,000	205,000	275,000	185,000	245,000
2014	-	135,000	230,000	-	210,000	280,000	180,000	240,000
2015	90,000	145,000	235,000	130,000	215,000	300,000	170,000	240,000
2016	75,000	140,000	215,000	140,000	210,000	290,000	155,000	220,000

- See Section C in the companion NIMs Report and Appendix Five in the Overview for estimates of the numbers of children in hardship using an internationally comparable measure (two thresholds).

The low-income graphs that follow use a rolling two-year average (from 2008) to smooth the year-on-year volatility and thus give a better idea of the actual trends. The latest point on the graphs is always the least certain when it comes to identifying trends.

See **Appendix 14** for the non-smoothed figures.

Proportion of dependent children below selected thresholds (BHC)

Figure F.3
Proportion of children below selected thresholds (BHC): fixed line (CV) and moving line (REL) approaches compared

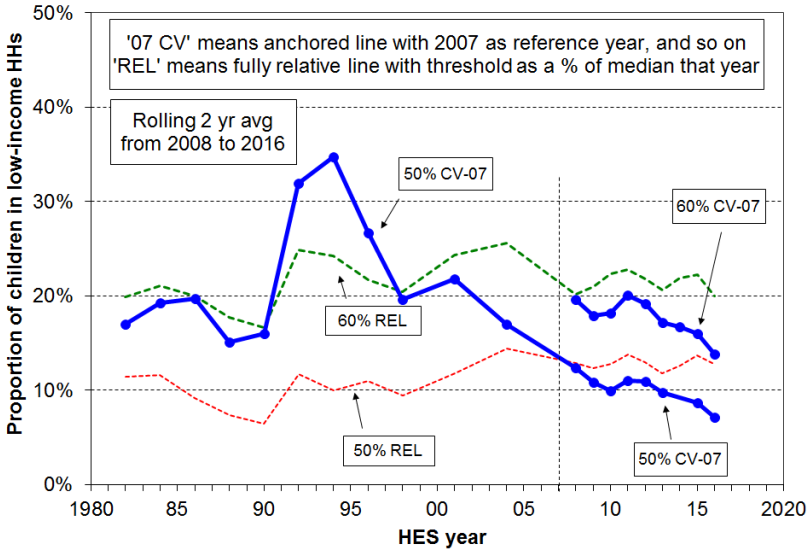


Table F.6
Percentage of children below selected thresholds (BHC)

	Constant value or "anchored"		Relative to contemporary median		Population (000s)
HES year	50% 2007 median	60% 2007 median	50% contemp median	60% contemp median	
1982	17	-	11	20	940
1984	19	-	12	21	925
1986	20	-	9	20	895
1988	15	-	7	18	885
1990	16	-	7	17	875
1992	32	-	12	25	875
1994	35	-	10	24	910
1996	27	-	11	22	940
1998	20	-	9	20	950
2001	22	35	12	24	1020
2004	17	30	14	26	1040
2008	12	20	13	20	1065
2009	11	18	12	21	1070
2010	10	18	13	22	1065
2011	11	20	14	23	1067
2012	11	19	13	22	1047
2013	10	17	12	21	1064
2014	-	17	13	22	1058
2015	9	16	14	22	1063
2016	7	14	13	20	1078

Proportion of dependent children below selected thresholds (AHC)

Figure F.4
Proportion of children below selected thresholds (AHC): fixed line (CV) and moving line (REL) approaches compared

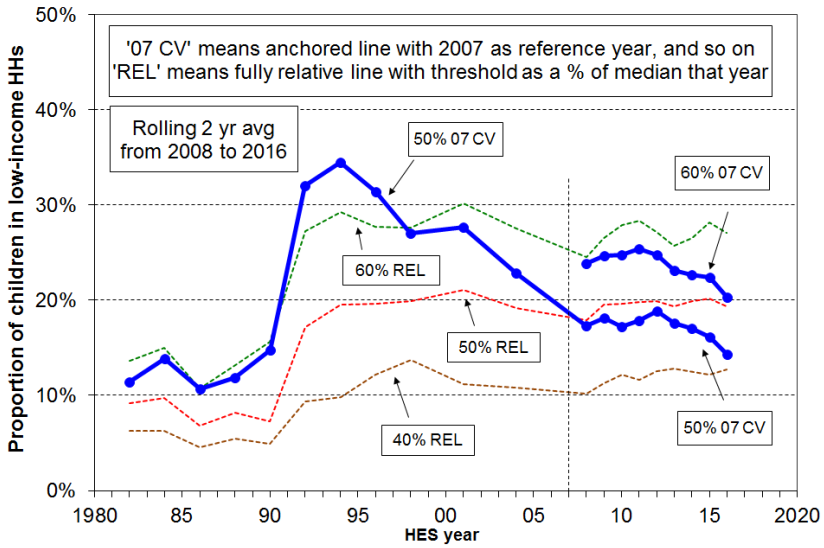


Table F.7
Percentage of children below selected thresholds (AHC)

Threshold type	Constant value or "anchored"		Relative to contemporary median			Population (000s)
HES year	50% 2007 median	60% 2007 median	40% contemp median	50% contemp median	60% contemp median	
1982	11	-	6	9	14	940
1984	14	-	6	10	15	925
1986	11	-	5	7	11	895
1988	12	-	5	8	13	885
1990	15	-	5	7	16	875
1992	32	-	9	17	27	875
1994	34	-	10	20	29	910
1996	31	-	12	20	28	940
1998	27	-	14	20	28	950
2001	28	37	11	21	30	1020
2004	23	31	11	19	28	1040
2008	17	24	10	18	25	1065
2009	18	25	11	20	27	1070
2010	17	25	12	20	28	1065
2011	18	25	12	20	28	1067
2012	19	25	13	20	27	1047
2013	18	23	13	19	24	1064
2014	17	23	-	20	29	1058
2015	16	22	12	20	28	1063
2016	14	20	13	19	25	1078

Note: AHC thresholds are calculated by deducting 25% from the corresponding BHC threshold as an allowance for housing costs. Each household's AHC income is then assessed against the chosen threshold.

Sensitivity of levels and trends to choice of poverty line

Figures F.5 and **F.6** show how the choice of threshold impacts on reported poverty rates for a given measure at a point in time and for trends over time. Figure F.5 uses BHC incomes with thresholds set relative to the contemporary median (the REL or moving line approach). Figure F.6 uses AHC incomes with thresholds held constant in real terms (the CV or "anchored line" approach).

The broad trends over time are largely unaffected by the choice of threshold within the usual range, especially in the AHC anchored line case.

The main exception to this generalisation is that for the period from the 2004 HES to the 2007 HES the reversal of the upward trend in 'low-income rates' in **Figure F.5** (BHC REL) is strong for thresholds set at 60% to 90% of the median, but for lower thresholds (50% and 55%) the trend lines just flatten. This difference reflects the WFF gains in income for lower income households in work or for those moving from benefit to work, compared with those whose main source of income was from a working age benefit or New Zealand Superannuation. For these latter households, many of whom had incomes below a 55% threshold in that period, there were no gains relative to the median from the 2004 HES to the 2007 HES.

The other point of interest is the stark way in which **Figure F.6** shows the impact on household incomes of the global financial crisis and associated downturn and recovery. It shows that from HES 2009 to HES 2011 (approximately calendar 2008 to 2010) the low-income rates all rose then fell from HES 2011 to 2013. The impact is detectable in the BHC REL chart (Figure F.5) but is not as stark as the REL low income rates are affected by the movement of the median as well as the changes in the incomes of low-income households.

Figure F.5
Proportion below a range of 'moving line' thresholds (BHC, REL)

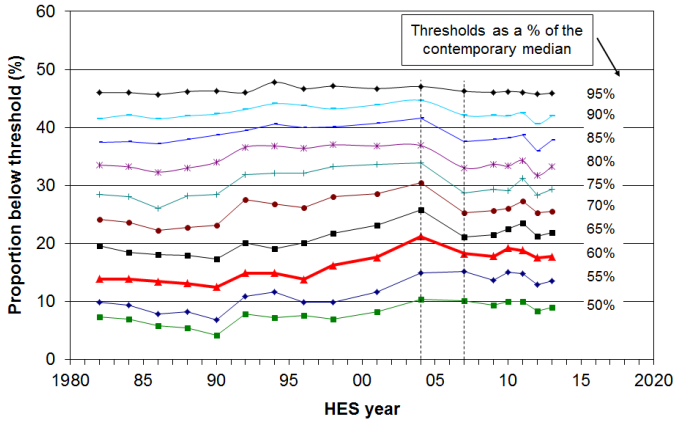
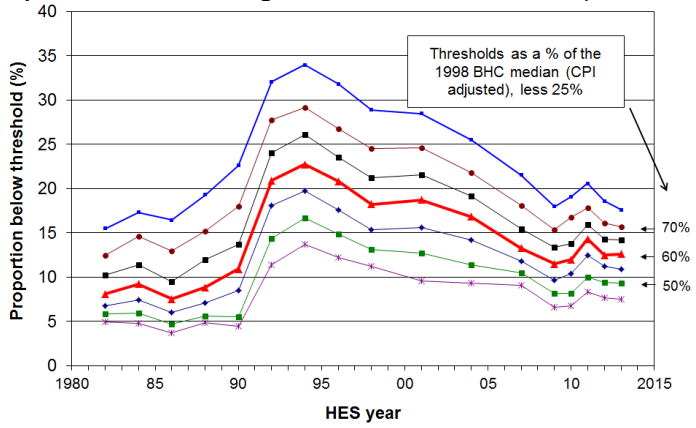


Figure F.6
Proportions below a range of 'anchored' thresholds (AHC, CV-98)



Depth of poverty

Trends in head-count poverty rates tell only a part of the story. It is important also to have an understanding of what is happening to the incomes of those identified as poor, that is, what is happening to trends in the depth of poverty.

This report uses two indicators of income poverty depth:

- The ratio of the number below the 50% line to those below the 60% line. The higher this ratio, the greater is the depth of poverty, as a higher number means more of those under the 60% line are under the 50% line rather than between the two lines.

- Median poverty gap ratios. These compare the gap between the poverty threshold and the median income of those below the threshold with the threshold itself.

There are issues around the quality of the data among households with very low incomes, and these present challenges to providing robust information on poverty depth. See **Appendix 8** for a discussion on the effect of noise in the bottom income decile on measures of poverty depth, and the noise-reducing adjustments to the dataset adopted for the estimates in this section.

This section is not yet updated beyond the 2007 HES and also retains 1998 as the reference year.

Poverty depth: the ratio of 50% poverty rates to 60% poverty rates

Comparing the numbers below a 50% of median threshold with those below a 60% threshold gives an indication of the 'depth' of poverty. The higher the ratio, the greater the depth.

Figure F.7 shows that during the 1980s the 60% CV (fixed line) BHC poverty rate for those aged under 65 was relatively steady at around 12%. Poverty depth, however, declined, as measured by the 50% to 60% ratio. In contrast, in the 1998-2004 period, poverty depth as measured by this ratio increased while the poverty rate again remained relatively steady at 15%, pointing to increasing poverty depth. From 2004 to 2007, the ratio was steady and the 60% rate declined, indicating no change in poverty depth.

Figure F.7
Ratio of 50% poverty rate to 60% poverty rate using 1998 CV thresholds (BHC), population under 65 years

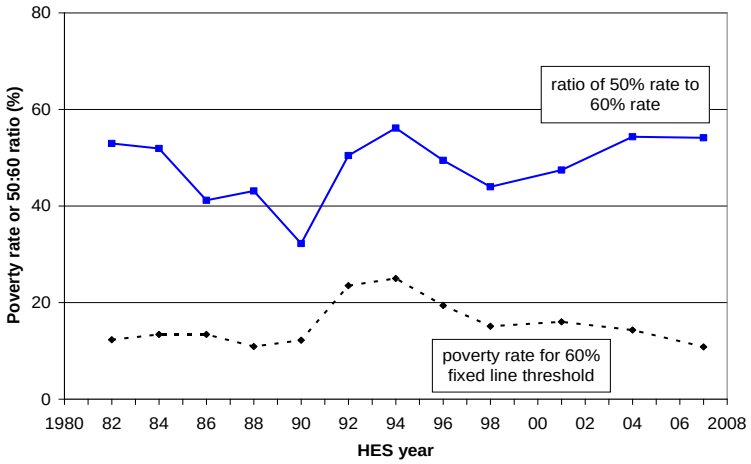
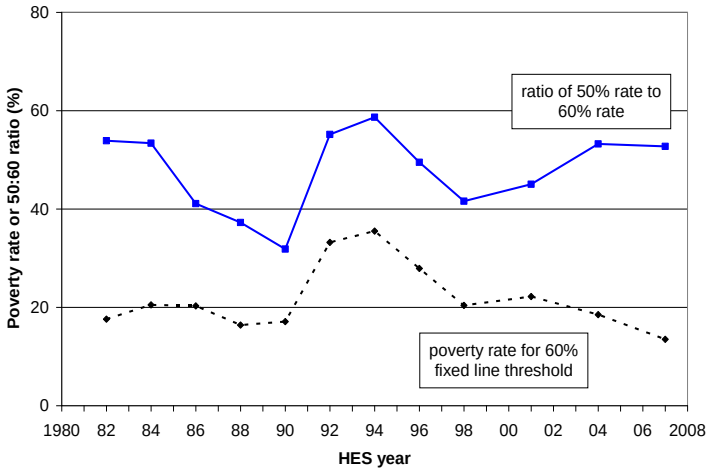


Figure F.8 shows a similar combination of trends for children, except that both the poverty rates and poverty depth (on this measure) are higher for children than for the population as a whole.

Figure F.8
Ratio of 50% poverty rate to 60% poverty rate using 1998 CV thresholds (BHC), dependent children



Poverty depth: mean and median poverty gap ratios

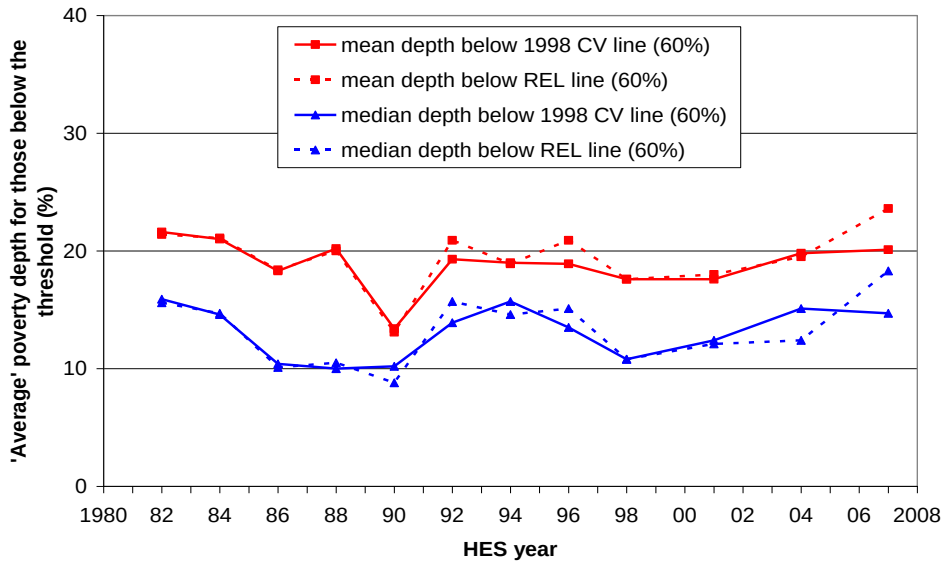
The median poverty gap ratio compares the gap between the poverty threshold and the median income of those below the threshold with the threshold itself.

The mean poverty gap ratio compares the gap between the poverty threshold and the mean income of those below the threshold with the threshold itself. It is much more affected by the incomes of households with very low incomes than is the median.

Figure F.9 shows that:

- median gap ratios are smaller than mean gap ratios, reflecting the higher concentration of households with incomes nearer the poverty lines compared with the concentration further down
- up to 2004, the estimates of poverty gap ratios are not greatly dependent on whether a REL ('moving line') or CV ('fixed line') approach is used
- apart from the blip in 1990,[74] the mean gap ratio remained reasonably steady from 1982 to 2004, but has clearly risen from 2004 to 2007 on the REL (moving line) measure

Figure F.9
Mean and median poverty gap ratios



[74] It is not clear why there was such a drop in mean income for low-income households in the 1990 HES compared with all other years.

Section G
Trends for the whole population, 1982 to 2016, by various individual and household characteristics

This section:

- compares trends in poverty rates for subgroups within the population
- reports on the changing composition of those identified as poor on the chosen measures.

The individual and household characteristics used for subgroup analyses are:

- age of the individual
- sex of the individual
- ethnicity of the individual (no trends) [75]
- tenure
- household type
- number of children in the household
- main source of income for households under 65.

For subgroup comparisons, the report recommends the use of AHC measures (see **Appendix 5**). **Table G.1** notes the AHC measures used in this section.

Table G.1
Poverty measures reported on in Section G for subgroups of the whole population

BHC				AHC			
REL ('moving line')		CV-07 ('anchored line')		REL ('moving line')		CV-07 ('anchored line')	
50	60	50	60	50	60	50	**60**
-	-	-	-	✓	✓	-	✓

Note: 'CV-07' means that the measure uses 2007 as the reference year.

[75] Estimates of poverty rates by ethnicity are too volatile to provide reliable information on survey by survey trends. See the discussions in Section A (Introduction) and Section B. Trends in median household incomes by ethnicity are given in Section D, and indicative relativities between ethnic groups are given in this Section, and in Section H for children, using averages over three recent surveys.

Individuals in low-income households by age

- Setting aside the 18-24 year old group, **Figure G.1** and **Table G.2** show that there has been a hardship gradient across the age groups since the early 1990s, with older New Zealanders having lower income poverty rates than children, and other ages falling in between.
- The position of those aged 18-24 years deteriorated relative to other groups from the mid 1990s through to 2007 and has not recovered since.

Figure G.1
Proportion of all individuals in low-income households by age, 60% CV threshold (AHC): (rolling two-year average from 2008 on)

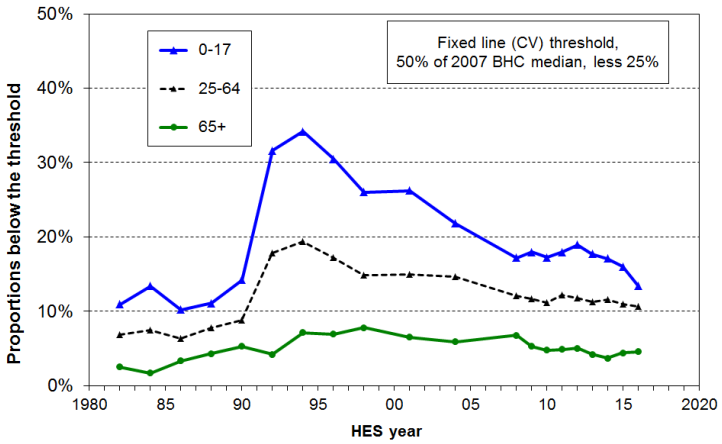


Table G.2
Proportion of all individuals in low-income households by age, 50% of median "anchored-2007" threshold (AHC): (rolling two-year average from 2008 on)

	0-17 yrs	18-24 yrs	25-44 yrs	45-64 yrs	65+ yrs	TOTAL
1982	11	5	9	4	3	8
1984	14	5	10	5	2	9
1986	10	5	8	5	4	7
1988	12	6	10	6	5	9
1990	15	8	11	6	6	10
1992	32	16	22	11	6	20
1994	34	20	22	15	7	22
1996	31	18	21	13	7	20
1998	27	16	18	12	8	18
2001	27	21	17	14	7	18
2004	23	21	17	13	6	17
2008	17	15	12	12	7	13
2009	18	12	12	11	5	13
2010	17	13	12	10	5	12
2011	18	17	13	11	5	13
2012	19	19	13	10	5	13
2013	18	15	13	10	4	12
2014	17	16	12	11	4	12
2015	16	18	11	11	4	12
2016	14	17	10	11	5	11

Table G.3
Proportion of all individuals in low-income households by age, 60% of median "anchored-2007" threshold (AHC): rolling two-year average

	0-17 yrs	18-24 yrs	25-44 yrs	45-64 yrs	65+ yrs	TOTAL
2008	24	20	17	16	14	18
2009	25	17	17	15	11	18
2010	25	17	17	14	10	17
2011	25	21	18	15	9	18
2012	25	23	17	14	9	18
2013	23	19	17	13	9	17
2014	23	20	16	14	8	16
2015	22	21	15	14	8	16
2016	19	20	14	14	8	15

Figure G.3 shows trends in poverty rates by age group using the 60% of median moving line measure (AHC). The hardship gradient is evident here too, with older New Zealanders having lower income poverty rates than younger New Zealanders. However, from 1992 to 2009 the age group poverty trends are quite different using the moving line measure compared with the trends using the fixed line measure (Figure G.1). This reflects the two different notions of poverty that underlie the measures. For example:

- Child poverty on this moving line measure remained steadily high (~28-30%) from 1994 to 2004, with no fall despite the rising employment, falling unemployment and rising real incomes for many low-income households. The trend reflects the poverty concept for the moving line measure: it is based on distance from the median, rather than distance from a fixed standard held constant in real terms, and the median rose in real terms in the period.
- The only significant fall in child poverty on the moving line measure after 1994 was from 2004 to 2007, reflecting the impact of the WFF package in lifting the incomes of many low- to middle-income families without it having any great impact on the median itself. The rate in 2015 and 2016 was 26% on average, a little lower than what it was in the 1990s.
- For older New Zealanders, the rise from 1992 to 2008 reflects the fact that the value of the NZS fell in this period relative to the median, even though in real terms the value of the NZS remained steady. From 2009 to 2012, the real value of NZS rose (driven both by income tax changes and rising real wages), while the median was relatively unchanged, thus dropping the 65+ poverty rate on this measure. From 2013 to 2016 the median rose more quickly than NZS, thus increasing the 65+ poverty rate on this measure.

Figure G.3
Proportion of all individuals in low-income households by age, 60% REL threshold (AHC)

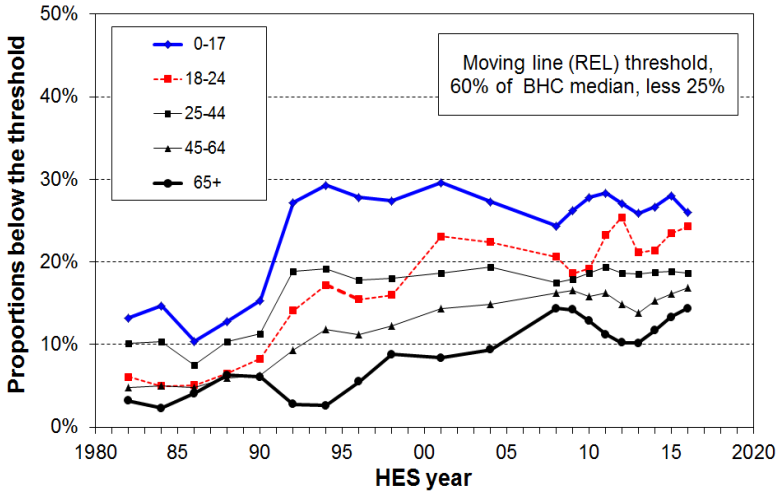


Table G.4
Proportion of all individuals in low-income households by age
(rolling two-year average from 2008 on)

A. AHC (REL threshold, 60% of BHC median, less 25%)

	0-17 yrs	18-24 yrs	25-44 yrs	45-64 yrs	65+ yrs	TOTAL
1982	13	6	10	5	3	9
1984	15	5	10	5	2	9
1986	10	5	8	5	4	7
1988	13	7	10	6	6	10
1990	15	8	11	6	6	11
1992	27	14	19	9	3	17
1994	29	17	19	12	3	19
1996	28	16	18	11	6	18
1998	27	16	18	12	9	18
2001	30	23	19	14	8	20
2004	27	22	19	15	9	20
2008	24	21	18	16	14	19
2009	26	19	18	17	14	19
2010	28	19	19	16	13	20
2011	28	23	19	16	11	20
2012	27	25	19	15	10	19
2013	26	21	19	14	10	18
2014	27	21	19	15	12	19
2015	28	23	19	16	13	20
2016	26	24	19	17	14	20

B. AHC (REL threshold, 50% of BHC median, less 25%)

	0-17 yrs	18-24 yrs	25-44 yrs	45-64 yrs	65+ yrs	TOTAL
1982	9	5	7	3	1	6
1984	9	3	7	4	1	6
1986	7	2	6	3	2	5
1988	8	5	7	5	2	6
1990	7	5	7	3	2	6
1992	17	10	13	6	1	11
1994	20	13	13	8	1	13
1996	20	11	13	9	3	13
1998	20	12	13	10	4	13
2001	21	15	13	9	3	13
2004	19	18	15	11	5	14
2008	18	15	13	12	7	13
2009	19	13	13	12	6	14
2010	20	14	13	11	6	14
2011	20	18	14	12	5	14
2012	20	19	14	11	6	14
2013	20	16	14	11	5	14
2014	20	18	14	12	6	14
2015	20	20	14	13	7	15
2016	18	19	13	14	7	14

Individuals in low-income households by sex

- **Table G.5** shows that from 1988 to 2016 on the 60% of median AHC fixed line measure, females were a little more likely than males to be below the threshold.
- **Table G.6** gives the numbers in each group for HES 2013 and HES 2016.

Table G.5
Proportion of individuals aged 15+ in low-income households by sex, AHC income, 50% of median (CV threshold)

	88	90	92	94	96	98	01	04	07	08	09	10	11	12	13	14	15	16
Female	7	9	17	19	18	16	17	15	13	12	11	12	13	11	12	12	11	11
Male	7	8	16	17	15	13	13	15	11	10	10	10	12	10	10	10	10	9
TOTAL (15+)	7	8	16	18	17	14	15	15	12	11	10	11	13	11	11	11	10	10

Table G.6
Numbers of individuals aged 15+ in low-income households by sex, HES 2013 and HES 2016 AHC income, 50% of median (CV threshold)

	HES 2013		HES 2016	
	Total 15+	"Poor"	Total	"Poor"
Female	1.78m	205,000	1.87m	207,000
Male	1.69m	165,000	1.77m	167,000
TOTAL (15+)	3.48m	370,000	3.64m	375,000

Individuals in low-income households by ethnicity (whole population)

As noted in the Introduction, only limited analysis by ethnicity is reported because of the relatively small sample sizes for Maori, Pacific and Other ethnic groups (especially Pacific). The analysis in this section combines the data from two surveys (HES 2015 and 2016) to give an indication of the differences in low-income rates by ethnicity.

Low-income rates for those in the Maori and Pacific ethnic groups are consistently higher than for those in the European/Pakeha ethnic group (roughly double), whatever measure is used.

For example, on average over the two surveys HES 2015 and 2016, using the AHC 60% anchored line measure, 11% of European/Pakeha, 23% of Maori, 22% Pacific and 20% "Other" were in households with incomes below this line. The population rate on this measure was 11%.

The above use ethnicity defined on a prioritisation approach (see Introduction). Using a "total count" approach makes little difference for this purpose: the corresponding figures are 12%, 23%, 23% and 20%.

Composition of the poor by ethnicity

It is important to distinguish between the proportion of a group who are counted as poor, and the proportion of the poor who are from a particular group, that is, between rates and composition.

Using the same approach as for the rates above (AHC 60% anchored), just under half (47%) of those identified as poor are in the European/Pakeha group, 32% in the Maori and Pacific groups, and 21% in the Other group.

Using a lower low-income line (50% of median), the composition proportions are 46%, 32% and 22% respectively. There is no evidence here of greater depth of poverty for any one group.

Individuals in low-income households by highest household educational qualification

There is a well-established positive link between adult educational qualifications and employment opportunities and wages received.

Table G.7 shows the fairly steep gradient for low-income rates for individuals from households of lower and higher educational qualifications.

A higher educational qualification does not of itself guarantee an adequate income however, as the 10% low-income rate for university graduates indicates.

One third of those in the low-income group (31%) have post-school non-degree qualifications, even though the low-income rate for this group is much lower than that for the group with no formal qualifications, now a relatively small group.

Table G.7A
Low-income rates and low-income composition by highest household educational qualification: averages over HES 2014 to 2016, using the AHC 60% of median threshold measure, anchored in 2007, for individuals under 65

	Low-income rate (%)	Low-income composition (%)	0-64 population composition (%)	Risk ratio[76]
No formal qualification	48	16	7	2.5
School qualification only	29	31	21	1.5
Post-school non-degree	17	31	33	0.9
Degree or post-graduate	10	22	40	0.5
ALL (0-64)	19	100	100	-

Table G.7B
Low-income rates and low-income composition by highest household educational qualification: averages over HES 2014 to 2016, using the AHC 60% of median threshold measure, anchored in 2007, for those aged 0-17 yrs

	Low-income rate (%)	Low-income composition (%)	0-17 population composition (%)	Risk ratio[77]
No formal qualification	53	14	6	2.6
School qualification only	34	35	22	1.6
Post-school non-degree	19	30	33	0.9
Degree or post-graduate	11	21	40	0.5
ALL (0-17)	21	100	100	-

[76] See p136 for definition of risk ratio.

[77] See p136 for definition of risk ratio.

Individuals in low-income households by tenure

- There is a clear hardship gradient across different tenures for those aged under 65 (**Table G.8A**): low-income rates for those in mortgage-free homes and a little higher for those who still have a mortgage, and relatively high rates for those in rental properties, especially in HNZC tenancies.
- For those aged 65+, the hardship gradient is also clear (**Table G.8B**). The figures underline the value of having a mortgage-free home in "retirement" years (72% of those aged 65+ live in mortgage-free homes (avg for three surveys, 2014 to 2016)).
- Around half of all those aged under 65 who are in a low-income household (on the CV-07 50% measure) live in private rental accommodation. The figure rises to two in three when HNZC and private rentals are counted together.
- For those aged 65+, 60% under the threshold are in rental accommodation, and around 25% live in their own home or that of a/their Family Trust that still has a mortgage.

Table G.8A
Proportion (%) of individuals aged under 65 in low-income households by tenure, AHC CV threshold (50% of 2007 BHC median, less 25%)

	92	94	96	98	01	04	07	09	10	11	12	13	14	15	16
Owned or FT, no mortgage	10	7	9	6	10	9	5	4	5	7	3	6	6	5	8
Owned or FT, with mortgage	21	22	19	14	16	12	10	9	8	9	8	7	9	8	6
Rented - private	33	41	36	34	33	30	25	23	22	25	22	25	21	20	19
Rented – HNZC or local authority	54	62	59	52	36	41	27	27	24	37	36	19	38	32	35
TOTAL (under 65)	22	24	22	19	20	18	14	13	13	16	14	14	14	13	12

Notes: 1 'Owned or FT without mortgage' means that the dwelling is owned by the householders or a Family Trust, and the householders make no mortgage payments.

Table G.8B
Proportion (%) of individuals aged 65+ in low-income households by tenure, AHC CV threshold (50% of 2007 BHC median, less 25%)

	92	94	96	98	01	04	07	09	10	11	12	13	14	15	16
Owned or FT, no mortgage	1	1	1	2	2	2	4	1	2	2	1	1	1	1	1
Owned or FT, with mortgage	*6*	*16*	*15*	*32*	*31*	*11*	*11*	*15*	*10*	*12*	*9*	*9*	*10*	*10*	*9*
Rented	33	51	59	51	29	33	28	23	18	18	26	12	15	15	23
TOTAL (65+)	6	7	7	8	7	6	7	5	5	5	5	3	4	4	5

Notes: 1 'Owned or FT, no mortgage' means that the dwelling is owned by the householders or a Family Trust, and the householders make no mortgage payments.

2 For the 65+ 'owned or FT, with mortgage', the sample numbers are small – the general conclusion that the poverty rate for mortgage payers is significantly higher than for those who own without a mortgage is robust, but the sample numbers do not support precise figures.

3 For the 65+, all renters are grouped together as the sample numbers are too small to split private and HNZC renters.

Individuals in low-income households by household type

This section uses the 60% AHC CV 2007 measure as the default measure, with some reference to the 50% measure for longer-run comparisons. The higher threshold ensures there are enough sample numbers in the sub-groups to support robust findings and relativities. Using the 50% threshold shows the same relativities between the sub-groups and enables reasonable longer-run analysis, but in later years there is more uncertainty in the actual percentages reported using this measure as the numbers of those in low-income households for some sub-groups are relatively small.

- Sole-parent households with dependent children have the highest low-income rates of all household types, typically around 55% compared with a population rate of 16%. Using the 50% measure, the rates are 42% compared with 12% respectively.

- Around one in three sole-parent families (EFUs) live in wider households with others.[78] Table G.8 shows the lower low-income rates for these embedded sole-parent EFUs (typically around 20-30% from HES 2012 to HES 2016) compared with those who live in sole-parent households on their own (~60-65% in the same period).[79]

- Two-parent households with dependent children have much lower low-income rates than sole-parent households, but because there are many more people living in two-parent households, there are more low-income individuals from two-parent households than from sole-parent households (typically one third to one half more).

- While those in households with dependent children make up the bulk of those classified as poor (~60%), working-age adults in households without dependent children now make up a larger proportion of those in low-income households than in earlier years (34% on average in 2014 to 2016, compared with 20% in the mid 1990s and 15% in the mid 1980s). This rise is driven not only by the increasing share of households without dependent children but also by the fact that since the mid 1990s low-income rates for working-age households without children have not declined as much as those for households with children. In fact, for some, the rates have risen since then.

- The AHC low-income rate for older working-age adults living on their own (45-64 years) trebled from 1984 to 2007 and has remained high since (36% on average for 2014 to 2016 compared with 16% for the population overall, and second highest after sole-parents (55%)), using the same 60% AHC anchored line measure.

- Overall AHC low-income rates for those aged 65+ have been considerably lower than those for the rest of the population over the full period from 1982 to 2016 (Table G.2 above). However, those older New Zealanders living on their own have generally had a much higher proportion below the threshold than have those in couple households (eg 14% compared with 5% for the last two surveys using the 60% AHC anchored line measure, and 7% compared with 3% using the 50% measure).

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[78] Some of the embedded SP EFUs are in the HH grouping ‘sole-parent HHs with (any) dependent children’ (along with adult children), and some are in the grouping ‘Other family HHs with children’. Note that individuals retain the equivalised income of their household of origin for this analysis on the grounds that those in the wider households share to a reasonable degree in the benefits of the wider households and the economies of scale.

[79] Preliminary analysis using non-income measures from the 2008 Living Standards Survey indicates that the hardship rates for sole parent families in households on their own are very close to those for sole parent families living with others in a wider household. This is a quite different finding from the income-based one in this report . Further investigation is being undertaken to better understand the difference.

Table G.10
Individuals in low-income households by household and family type
60% AHC CV (2007 reference year)

Proportions below the threshold (%)

	Reference year = 2007								
	07	**09**	**10**	**11**	**12**	**13**	**14**	**15**	**16**
In all households									
Single 65+	23	16	23	14	13	12	14	14	15
Couple 65+	10	5	5	7	9	7	6	5	5
Single under 65	36	30	30	37	28	30	35	37	30
Couple under 65	14	10	9	16	10	12	9	9	10
Sole parent with children	57	52	61	61	60	56	59	48	55
Two parent with children	14	16	16	15	15	14	14	14	10
Other fam HHs with children	20	15	21	15	16	14	15	16	17
Other fam HHs, adults only <65	12	11	12	11	9	11	10	9	15
Non-family HHs	18	13	11	18	18	8	19	22	18
In households with dependent children									
Total	20	20	23	22	21	20	21	19	16
- with 1 child	19	17	20	23	18	21	21	17	14
- with 2 children	17	19	20	17	19	18	16	15	15
- with 3 or more children	26	28	29	29	28	22	26	25	18
In families (EFUs) with dependent children									
SP families overall	48	45	54	53	51	50	54	44	48
- living on their own	59	57	67	71	67	65	65	57	62
- within wider HHs	32	21	29	24	22	18	31	20	29
2P families	14	16	16	14	15	14	14	14	11
Under 65, by main source of household income in the 12 months prior to interview									
Market	11	11	10	11	11	10	11	10	10
Income-tested benefit	76	71	78	77	76	73	-	80	80
All in households under 65	19	16	18	19	17	17	18	17	15
Under 65, by work status of adults in household at time of interview									
Self-employed	10	12	18	19	16	12	14	11	12
One or more FT	10	10	8	9	8	9	8	9	8
None FT	62	58	57	66	64	59	-	60	65
Workless	68	62	63	68	69	64	-	66	70
Total population	18	17	18	19	17	16	17	16	14

Notes: 1 '07' means the 2006-07 HES year, and so on.

2 The relatively large changes in low-income rates for two-parent households, households with 3+ children, and adult-only family households (<65) from 2015 to 2016 are likely to be random statistical fluctuations rather than a reflection of real-world changes. Next year's survey findings will clarify this.

3 Around one in three sole-parent families (EFUs) live in wider households with others.

4 Note that individuals in the EFU analysis in Table G.10 retain the equivalised income of their household of origin for this analysis on the grounds that those in the wider households share to a reasonable degree in the benefits of the wider households and the economies of scale.

5 The HH type "SP with children" can include non-dependent children and other adults. On the other hand a family that is "SP on own" has only the one adult plus dependent child(ren).

Table G.10
Individuals in low-income households by household type
60% AHC CV

Composition of those below the threshold, by household type
(add down columns for 100%)

	Reference year = 2007									
	07	**09**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**Popln in '16'**
By household type										
Single 65+	5	4	5	3	3	3	3	3	4	4
Couple 65+	4	2	2	3	4	4	3	3	3	9
Single under 65	9	8	8	9	8	8	10	10	8	4
Couple under 65	10	7	6	11	8	9	7	7	7	11
Sole-parent with children	21	25	24	26	25	25	24	20	20	5
Two-parent with children	29	33	34	30	32	33	32	32	28	38
Other fam HHs with ch	10	8	9	6	8	6	6	9	9	7
Other fam HHs, adults only	8	8	8	6	5	9	6	9	15	17
Non-family HHs	6	5	4	6	7	3	9	8	6	5
Market <65	53	57	48	46	53	53	-	52	59	92
Govt < 65	47	43	52	54	47	47	-	48	41	8
Self-employed	5	8	10	9	7	7	8	6	12	9
One or more FT	39	38	31	31	35	40	34	39	36	74
None FT	51	51	57	58	56	52	-	51	46	15
- PT only	*12*	*11*	*12*	*12*	*12*	*10*	*-*	*10*	*9*	*4*
- Workless	*39*	*40*	*44*	*46*	*44*	*42*	*-*	*41*	*37*	*11*
Total population	100	100	100	100	100	100	-	100		100

To properly interpret the trends in composition of the poor by household type (as in Table G.8 above), both the trend in poverty rates and the changes over time of the composition of the population as a whole need to be known. One way of integrating and summarising these two trends is to use the 'poverty risk ratio' (PRR). The PRR for a given sub-group is the ratio of the poverty rate of that sub-group to that of the population as a whole. This gives an indication of the over- or under-representation of the subgroup at the lower end of the income distribution. A PRR greater than one indicates over-representation.

Figure G.4 shows the trends in the PRR for selected years from 1984 to 2012 for different household types. One person 65+ households have consistently had a higher PRR than couple 65+ households. The PRR rose from 1984 to 2012 for sole-parent households and fell for two-parent households. Perhaps the most significant change is the much higher PRR for one person working-age households in 2012 (1.8) compared with a quarter century earlier in 1984 (1.2).

Figure G.4
Poverty risk ratio by household type, AHC CV-98 60% threshold, selected years

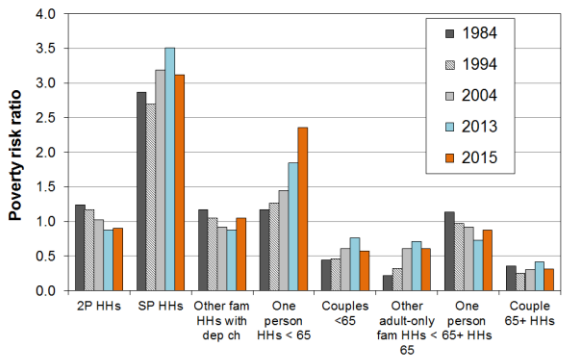

Table G.11
Individuals in low-income households by household and family type
50% AHC CV (2007 reference year)
(see Appendix 12 for same analysis using relative AHC thresholds)

Proportions below the threshold (%)

	84	86	88	90	92	94	96	98	01	04	07	09	10	11	12	13	14	15	16
In all households																			
Single 65+	3	9	12	13	10	13	11	14	9	14	10	9	10	8	8	5	4	7	7
Couple 65+	1	2	2	3	4	5	6	5	8	3	6	3	2	4	4	3	4	3	3
Single under 65	10	10	12	15	30	30	29	22	28	27	29	26	26	30	23	24	22	31	27
Couple under 65	5	4	6	7	11	12	11	10	9	12	11	7	7	12	7	10	7	7	8
Sole parent with children	27	22	15	25	69	72	74	62	70	55	46	43	43	50	52	48	51	35	41
Two parent with children	12	9	12	12	25	26	21	19	19	16	10	10	10	11	10	10	10	9	7
Other family HHs with children	10	7	3	12	14	16	21	16	13	16	14	10	14	13	10	10	10	11	13
Other family HHs, adults only <65	2	2	2	4	5	6	5	6	6	12	7	8	10	8	5	11	8	9	13
Non-family HHs	3	2	7	4	14	22	15	20	24	24	13	10	8	14	15	7	14	17	16
Total population	9	7	9	10	20	22	20	18	18	17	13	12	12	14	12	12	13	11	11
In households with dependent children																			
Total	13	10	11	14	29	31	29	24	25	20	15	15	15	17	16	15	15	13	11
- with 1 child	7	7	8	8	26	25	25	19	18	16	15	10	16	19	13	17	16	12	12
- with 2 children	12	9	9	13	25	28	29	27	26	16	12	15	13	12	14	12	12	11	10
- with 3 or more children	17	13	15	21	36	39	32	27	30	28	19	22	17	22	21	16	19	17	12
In families (EFUs) with dependent children																			
SP families overall	-	-	13	22	57	62	63	52	61	42	38	37	37	43	43	41	45	32	35
- living on their own	-	-	17	29	79	76	77	68	76	56	47	48	47	58	59	54	58	43	46
- within wider HHs	-	-	4	9	18	24	31	22	23	20	25	17	19	18	16	13	20	12	20
2P families	-	-	11	13	24	26	22	19	19	16	10	10	10	11	10	10	9	10	7
Under 65, by main source of household income in the 12 months prior to interview																			
Market	7	6	7	9	12	14	14	12	13	12	8	8	6	7	7	8	8	6	7
Income-tested benefit	33	28	26	24	64	66	65	61	62	56	59	63	60	68	65	60	-	67	70
All in households under 65	10	8	9	12	23	25	23	19	20	18	13	13	13	16	13	14	14	12	12
Under 65, by work status of adults in household at time of interview																			
Self-employed	-	-	-	-	-	-	-	-	-	-	7	9	12	12	11	11	9	7	8
One or more FT	-	-	-	-	-	-	-	-	-	-	7	6	5	6	5	7	5	5	5
None FT	-	-	-	-	-	-	-	-	-	-	48	46	43	56	53	48	-	49	57
Workless	-	-	-	-	-	-	-	-	-	-	53	52	47	59	60	56	-	53	63

Notes: 1 '01' means the 2000-01 HES year, and so on.

2 Around one in three sole-parent families (EFUs) live in wider households with others. Note that individuals in the EFU analysis in Table G.8 retain the equivalised income of their household of origin for this analysis on the grounds that those in the wider households share to a reasonable degree in the benefits of the wider households and the economies of scale.

3 The HH type "SP with children" can include non-dependent children and other adults. On the other hand a family that is "SP on own" has only the one adult plus dependent child(ren).

Section H
Trends for dependent children, 1982 to 2016, by various individual and household characteristics

This section:

- compares trends in poverty rates for subgroups of dependent children
- reports on the changing composition of those children identified as poor.

The individual and household characteristics used for subgroup analyses are:

- age of the children
- ethnicity of children (no time series)
- highest household educational qualification
- tenure
- household type
- family type
- hours of work of adults in households where there are dependent children.

AHC measures are used in this section (**Table H.1**). The rationale for this approach when comparing subgroups is outlined in **Appendix 5**. The anchored threshold approach is mainly used. Further tables based on the fully relative approach are in Appendix 12.

Table H.1
Poverty measures reported on in Section H for subgroups of dependent children

BHC				AHC			
REL ('moving line')		CV-07 ('anchored line')		REL ('moving line')		CV-07 ('anchored line')	
50	60	50	60	50	60	50	**60**
-	-	-	-	✓	✓	✓	✓

Children in workless and working households

Policy development and public debate around improving the wellbeing of children often involve discussion about the links between child poverty rates and the labour market involvement of their parents. A special subsection at the end of this section therefore brings together in one place a range of information on the numbers of children in workless and working households, their respective poverty rates, and the composition of children identified as poor vis-à-vis the work status of adults in their households.

Poverty rates for children and the composition of poor children

It is important to distinguish between the proportion of a group who are counted as poor, and the proportion of the poor who are from a particular group, that is, between rates and composition.

In **Table H.8** (later in this Section) rate and composition statistics are summarised for children by household type, family type, number of children in the household, ethnicity, highest household educational qualification, tenure and main source of income for the household (benefit or market).

Children in low-income households by age

- **Figure H.1** shows that from 1982 to 2016, poverty rates for younger children (0 to 11 years) were higher than the rates for older children (12 to 17 years). Note the way the lines go "off trend in 2013 and 2014 for older children and in 2016 for younger children. This illustrates why it is important to look at the trend over several surveys rather than relying on year-on-year comparisons to tell us what is happening.
- **Table H.2** breaks the younger group into two groups (0-6 yrs and 7-11 yrs). In most years there is little difference in poverty rates for these two younger subgroups.

Figure H.1
Proportion of children in low-income households by age, 60% CV threshold (AHC)

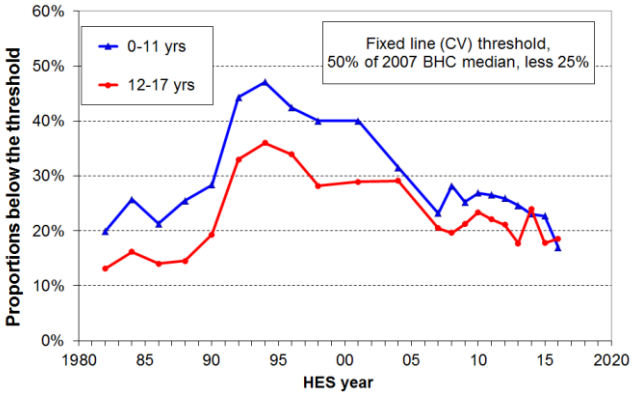

Table H.2

A. Proportion of children in low-income households by age, 50% CV-2007 threshold (AHC)

	82	84	86	88	90	92	94	96	98	01	04	07	09	10	11	12	13	14	15	16
0-6	13	14	12	14	16	36	38	34	30	30	23	19	18	16	21	21	19	18	17	12
7-11	12	16	12	12	17	33	37	33	29	28	25	16	21	18	21	19	18	18	16	12
0-11	13	15	12	13	17	34	38	33	30	29	24	17	20	17	21	20	19	18	16	12
12-17	8	11	7	9	11	27	27	28	21	23	22	15	15	16	16	15	13	16	11	13
0-17	11	13	10	11	14	32	34	31	26	26	22	16	18	17	19	19	17	17	15	12

B. Proportion of children in low-income households by age, 60% CV-2007 threshold (AHC)

	07	09	10	11	12	13	14	15	16
0-6	24	24	26	26	26	25	23	22	17
7-11	22	26	28	27	26	24	23	23	18
12-17	20	21	23	22	21	18	24	18	19
0-17	22	24	26	25	24	22	23	21	18

C. Proportion of children in low-income households by age, 50% REL threshold (AHC)

	82	84	86	88	90	92	94	96	98	01	04	07	09	10	11	12	13	14	15	16
0-6	10	10	7	9	8	19	22	22	21	24	19	19	20	20	22	22	22	22	21	16
7-11	10	10	7	8	8	18	21	19	21	21	21	16	23	21	22	21	21	20	22	17
12-17	7	9	6	7	5	15	16	17	16	17	19	15	17	19	17	16	14	20	16	18
0-17	9	10	7	8	7	17	20	20	20	21	19	16	20	20	20	20	19	21	19	17

D. Proportion of children in low-income households by age, 60% REL threshold (AHC)

	82	84	86	88	90	92	94	96	98	01	04	07	09	10	11	12	13	14	15	16
0-6	15	16	12	15	17	30	32	30	31	33	26	24	27	31	28	28	27	30	29	24
7-11	15	17	12	14	18	28	32	28	29	32	30	22	28	32	30	30	27	28	30	25
12-17	10	12	8	10	11	23	23	25	21	24	26	21	24	27	24	24	20	28	23	26
0-17	14	15	11	13	16	27	29	28	28	30	28	22	26	30	27	27	24	29	27	25

Children in low-income households by ethnicity

As noted in the Introduction, only limited analysis by ethnicity is reported because of the relatively small sample sizes for Maori, Pacific and Other ethnic groups (especially Pacific). The sample sizes are even smaller when looking only at children. To improve the robustness of the findings the analysis in this section (a) combines the data from two surveys (HES 2015 and 2016), and (b) uses the AHC 60% anchored line measure rather than the 50% one (this gives higher numbers), to give an indication of the relativities in low-income rates for children by ethnicity.

The new figures (the average of HES 2015 and HES 2016) are very close to those from last time, the average of HES 2012 to HES 2014.

The low-income rates for children in the Maori and Pacific ethnic groups are consistently higher than for those in the European/Pakeha ethnic group, whatever measure is used. For example, on average over 2015 and 2016, using the AHC 60% anchored line measure, around 14% of European/Pakeha children lived in low-income households**,** 28% of Maori children**,** and 26% of Pacific children (double the rate for European/Pakeha children). The average rate for all children was 20% on this measure.[80]

The higher poverty rate for Maori children reflects the relatively high proportion of Maori children living in sole-parent beneficiary families and households (around 47% of all sole parent beneficiary recipients are Maori).

On average over 2015 and 2016, just under half (45%) of children in low-income households were Maori or Pacific using this measure. Overall, ~32% of children are Maori or Pacific.

Children in low-income households by highest household educational qualification

There is a well-established positive link between parental educational qualifications and a wide range of outcomes for their children. The positive impact is understood to occur through several pathways in addition to genetic endowment. Higher education means: higher family incomes on average, and this improves the chances of higher investment in the children in relation to the things that money can buy; higher chance of more constructive parenting style and a wider range of vocabulary and so on; lower chance of on-going stress in the family from financial pressures. None of these linkages are deterministic, but they do apply “on average”.

Table H.3 shows the steep gradient for low-income rates for children from families with different educational qualifications, supporting aspects of the pathways perspective described above.

Table H.3
Poverty rates and poverty composition by highest household educational qualification: averages over HES 2014 to 2016, using the AHC 60% of median threshold measure, anchored in 2007 those aged 0-17 yrs

	Poverty rate (%)	Poverty composition (%)	0-17 population composition (%)	Risk ratio[81]
No formal qualification	53	14	6	2.6
School qualification only	34	35	22	1.6
Post-school non-degree	19	30	33	0.9
Degree or post-graduate	11	21	40	0.5

[80] The low-income relativities between children from the Maori and European/Pakeha ethnic groups are generally relatively stable from survey to survey. Rates for Pacific children are more volatile as the Pacific population is around half that for Maori and the sample numbers are smaller too.

[81] See p126 for definition of risk ratio.

Children in low-income households by tenure

Using the AHC 60% fixed line measure, the child poverty rates show a clear gradient across different tenure types. For 2014 to 2015:

- the rates were 53% in HNZC homes, 32% in private rental, 10% in privately owned homes with a mortgage and ~6% where there is no mortgage
- 57% of poor children lived with their families in private rental accommodation, and another 15% in HNZC homes.

In the early to mid 1990s, the majority of children identified as poor (50 to 55%) came from households that owned their own home. The difference today is in part a reflection of the fact that in the early to mid 1990s 72% of children lived in households that owned the home, whereas on average in 2015 and 2016 this proportion had fallen to 56%.

The composition patterns and rate relativities between tenure types have remained much the same in recent years.

Children in low-income households by household type, family type and work status of adults in the household

Using AHC incomes (60% CV-07) (**Table H.4**):

- Children living in sole-parent (SP) households experience significantly higher poverty rates than those in two-parent (2P) households and other family households (58%, 14% and 19% respectively in 2013 to 2015 on average).
- Around one in three SP families (EFUs) live in households with other adults. Children living in these SP EFUs have lower poverty rates than those in SP EFUs living on their own because of the wider household financial resources available to them, both directly and indirectly.[82]
- Although poverty rates for children in SP families are much higher than for children in 2P families, around half of poor children come from 2P families and half from SP families.
- Children in households with three or more children generally have poverty rates considerably higher than those with only one or two children (30% and 20% respectively on average from 2007 to 2014. In 2014, children in these larger households made up just under half of all poor children (45%).[83]
- In 2001 and 2004, around one in two poor children came from households where at least one adult was in full-time paid employment or was self-employed. On average from 2009 to 2015 this proportion had dropped to around two in five.
- From 1992 to 2004, children in workless households generally had poverty rates around four times higher than for those in households where at least one adult was in full-time work. From 2007 to 2015, the difference was even greater – around six to seven times higher for children in workless households. This change in relativities to a large degree reflects the greater WFF assistance for working families than for beneficiary families.
- The fall in child poverty rates from 2004 to 2007 for children in one-FT-one-workless 2P households was very large (28% to 9% using the 50% CV-07 measure), reflecting the WFF impact, especially through the In-work Tax Credit.

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[82] Preliminary analysis using non-income measures from the 2008 Living Standards Survey indicates that the hardship rates for sole parent families in households on their own are very close to those for sole parent families living with others in a wider household. This is a quite different finding from the income-based one in this report . Further investigation is being undertaken to better understand the difference.

[83] In 2014, 38% of children were in households with 3 or more children, 39% with 2 or more and 23% in one child households.

Table H.4
Children in low-income households by household and family type: 60% AHC CV

A. Proportions of children below the threshold, by household and family type

	Reference year = 1998											Reference year = 2007							
	84	**86**	**88**	**90**	**92**	**94**	**96**	**98**	**01**	**04**	**07**	**07**	**09**	**10**	**11**	**12**	**13**	**14**	**15**
By household type																			
Children in SP HHs	31	24	17	28	74	76	77	65	74	56	49	59	56	63	66	64	61	63	53
Children in 2P HHs	13	10	13	14	27	29	23	20	21	17	9	15	17	18	16	16	14	15	14
Children in other fam HHs	14	9	4	15	15	17	23	21	16	20	18	23	15	23	16	18	19	18	21
By family type (n1)																			
Children in SP families	-	-	14	24	60	65	65	55	64	44	42	49	47	55	56	53	52	56	46
- in SP families on own	-	-	18	31	80	78	78	70	77	57	49	60	66	69	73	69	66	66	59
- within wider HHs	-	-	4	7	20	26	32	23	25	21	25	34	20	29	25	24	18	34	20
Children in 2P families	-	-	12	14	25	28	23	20	20	18	9	14	18	17	15	16	14	15	15
By # of children in HH																			
1 or 2 children	11	9	10	12	29	30	31	27	26	18	14	19	20	22	21	21	22	21	18
3 or more children	19	14	15	22	38	41	34	29	32	30	20	28	30	32	32	30	24	29	28
By main source of household income in the 12 months prior to interview																			
Market	-	-	-	-	-	-	-	-	-	-	-	12	14	13	12	13	12	12	11
Income-tested benefit	-	-	-	-	-	-	-	-	-	-	-	79	85	86	80	85	81	-	85
By work status of adults at time of interview (all HHs with children)																			
Self-employed	11	8	16	8	17	21	20	12	21	21	6	10	17	21	20	20	13	16	13
One or more FT	12	10	10	14	17	20	19	17	17	14	8	11	12	12	10	10	11	11	10
None FT	34	23	18	26	73	75	74	66	72	58	49	65	66	64	70	72	66	-	66
Workless	38	25	18	25	78	77	78	71	77	60	58	72	73	70	74	81	74	-	75
By work status of adults at time of interview (two parent HHs)																			
Both full-time	11	11	9	7	12	10	18	8	6	7	3	6	8	6	9	7	2	2	5
One FT, one PT	9	8	7	7	10	11	11	9	19	8	6	10	6	14	5	8	8	12	9
One FT, one workless	15	9	16	23	27	32	23	28	24	28	9	11	20	18	12	13	22	17	17
All children, all HHs	15	11	12	16	33	35	32	28	29	23	16	22	24	26	25	24	22	23	21

B. Composition of children below the threshold, by household and family type

	84	**86**	**88**	**90**	**92**	**94**	**96**	**98**	**01**	**04**	**07**	**07**	**09**	**10**	**11**	**12**	**13**	**14**	**15**
Children by household type																			
Children in SP HHs	19	21	18	27	36	34	42	40	40	35	38	40	46	41	50	45	47	45	39
Children in 2P HHs	71	68	79	65	59	61	50	51	53	52	48	46	46	49	42	45	45	47	46
Children in other fam HHs	11	11	4	8	6	4	7	9	6	13	14	14	6	10	7	9	8	7	13
Children by family type (n1)																			
Children in SP families	-	-	19	29	39	37	45	44	44	39	56	50	45	49	49	57	51	51	46
- in SP families on own	-	-	18	26	34	33	39	38	40	33	44	36	38	42	40	48	45	42	39
- within wider HHs	-	-	2	3	4	4	6	6	4	7	13	14	7	8	8	9	5	10	7
Children in 2P families	-	-	81	71	61	64	55	56	56	60	44	50	55	51	51	43	49	49	54
By main source of household income in the 12 months prior to interview																			
Market	-	-	-	-	-	-	-	-	-	-	-	47	50	41	37	45	47	-	45
Income-tested benefit	-	-	-	-	-	-	-	-	-	-	-	53	50	59	63	55	53	-	55
By work status of adults (all HHs with children)																			
Self-employed	10	9	14	4	4	5	6	5	8	7	4	5	9	9	9	7	6	-	6
One or more FT	56	62	61	57	34	36	39	40	42	45	32	33	33	29	25	28	35	-	34
None FT	34	29	26	38	62	59	56	55	50	49	65	62	58	62	65	64	60	-	59
- *PT only*	*3*	*2*	*5*	*6*	*6*	*10*	*9*	*11*	*12*	*12*	*13*	*18*	*15*	*15*	*13*	*15*	*12*	-	*13*
- *Workless*	*31*	*27*	*21*	*32*	*56*	*49*	*47*	*44*	*38*	*37*	*52*	*45*	*43*	*47*	*52*	*49*	*48*	-	*46*
All children	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

Notes: 1 Family here is 'economic family unit' (see Section A for definition), and see n2 under Table G.8.

"4 out of 10 poor children are from working families" – discussion of this stylised fact

There are three main ways that the HES data can be used to produce an estimate of the composition of poor children by the work status of the adults in their households – that is, of all the children identified as poor by a particular measure, what proportion are from working families? The three approaches (for working-age households) are:

- to use the source of household income in the 12 months prior to interview, with a "working household" defined as one for which more than 50% of the household income comes from market income
- by excluding all households in which any adult in the household says that they received any main benefit at all in the last 12 months, with the rest being "working households"
- by including all households which at the time of interview declared self-employment or had at least one adult in full-time employment – this is a relatively high bar to achieve for a household to be considered to be a "working household".

On average in HES 2013 and HES 2015[84]:

- the source of income approach identified 46% of poor children as being from working families
- the second approach (no main benefit income at all in the previous 12 months) identifies 52%
- and the third one (at least on adult in FT employment or self-employed) gives 40% – if part-timers were included in this approach its percentage comfortably goes beyond 40%.

One of the challenges for this analysis is that the standard Statistics New Zealand weights applied to the survey data underestimate the number of beneficiary children in the population by a considerable amount. This leads to an underestimate of the proportion of poor children who are in beneficiary families and an over-estimate of the proportion of poor children coming from working families.

There are two ways of obtaining alternative estimates. One is to use Treasury's Taxwell weights which are designed to (among other things) give good population estimates of benefit numbers. The other is to take the beneficiary poverty rates (not greatly impacted by weighting) and apply them to beneficiary numbers drawn from administrative data. When these two approaches are used the proportion of children found to be in working households drops by about three to four percentage points.

Whether the estimate is 40% to 52% or more like 37% to 49% is not too important. The most important thing is that we know that a sizeable portion of poor kids come from working families.

The non-incomes approach gives similar results in HES 2015 and 2016 – around 40% of children in hardship (DEP-17 of 7+/17) were from families who had no adult on benefit at any time in the 12 months prior to interview.

The stylised fact that around 4 in 10 of poor children are from working families has strong evidence to support it.

[84] Data from HES 2013 and 2015 are used rather than HES 2014 and 2015 as there were some issues with the incomes of some beneficiaries in HES 2014 which are likely to skew the findings. See Introduction (Section A) for more detail on the HES 2014 data.

Children in 'workless' and 'working' households

Policy development and public debate around improving the wellbeing of children often involve discussion about the links between child poverty and material hardship rates and the labour market involvement of their parents. This subsection contributes to that discussion by reporting on:

- the number and proportion of children in workless and working households
- low-income rates for children, by the work status of the adults in their household
- the composition of poor children, by the work status of the adults in their household.

In a future issue, it is hoped to also have information about 'churning' in and out of work for low-income households.

Numbers and proportions of children in working and workless households

Table H.5 shows the trend in the proportion of children in 'workless' households and in beneficiary families over time.

The final row in the table (children in beneficiary families) is a "census" as at 31 March each year (30 June for years up to and including June 2012), from MSD's administrative data. This is robust data. In contrast, the first four rows are estimates only, based on the HES sample. We know that the figures based on Statistics New Zealand's weights consistently under-estimate the number of beneficiaries compared with the administrative data. Generally, the estimates using the Treasury's Taxwell weights are closer to the administrative data, but the sampling error from the HES can still lead to either or both weighting regimes under- or over-estimating the population numbers.

What can be said with certainty is that around one in five New Zealand children live in households where there is no adult in full-time employment. These rates and the rate for children in workless households are high by OECD and EU standards (see Section J).[85]

Table H.5
Proportion of children in 'workless' households (% of all children)

HES year	07	08	09	10	11	12	13	14	15
In workless HHs - SNZ wgts	14	14	14	17	18	15	14	14	13
- TSY wgts	17	16	17	20	20	18	16	15	16
In HHs with no FT worker - SNZ wgts	22	20	21	25	24	22	20	20	19
- TSY wgts	25	22	25	29	27	25	22	21	22
In beneficiary families	19	19	21	22	22	22	20	19	18

The 2016 figures are not reported in Table H.5 because of the sampling fluctuation which led to fewer-than-usual beneficiary households with children being interviewed. See Section A for more detail on this.

[85] The proportion of children in beneficiary families is unlikely to ever match either of the other two lines for several reasons: (a) a beneficiary family may live in a household where an adult is in FT work (eg a sole parent family living with the mother's parents or other relatives), (b) some beneficiary families receive income from PT employment, and (c) the beneficiary information is a snapshot at 30 June (31 March from 2013 on), whereas the HES based figures are an average over the full year.

Comparing employment rates for adults in sole-parent and two-parent families

(updated data not available at time of printing – updates will be incorporated in the website version in 2017)

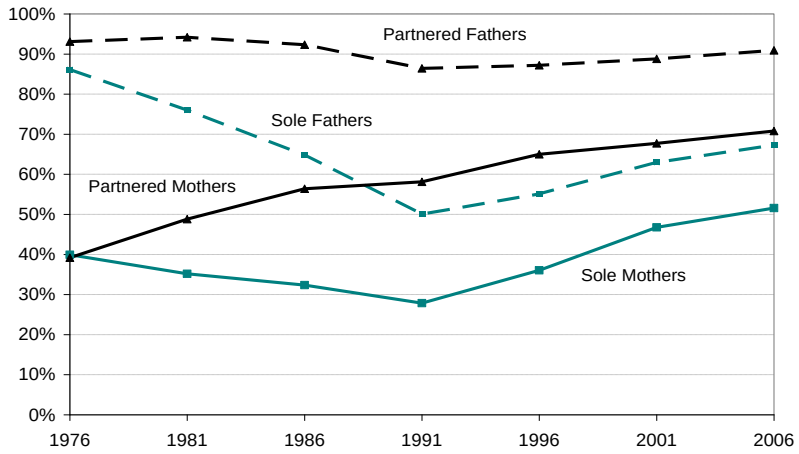
Figure H.2 uses Census data to show the proportion of parents of dependent children who were employed (either FT or PT) in the three decades from 1976 to 2006, for both sole and partnered parents.

Table H.6 uses HLFS data to show the proportion of sole and partnered mothers employed, FT and PT, in 1999 and 2009. (Around five in six sole-parent families are headed by sole mothers.)

The key features of the graph and the table for the purposes of this report are:

- the steady rise in the proportion of partnered mothers in employment to around 70% (71% in the 2006 Census, 69% in the 2009 HLFS) – thus increasing the proportion of dual earner two parent families
- the steady rise in the proportion of sole mothers in employment to around 50% (52% in the 2006 Census, 50% in the 2009 HLFS)
- the steady rate of PT employment for both sole and partnered mothers from 1999 to 2009 (19% and 30% respectively)
- the corollary of this, that the increase in mothers' employment has been driven by their increased FT employment since the late 1990s – in 2009, almost one in three sole mothers were employed FT, a 50% increase from 1999.

Figure H.2
Proportion (%) of parents of dependent children employed, 1976–2006



Source: Figure 3 in MSD (2010), (drawing on the Census of Population and Dwellings)

Table H.6
Proportion of sole and partnered mothers employed, FT and PT

		1999	2009
Employed FT (30+ hrs pw)	Sole mothers	20	31
	Partnered mothers	34	38
Employed PT (<30hrs pw)	Sole mothers	19	19
	Partnered mothers	30	30

Source: Derived from Table 3 in MSD (2010), (drawing on the HLFS)

Proportions of children in workless households, by family type

In 2009, 80% of children in workless households were from sole-parent families, 20% from two-parent families. The proportions were very similar in 2007 and 2008.

The proportions here are proportions of all children, including those where the work status of the adults is 'self-employed'. Almost all the self-employed are in two-parent households. From HES 2009 there were 273,000 children in sole-parent families. Assuming around half are from workless families (see Table H.6 above, based on the HLFS), then around 80% of children in workless families are from sole-parent families (137,000 out of 171,000). This is close to the figure that can be derived directly from the HES.

In 2013, 76% of sole mothers and 54% of sole fathers were receiving a main benefit. 18% of these sole parents had declared earnings in June 2015. In 2013, 35% of sole parents were employed full-time. This is low on international standards. Sole parent beneficiary families are clustered in the lower part of the income distribution.

Increasing proportion of dual-earner two-parent households

Figure H.3 and the associated **Tables H.7A and H.7B** show the trend to increasing work intensity among two-parent households with dependent children. The option of one partner in FT paid employment and one not in paid employment ('workless') was the dominant pattern in the early 1980s. In 2016, the most common arrangement was for both parents to be employed FT (45%).

- Around two of every three two-parent families were dual-earner families from 2007 to 2016, up from one in two in the early 1980s. The new pattern seems to have stabilised.
- The most common arrangement in HES 2016 was for both parents to be working full-time (45%), with another 22% with one full-time and the other part-time. In contrast, in 1982 the dominant pattern (52%) was one in full-time work and the other 'workless' (WL), with only 20% having both in full-time work.

Figure H.3
Increasing proportion of two-earner two-parent households (with dependent children)

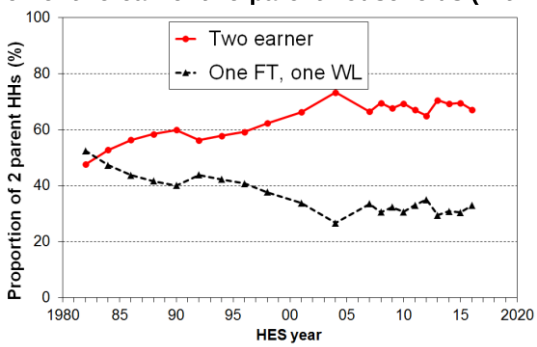


Table H.7A
Proportion of two parent households where there is at least one FT adult worker

	82	84	86	88	90	92	94	96	98	01	04	07	09	10	11	12	13	14	15	16
One FT, one WL	52	47	44	42	40	44	42	41	38	34	27	34	32	31	33	35	30	31	31	33
One FT, one PT	28	30	30	31	30	29	26	27	27	29	30	30	23	26	26	26	27	27	25	22
Both FT	20	23	26	28	30	27	32	32	35	38	43	37	44	43	41	40	43	42	44	45

Table H.7B
Proportion of children in two parent households where there is at least one FT adult worker

	82	84	86	88	90	92	94	96	98	01	04	07	09	10	11	12	13	14	15	16
One FT, one WL	54	47	46	43	42	46	46	42	41	36	30	36	36	34	36	39	32	36	33	36
One FT, one PT	28	30	30	30	32	29	26	27	29	31	33	30	24	27	26	28	30	28	27	23
Both FT	19	23	25	27	26	25	29	30	30	33	38	34	39	39	38	34	38	36	41	42

Poverty rates and composition for children in working and workless households

In broad terms, three factors impact on child poverty rates and on the proportion of poor children who come from various subgroups (that is, on the composition of the poor):

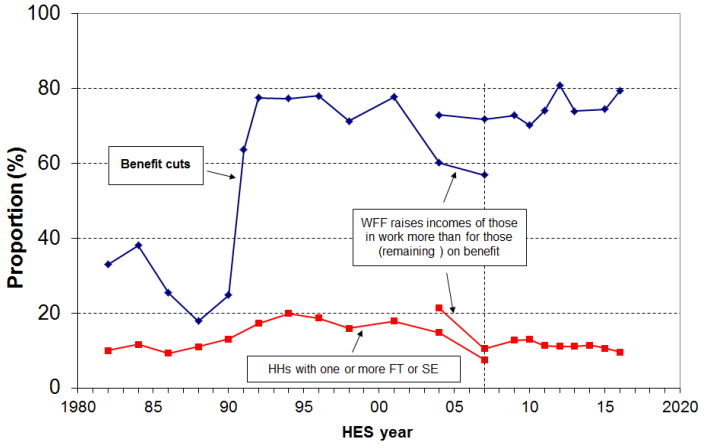
- the economy and the labour market (impacting on employment and unemployment rates, wage rates and on benefit numbers (including numbers of sole-parent families))
- demographic shifts and changing cultural norms (eg the number of sole-parent families, whether sole-parent families live in households on their own or with other adults, the proportion of dual-earner two-parent households)
- policy changes (eg policy changes around benefit rates, income-related rents, the AS and WFF all have clear impacts on the child poverty rates for children from working and workless households, and on the relativities between the two groups).

The information in **Figures H.4, H.5 and H.6** below illustrate these factors at work and support the following findings:

- child poverty rates in workless households are consistently several times higher than those for children in working households (three to four times higher in 1992 to 2004, six to seven times higher from 2007 to 2016 after WFF)
- child poverty rates in workless households were very high from 1992 to 2001 (after the benefit cuts), typically just under 80% using the AHC 60% fixed line measure (CV-98)
- the introduction of income-related rents contributed to the reduction in the child poverty rate from 2001 (78%) to 2004 (60%) for children in workless households
- the WFF package had little impact on the poverty rates for children in workless households
- for children in 'working' households (self-employed or at least one FT worker) the child poverty rate from 1992 to 2004 was reasonably steady at around 18-20%
- the WFF impact was significant for this group, with the rate in 2007 (11%) half what it was in 2004 (22%)
- nevertheless, on average from 2007 to 2016, around two in five (40%) poor children still came from working families – down from just over one in two (52%) in 2004 before WFF.

Figure H.4 shows the poverty (low income) rates for children in workless and working households. A working household is one where at least one adult is in FT employment, or where the main source of income for the previous 12 months is from self-employment (cf Table H.3 above).

Figure H.4
Poverty rates for children in 'workless' and 'working' households (AHC 60%, fixed line)



Note: The discontinuity at 2007 arises because of the change of reference year from 1998 to 2007. The 2004 to 2007 changes are shown using both reference years.

Figure H.5 shows the proportion of poor (ie low-income) children who live in workless households. As there are fewer children in workless households than in working households the proportion of all poor children who come from workless households is much lower than their poverty rate in any given year. In addition, this proportion is also affected by policy changes and changes in the economy and labour market, as indicated in the text boxes in Figure H.5.

In 1992, after the benefit cuts in 1991 and with unemployment high, the proportion of poor children who came from workless households peaked at 56%. The improving labour market and growing economy then helped to reduce that proportion to 37% by 2004. The WFF package gave greater financial assistance to working families than to (those who remained as) beneficiary families. This was reflected in the decrease in child poverty rates for those in working families. The consequence was a rise to 52% in 2007 in the proportion of poor children who come from workless families. Using the updated reference year (2007), that proportion was 49% in 2013 and 46% in 2015.

Figure H.5
Proportion of poor children who live in 'workless' households (AHC 60%, fixed line)

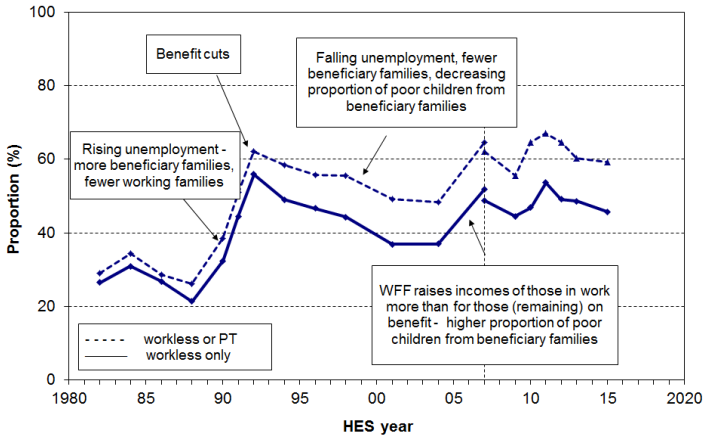
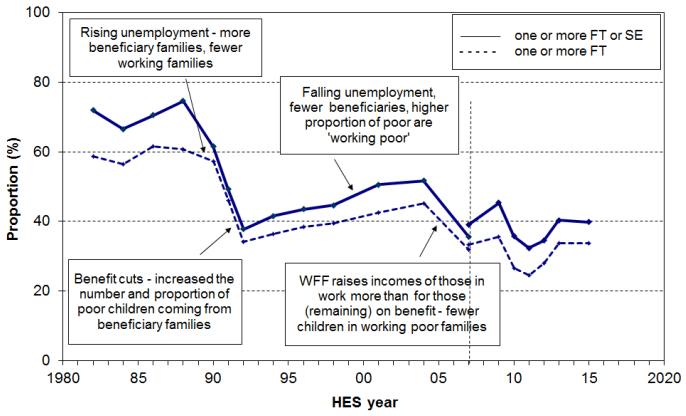


Figure H.6 looks at the composition of children identified as poor from the other perspective – what proportion of poor children come from working households? The trend is overall a mirror image of the one on Figure H.5. The secondary (broken) line omits self-employed households.

The WFF package reduced the proportion of poor children coming from working families from just over one in two (52%) in 2004 to around two in five (40%) on average from 2007 to 2015.

Figure H.6
Proportion of poor children who live in 'working' households (AHC 60%, fixed line)



HES 2016 findings are not reported because of concerns about the sample for beneficiaries with children. See section A for details.

Annex to Section H

Summary of low income (poverty) and material hardship findings for children, drawing on both the Incomes Report and the companion report using non-income measures (NIMs)

This Annex brings together in one place all the key material on child poverty and material hardship from the Incomes Report and the companion report using non-incomes measures (the NIMs Report).

Using and interpreting the figures in the reports

As well as providing the figures themselves, the reports provide guidelines for the use and interpretation of the reported figures. These are summarised and elaborated in the Guidelines document on the website. The main points are that:

- Poverty and hardship are multi-dimensional and levels and trends cannot usefully be captured in a single measure. The reports use a multi-measure approach.
- Poverty and hardship exist on a spectrum from less to more severe. There is legitimate debate about where the 'less severe' level starts. The reports use a multi-level approach.
- For reporting trends, the reports use a hierarchical approach, taking the material hardship and anchored line income measures as primary, at least in the short to medium term. The reports encourage users to look at movement over several years rather than making too much of year-on-year changes.
- Information on the composition of the poor and of those in hardship is an important aspect of monitoring child poverty and hardship.

The most challenging aspect is reporting on current levels of poverty and hardship as the reported figures depend a great deal on the measure and threshold used. The multi-level approach used in the reports helps to some degree on this, but a decision is still required on a plausible range of thresholds. The reports are clear on this range for material hardship measures, but do not have the same clarity for income measures. While for BHC measures there are international standards in common use, there is limited use of AHC measures internationally and standards are not as well developed.

There is an understandable desire to be able to say that "there are X thousand older New Zealanders in poverty", and so on. To give some meaning to statements like that requires a reference point that the reader can readily understand. To have them widely accepted requires a standard or measure which is at least plausible, and hopefully even better than that.

In practice there are three main options available for defining usable reference points:

- comparisons with the population rate and rates for other age groups on the same measure (and the use of risk ratios)
- comparisons with historical trends on the same measure
- international comparisons giving relativities with other countries using the same measure.

There are two main ways of establishing a standard or standards:

- use international standard measures
- develop local standards which are constructed based on evidence and on argument with the assumptions and judgements declared for others to consider and critique:
    - the NIMs report constructs such a standard when it puts the case for the upper limit of its plausible range of thresholds for monitoring material hardship
    - for low incomes and income poverty (AHC), the same carefully argued case is not yet made in the reports – there is a place for the use of scenario budgets, for example, in assisting with this task, and further work on this is planned.

To assist with comparing apples with apples: measures used internationally for reporting on "poverty and material hardship", especially for children.

OECD

Low incomes

- 50% BHC relative (mainly)
- 60% BHC relative (this information is collected but is used less than the 50% measure)
- sometimes they use an anchored line approach, but rarely
- the OECD never uses AHC, mainly because most OECD countries do not collect housing costs in the same survey as they collect the income data so cannot do what we do

Material hardship

- no hardship measures available from the OECD, partly because not enough member countries collect the relevant data

New Zealand children

- using the 50% BHC relative measure, the low-income rate for NZ children is 13% (140,000 children), and the OECD median is 11% (HES 2013, latest available comparison)

EU (and Eurostat)

Low incomes

- 60% BHC relative
- the EU never uses AHC, mainly because most EU countries do not collect housing costs in the same survey as they collect the income data, so they cannot do what we do

Material hardship

- the relevant data is collected by all EU countries – the EU currently uses a 9-item index, but have just approved a much improved 13-item index which is similar to our DEP-17
- each index uses two thresholds (eg "standard" hardship 5+/13, "severe hardship" 7+/13)
- we can replicate both indices using NZ data for 2008, and from the next HES expect to have EU-13 updates using new HES data

New Zealand children

- using the 60% BHC relative measure, the low-income rate for NZ children is 22% (240,000 children), and the EU median is 21% (HES 2015, latest available comparison)
- using the EU 13-item index, the 2008 rate for NZ children was 18% (190,000) on the standard measure and 8% (85,000) on the severe measure – the EU medians were 16% and 7% – updates are expected from the EU in 2018.

UNICEF (International Research Centre in Florence)

Low incomes

- they use a range of approaches, depending on the purpose of the publication, but they have never used AHC, because there is no source for international comparisons using AHC incomes (see above on the OECD and the EU)
- in Report Card 11 (2013) – 50% of median BHC relative plus a material hardship index
- in Report Card 12 (2014) – 60% of median BHC anchored plus a material hardship index
- in Report Card 13 (2016) – 50% of median BHC relative
- in Report Card 14 (2017) – 60% of median BHC relative

Material hardship

- UNICEF (Research Centre) recognises the value of this approach but only EU comparisons are available (and New Zealand on some measures).

We can do AHC comparisons with the UK

- the UK reports on a wide range of measures – BHC and AHC moving and anchored lines for low incomes, and also their own material hardship measures (in addition to the EU measures)
- the New Zealand and UK figures using the AHC relative (or moving line) low income measures are almost identical for children:
    - AHC 60% relative for children (UK = 29%, NZ = 28%(around 300,000))
    - AHC 50% relative for children (UK = 19%, NZ = 20% (around 210,000)).

What the reports do not say

As discussed in Section E, the starting point for both reports is that poverty is about household resources not being adequate to meet basic needs or, to put it another way, it is about being excluded from a minimum acceptable standard of living in one's own society because of inadequate resources. Clearly there is room for debate about just where on the spectrum of severity it is reasonable to draw the lines, though in practice the range of plausible thresholds is fairly narrow. The reports take the view that a multi-level multi-measure approach is the best way to monitor trends. This enables the New Zealand story to be told in a comprehensive and nuanced way that better informs public debate, political decision-making and policy development.

There are several fairly commonly made claims about child poverty and hardship in New Zealand which directly or indirectly use some of the numbers from the reports, but which are claims that the reports do not in fact support. In some cases the reports explicitly show that the claims are misleading or incorrect.

"There are [290,000, 150,000, 100,000, (choose own preferred number)] children in New Zealand below the poverty line / the bread line"

- Such claims definitively declare how many thousand children are in (income) poverty in New Zealand as if it were a relatively straightforward, uncontested and binary statistic ("you're under the line and in poverty or over it and not in poverty"), in the same category as declaring how many children of a certain age are taller than, say, 130 cm.
- The reports show that there is no single low-income measure which satisfactorily divides children into the poor and the non-poor in the way that such claims seek to do. There is a range of plausible thresholds that can be used. There are also factors other than income which determine whether a household has the resources needed to achieve a minimum acceptable standard of living. The reports take the view that the most useful and productive approach is to focus on telling a more comprehensive story about trends at different depths, and on seeking to understand why different measures produce different trends and what all this means for policies to address poverty and hardship.

"There are [290,000, 150,000, 100,000, (choose own preferred number)] children in New Zealand below the poverty line: they don't have a waterproof coat, shoes in good condition for daily activities, their own bed, a warm dry home, and they have to miss out on participation in sporting and other activities, and so on"

- This claim works off the assumption that all "poor" (low-income) children lack all or most of the items used in the NIMs report to create the hardship indices or in the calibration exercise to select usable thresholds.
- An example of this sort of claim occurred in mid-August 2016. The Guardian in the UK ran stories by a New Zealand freelancer about how grim things were in New Zealand for the "one in three children who live in poverty". A key part of the "evidence" that was "used" in the stories was the claim that all these poor children suffered serious multiple deprivations. A local provincial paper picked up on the Guardian story and their claim, repeated below, well illustrates the same misleading use as the Guardian pieces did.

  > *According to UNICEF, as many as 28 per cent of New Zealand children – about 305,000 – currently live in poverty. When a child grows up in poverty they miss out on things most New Zealanders take for granted. They are living in cold, damp, over-crowded houses, if they have a house at all, they do not have warm or rain-proof clothing, their shoes are worn, and many days they go hungry.*

- The assumption is not correct. For example, as discussed above, the reports show that not all low-income households are experiencing hardship: the overlap of the two groups is typically around 40-50% using standard thresholds. In addition, the proportion of low-income households lacking individual items, when taken one at a time, is even lower.
- For example:

  - the surveys show that around 10% of all children (110,000) live in homes that report a major problem with dampness and mould
  - for children in households with incomes below the 60% AHC threshold (290,000), "only" 50,000 live in such homes (17% of the 290,000)
  - though this is 50,000 more than what most would consider acceptable, it is a much smaller group than the 290,000.

- Similarly, in the 2016 HES, 6% of 6-17 year olds (~45,000) are reported as not having a meal with meat, fish or chicken (or a vegetarian equivalent) at least each second day. "Only" 18-20,000 of these children (~40%) live in households with incomes below the 60% AHC threshold. This is around 10% of the 200,000 6-17 year olds in that low-income group.
- This analysis is not saying that there is not an issue to address. There is, but exaggerations and misleading claims are not helpful for productive public and political debate.

"NZ has one of the highest child poverty rates in the (more developed / richer) nations"

- This claim usually starts with the numbers produced using the 60% AHC relative low-income measure: around 27% (290,000) children live in low-income households with incomes below this threshold.
- This relatively large number is then compared with the numbers in international league tables produced by the OECD and others. These tables use only BHC measures. The comparison is an invalid apples-with-carrots comparison. For example, using the OECD's 50% of median BHC measure the rate for both Australia and New Zealand is 13%, close to the OECD median and half the 27% figure above which uses a different measure. The only other country to regularly report AHC rates is the UK and for them the low-income rate for children is close to New Zealand's rate when using the same measure (28%).
- In their Concluding Observations after the 2016 review of New Zealand the United Nations Committee on the Rights of the Child (UNCRoC) noted that it is "deeply concerned about the enduring high prevalence of poverty among children". This conclusion was based on submissions by various New Zealand groups who used the apples-with-carrots approach.
- This analysis is not saying that there is not an issue to address. There is, but exaggerations and misleading claims are not helpful for productive public and political debate.

"There is no child poverty in New Zealand"

- Those who make the claim are usually referring to the extreme destitution of some children in "third-world" countries. Reference is made to distended bellies, flies crawling around large sad eyes, no clean water, no good sanitation and so on.
- The "p" word is awkward, not only because of the complexity of the notion and the fact that different people have different perspectives on its meaning and its causes, but also because whenever and however it is used it is describing an unacceptable state-of-affairs which demands a remedy. However, no semantic niceties can change the reality that there are children in New Zealand who are going without the very basics, without items and experiences that virtually everyone would say that all children should have and none should be deprived of in New Zealand in 2017. This is shown in the NIMs report and in the summary in the Overview (pp35-36). Some individual items tell the same story. For example:
  - ~ 8% of all children (90,000) live in households where the respondent reports that they put up with feeling cold "a lot" to keep costs down.
  - ~ 6% of all children (70,000) live in households which had to use foodbanks and the like "more than once in the last 12 months"
  - ~ 4-5% of 6-17 year olds (35-40,000) do not have fresh fruit or vegetables each day "because of the cost", and the bulk of these children are in households with multiple other deprivations.
  - ~ 8% of households with 6-17 year olds do not have two pair of shoes in good condition, suitable for daily activities, for each child.

"*(Income) poverty is relative, so no country can ever eliminate poverty"*

- The assertion is based on the view that there will always be a group of households with incomes that are low relative to those in the middle. By definition, therefore, "the poor will always be with us".
- It misses the point that the incomes of the poor can be raised without raising the level of the median. This is what happened when the WFF package was rolled out from 2004 to 2007, and is what the Family Incomes package, announced in the 2017 Budget, will do. The shape of the income distribution at the lower end is not fixed in stone – it can be changed without changing the median or with only a small change in the median.
- Another version of this misunderstanding is the claim that when low-income households have more income transferred to them in an attempt to reduce income poverty, the process is at least partially self-defeating, as this action raises the mean and therefore also raises a poverty line set as a % of the mean (unless there's a perfectly matching income reduction for those above the mean). The misunderstanding here is that poverty lines are only very rarely set as a % of the mean these days: the median is used as the reference for the middle and raising the incomes of low-income households has no impact on the median.

What the reports do say

The graphs and tables that follow give the key trends, current levels and composition information on child poverty and material hardship.

International comparisons

Type of measure	Threshold		NZ (%)	EU or OECD median (%)	Comment
Material hardship EU-13	'standard'	0-17	18	16	International comparisons using material hardship indices are more robust than income-based comparisons such as the BHC % of median measures noted below. They compare real-life circumstances of access to the basics using the same standard for each country
		Popln	11	13	
	'severe'	0-17	8	7	
		Popln	4	5	
BHC income	50% of median (OECD)	0-17	13	11	International comparisons using income measures compare how citizens are faring relative to national standards, not a common international standard as the hardship measures do. They are essentially about the different levels of inequality in the lower half of the income distributions – these are important statistics but they do not tell us how people are actually faring on the ground.
		Popln	10	10	
	60% of median (EU)	0-17	20	20	
		Popln	18	17	

UK comparisons for low AHC incomes (2014-15)

Type of measure	Threshold		NZ	UK	Comment
AHC income	40% of median	0-17	12	-	There are very few countries that publish AHC trends. The UK is one that does. The UK AHC figures for the 50% and 60% lines are very similar to those in New Zealand. As for New Zealand, there has not been much change in AHC relative rates in the last decade.
		Popln	10	-	
	50% of median	0-17	20	19	
		Popln	15	14	
	60% of median	0-17	28	29	
		Popln	21	21	

Trends in AHC low income (poverty) rates, material hardship rates, and rates for those in households with low income and experiencing material hardship

Figure F.4
Proportion of children below selected thresholds (AHC): fixed line (CV) and moving line (REL) approaches compared

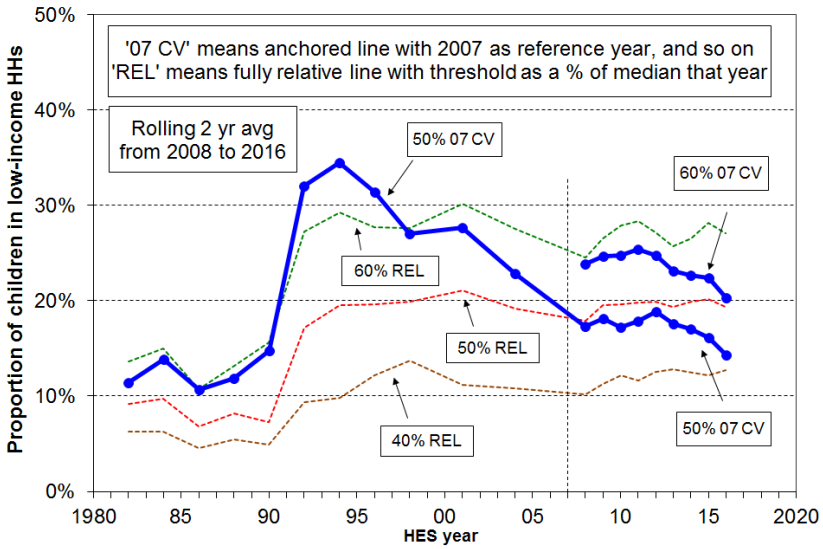


Figure G.2 (from companion NIMs report)
Material hardship trends for different thresholds (0-17yrs)

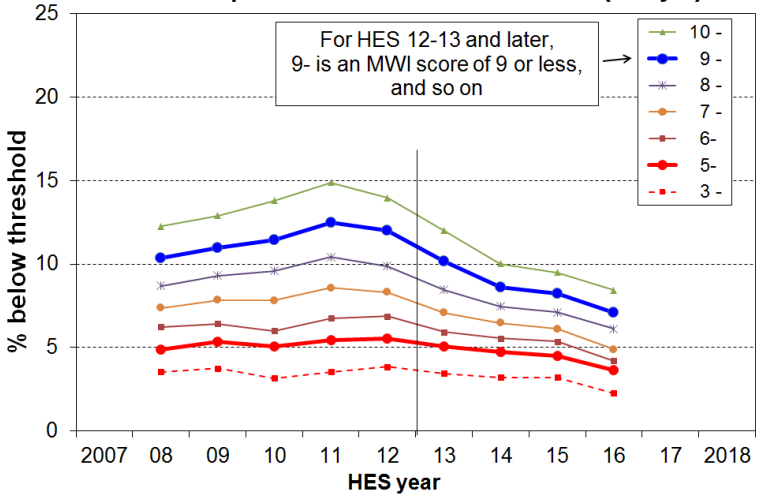
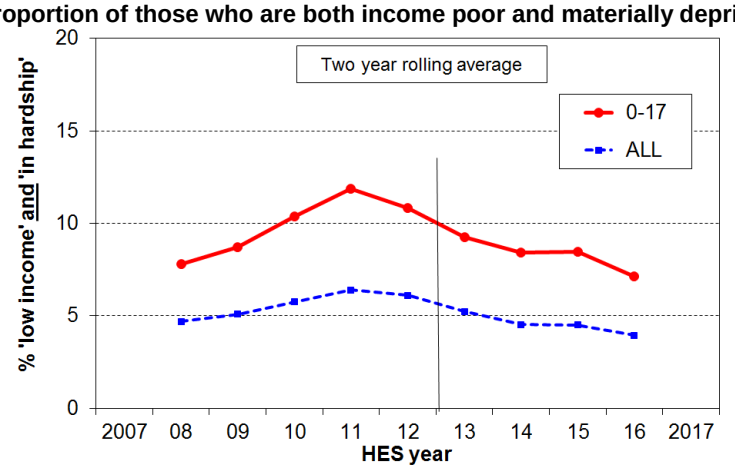


Figure G.6 (from companion NIMs report)
Trends in the proportion of those who are both income poor and materially deprived, 2007 to 2016



How many poor children are there in New Zealand?

(ie How many children live in households with incomes below selected thresholds?)

Low income (poverty) rates for children in New Zealand: rolling two-year averages from 2008 (ie the proportion of children in households with incomes below the selected thresholds)

	BHC			AHC				
	BHC 'anchored line (2007)'	BHC 'moving line'		AHC 'moving line'			AHC 'anchored line (2007)'	
HES year	50% (07 ref)	50%	60%	40%	50%	60%	50% (07 ref)	60% (07 ref)
2001	22	12	24	11	21	30	28	37
2004	17	14	26	11	19	28	23	31
2008	12	13	20	10	18	25	17	24
2009	11	12	21	11	20	27	18	25
2010	10	13	22	12	20	28	17	25
2011	11	14	23	12	20	28	18	25
2012	11	13	22	13	20	27	19	25
2013	10	12	21	13	19	26	18	23
2014	-	13	22	-	20	27	17	23
2015	9	14	22	12	20	28	16	22
2016	7	13	20	13	19	27	14	20

Numbers of poor children in New Zealand: rolling two-year averages from 2008 (ie the number of children in households with incomes below the selected thresholds)

	BHC			AHC				
	BHC 'anchored line (2007)'	BHC 'moving line'		AHC 'moving line'			AHC 'anchored line (2007)'	
HES year	50% (07 ref)	50%	60%	40%	50%	60%	50% (07 ref)	60% (07 ref)
2001	225,000	120,000	250,000	115,000	215,000	310,000	285,000	380,000
2004	175,000	150,000	265,000	115,000	200,000	285,000	240,000	320,000
2008	130,000	135,000	210,000	105,000	190,000	260,000	180,000	250,000
2009	115,000	130,000	225,000	120,000	210,000	285,000	195,000	265,000
2010	105,000	135,000	240,000	130,000	210,000	295,000	185,000	265,000
2011	120,000	145,000	245,000	125,000	210,000	305,000	190,000	270,000
2012	115,000	135,000	230,000	130,000	210,000	285,000	200,000	260,000
2013	105,000	125,000	220,000	135,000	205,000	275,000	185,000	245,000
2014	-	135,000	230,000	-	210,000	280,000	180,000	240,000
2015	90,000	145,000	235,000	130,000	215,000	300,000	170,000	240,000
2016	75,000	140,000	215,000	140,000	210,000	290,000	155,000	220,000

Note: 40% of median AHC income poverty figures and 50% of median BHC figures are not reported for HES 2014 because of data issues for some beneficiary incomes – see Section A for details.

'anchored line':

- this is the line set at a chosen level in a reference year (now 2007), and held fixed in real terms (CPI adjusted)
- the concept of 'reduced poverty' here is that the incomes of low-income households have risen in real terms compared with what they were previously, irrespective of what is happening to incomes at the median or elsewhere

'moving line':

- this is the fully relative line that moves when the median moves (eg if median rises, the poverty line rises and reported poverty rates increase even if low incomes stay the same)
- the concept of 'reduced poverty' here is that the incomes of low-income households have moved closer to the median, whether or not they actually rise or fall in real terms.

How many children are there in households experiencing material hardship?

(ie How many children live in households with deprivation scores below selected thresholds?)

Material hardship rates (%) and numbers for children: rolling two-year averages

HES year	MSD less severe threshold ≡ EU 'standard' threshold		MSD more severe threshold ≡ EU 'severe' threshold	
	rate (%)	numbers	rate (%)	numbers
2008	16	170,000	8	80,000
2009	16	180,000	9	95,000
2010	18	190,000	9	95,000
2011	20	220,000	9	100,000
2012	19	200,000	9	95,000
2013	16	175,000	9	95,000
2014	15	155,000	8	90,000
2015	14	155,000	8	85,000
2016	12	135,000	6	70,000

- The less severe threshold uses an MWI score of 9 or less (this is equivalent to a DEP-17 score of 7+/17). The more severe threshold uses an MWI score of 5 or less, (equivalent to 9+/17 for DEP-17).
- Note that for the MWI a lower score means lower living standards (higher deprivation), whereas for DEP-17 a higher score means higher deprivation.

Children from income-poor households: composition by their ethnicity and by selected household characteristics

Table H.8 brings together in one place the poverty rate and composition information from earlier pages in Section H. The shaded column shows the proportion of poor children in the various sub-groups. Some sub-groups have high poverty rates but if there is a relatively small proportion of children in that sub-group overall, then the proportion of poor children coming from that sub-group is much lower than their poverty rate would suggest (and vice versa). For example:

- the poverty rate for children in sole-parent families living on their own is high at 69%, but only 45% of all poor children come from such families
- on the other hand, the poverty rate for children in two-parent families is much lower at 15%, yet 47% of poor children come from these families
- this difference arises from the fact that there are many more children in two-parent families than in sole-parent families living on their own (76% and 16% respectively).

Table H.8
Poverty rates and composition for children by their ethnicity and by characteristics of their households, based on the 60% of median CV (fixed line) AHC measure: average over last three surveys, HES 2011 to HES 2013

Dependent children (0-17 yrs): 1,060,000	Children in income-poor households		All children
	What % of this category are poor?	What % of poor children are in this category?	What % of all children are in this category?
	Poverty rate (%)	Composition of the poor (%)	Approximate composition for all children (%)
Household type			
Sole parent HH	64	47	18
Two parent HH	15	44	69
Multi-adult family HH	16	8	12
Family type			
Sole parent families	53	53	24
- in SP family on own	*69*	*45*	*16*
- within a wider HH	*23*	*8*	*8*
Two parent families	15	47	76
# of children in the household			
1 or 2	21	55	63
3+	29	45	37
Ethnicity			
Maori	34	34	24
Pacific	34	13	10
Other	27	14	12
Euro/Pakeha	17	38	54
Highest household educational qualification			
No formal qualification	55	15	7
School qualification only	35	38	25
Post-school non-degree	21	33	38
Degree or post-graduate	12	14	30
Main source of income for HH			
Benefit	75	63	22
Market	12	37	78
Tenure			
HNZC	54	19	9
Private rental	38	53	33
Own home	12	28	59
Children overall	23	100	100

Table D.9 (from companion NIMs report)
Hardship rates and composition for different family and personal characteristics, by different levels of hardship (using DEP-17): children (0-17yrs)

LSS 2008	Hardship rates					Composition					
	what % of this group of children are in hardship, using the different thresholds?					what % of all children in hardship (using a given threshold) are in this group / cell?					Over-all
	6+	**7+**	**8+**	**9+**	**11+**	**6+**	**7+**	**8+**	**9+**	**11+**	
All children (0-17 yrs)											
Hardship rates for children	21	17	13	10	6	-	-	-	-	-	
Children as % of all people in hardship	-	-	-	-	-	39	41	42	47	48	26
Family type											
Sole parent	46	40	32	27	16	48	53	58	65	70	25
Two parent	17	12	8	5	2	52	47	42	35	30	75
Main income source for parent(s)											
Benefit (no movement off or onto benefit)	61	52	43	35	20	40	44	48	54	55	16
Some movement	42	35	29	23	13	10	10	11	12	12	5
Paid work (no main benefit income)	15	11	7	5	2	50	46	41	35	33	79
Number of children in household											
1	22	17	13	9	4	22	21	21	21	16	23
2	20	15	12	8	4	34	34	32	32	31	40
3	25	20	16	11	7	23	24	25	24	28	22
4+	35	28	21	16	10	22	22	22	23	25	15
Ethnicity (total)											
European	18	14	10	8	3	42	41	37	35	33	59
Maori	39	33	27	19	11	29	31	33	33	33	19
Pacific	51	43	36	30	19	20	22	24	28	31	10
Other	19	12	8	4	3	9	7	7	6	5	12
Tenure of the household											
Owned, FT, or Other - with payments	15	10	8	5	3	33	28	27	25	24	51
Owned, FT, or Other - no payments	4	4	3	1	1	2	3	3	1	1	13
Private landlord	36	29	23	17	8	42	45	46	47	39	28
Housing New Zealand	70	61	46	36	26	22	25	24	26	37	8

FT = Family Trust

Section I
Income trends for older New Zealanders

Older New Zealanders (aged 65+) currently make up 14% of the population (650,000). By 2028 this proportion is expected to be close to 20% (1.04m).

This section:

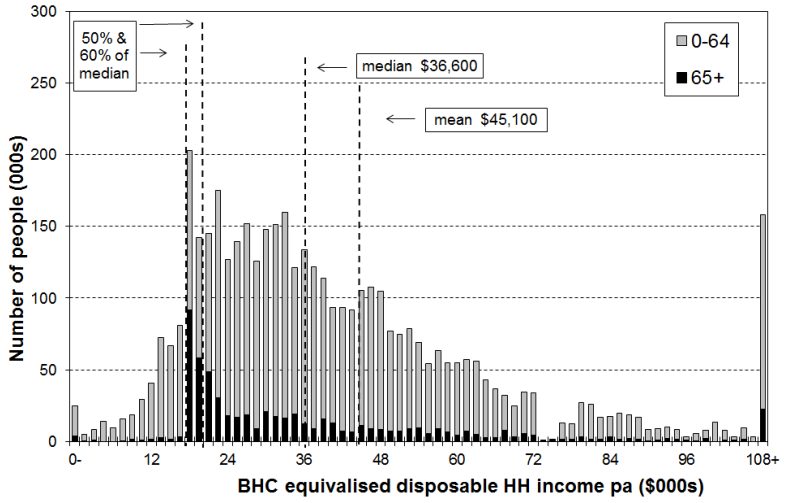
- describes the distribution of incomes for older New Zealanders relative to the rest of the population, noting the 'pensioner spike' in the BHC income distribution
- notes the significant sensitivity of reported poverty rates to the choice of BHC poverty line for older New Zealanders (because of the 'pensioner spike'), and outlines what can be done about this to ensure that trends in reported poverty rates more realistically reflect changes in the relative material wellbeing of older New Zealanders
- compares the value of NZS to average wages and median household incomes
- reports on trends in the relative contributions of state income support (government transfers), employment income, and other private income to the incomes of older New Zealanders.[86]

The BHC incomes of older New Zealanders

Figure I.1 shows the distribution of equivalised household disposable income for individuals. Individuals are grouped by their household incomes in multiples of $1500 pa ($30 pw). The graph clearly shows the 'pensioner spike' at close to the 50% of median poverty line, and also the high proportion with incomes between 50% and 60% of the median (~28%).

The spike is a direct consequence of (a) New Zealand having a universal New Zealand Superannuation (NZS) that is neither income nor asset tested, and (b) there being a large proportion of older New Zealanders with very little other income over and above NZS.

Figure I.1
BHC household income distribution for older New Zealanders relative the rest of population, HES 2015



[86] The material wellbeing of older New Zealanders is determined by more than just their incomes. Physical and financial assets are important too, as are special demands on the budget such as high health-related or debt-servicing costs. These issues are discussed in the Introduction (Section A). See especially **Figure A.1** and the associated analysis and discussion on the different picture presented depending on the measure of wellbeing used: BHC incomes, AHC incomes or the MWI. Nevertheless, income does matter, and in line with the focus of this Incomes Report, this section reports only on the incomes of older New Zealanders. The international section (Section J) has further relevant material. See too the companion report using Non-Income Measures (the NIMs report).

NZS relative to average earnings and median household income

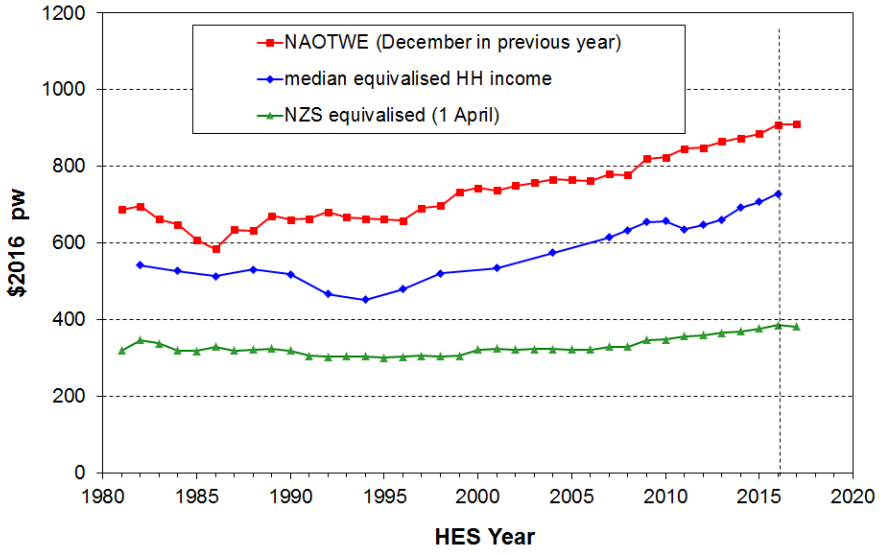
For a very large proportion of older New Zealanders, NZS provides the bulk of their income. In assessing the relative material wellbeing of older New Zealanders it is therefore useful to know how NZS tracks:

- in real terms
- relative to average wages
- relative to median household incomes.

In these comparisons, NZS is the equivalised NZS which puts couple and single living alone rates at the same equivalised dollar value.[87] Average earnings are net average ordinary time weekly earnings (NAOTWE), and median incomes are median equivalised household disposable incomes. Average earnings are just one factor impacting on household incomes. Another major factor is the total number of hours of paid employment being worked by households. These hours have been increasing, so household incomes have risen more rapidly than average wages (since c1994). The October 2008 and 2010 tax cuts also increased net average wages and after-tax household incomes, though the GFC put a (temporary) halt to the steady rise in the median.

Figure I.2 shows that the value of NZS (and its predecessors) remained reasonably steady in real terms from the mid 1980s through to 2007, whereas there were considerable movements in average earnings and median household incomes in the period. From 2007 to 2016 NZS rose by 16% in real terms, as a result of the rising NAOTWE.

Figure I.2
Trends in average earnings, median household incomes and NZS (in $2016)



[87] For older New Zealanders living alone, NZS is paid at 65% of the married couple rate. The equivalence ratio for a one-person household relative to a couple household is 0.65 (for the equivalences usually used in this report). This means that equivalised household income is the same for older (65+) one person and couple households where there is little or no other income over and above NZS.

Figure I.3 reformats the information in Figure I.2 to show the trends in NZS relative to average earnings and median household income.

In 2015, the NZS married couple rate was close to the 66% floor relative to average earnings, as shown in the upper trend line in Figure I.3.[88]

NZS has declined in value relative to median household incomes since the mid 1990s. This is because median household income has risen steadily in real terms, while the real value of NZS did not change greatly in real terms from the mid 1980s through to 2007. The "RJS-all" row in **Table I.1** gives the figures behind the lower trend line in Figure I.3. When the 1988 Jensen equivalence scale is used (RJS in the table) the married couple (MC) and single living alone (SLA) NZS rates have the same dollar value. When the "square root" equivalence scale is used (as the OECD does) the two rates are different when equivalised – hence the need for two OECD rows in the table.

Figure I.3
NZS relative to average earnings and median household incomes

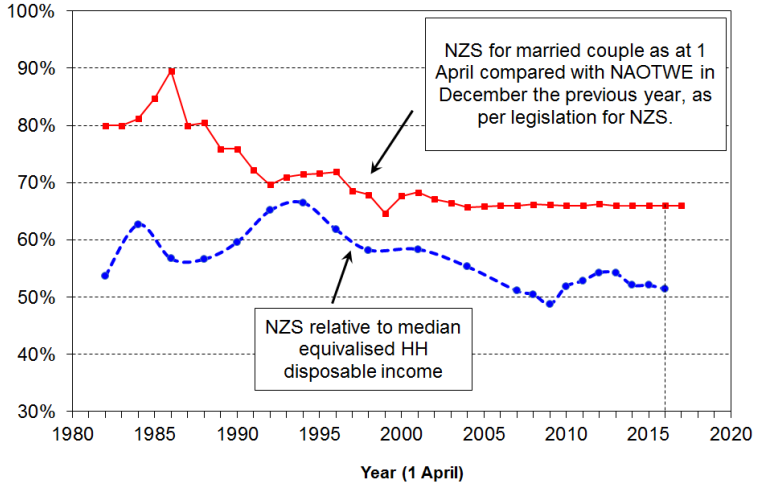


Table I.1
NZS relative to the median equivalised BHC household income median (%), using both the 1988 Jensen equivalence scale (RJS) and the square root scale as used by the OECD

	84	86	88	90	92	94	96	98	01	04	07	08	09	10	11	12	13	14	15	16
RJS - all	63	57	57	60	65	67	62	58	58	56	52	51	49	52	53	54	54	52	52	51
OECD - MC	-	-	56	60	65	66	62	59	57	55	50	50	49	51	52	53	54	52	52	51
OECD -SLA	-	-	52	55	61	61	57	54	53	50	46	46	45	47	48	49	49	47	47	47

Note 1: NZS is updated on 1 April each year, and sometimes on 1 October also if there have been tax changes. The HES interviews are carried out from 1 July to 30 June. For Figure I.3 and Table I.1, the NZS in year 'n' is compared with the HES median for year 'n to n+1'. For example, the 1 April 2009 NZS is compared with the median for the 2009-10 HES. This is a reasonable approximation, but note that the actual NZS amount received over the 12 months prior to interview depends on the actual interview date for each household. The trend of NZS relative to the household median income in Figure I.3 and Table I.1 is robust for a 'stylised fact', but not for the precise micro detail for all older households.

[88] The net weekly rates of NZS/VP must by law be adjusted on 1 April each year, in line with any annual percentage increase in the Consumers Price Index (CPI) for the year ending the previous 31 December. After this adjustment, the after-tax weekly amount of NZS/VP payable to a married couple (where both qualify) must be at least 65 per cent of the average wage after tax (NAOTWE), but cannot be greater than 72.5 per cent of the average wage after tax. It is current Government policy to ensure that the after-tax married couple rate is maintained at a minimum of 66 per cent of the average wage after tax. If the after-tax married couple rate after the CPI adjustment is less than 66 per cent of the average wage after tax, a further adjustment is made to bring the rate up to this level. Following the price and wage adjustment, the single sharing and living alone rates are set at:

- a lower rate of 60 per cent of the married couple rate for single people sharing accommodation
- a higher rate of 65 per cent of the married couple rate for single people who are living alone.

Sensitivity of reported BHC poverty rates to the choice of poverty line

Table I.2 shows the proportion of older New Zealanders (65+) in households with incomes under two commonly used "poverty lines". The top line uses the "square root" equivalence scale and a 50% of median threshold to ensure consistency with OECD publications. The second line also uses a 50% of median threshold but adjusts household incomes with the Revised Jensen scale as in the rest of the report.

Using the 50% of median measure (OECD), the poverty rate was close to zero for the whole period 1984 to 2001. This was because the value of NZS was (well) above 50% of the median. By 2007 the value of NZS for those living alone had fallen below the 50% threshold (see Table I.1 above), and the 50% of median "poverty" rate had risen to 18%, and 19% in 2009. It remains at ~13% on average over the last three surveys (2014-2016), reflecting the fact that the SLA rate was still below the 50% threshold when using the square root equivalence scale. Using a 46% of median threshold, the 2014-2016 rate is close to zero (2%).

Using a 60% threshold (and the Jensen scale) the poverty rates fell from 25% in 1988 to close to zero in the mid 1990s when the median fell in real terms and NZS was above the 60% threshold. By 2004, the rising median had led to 37% of older New Zealanders being classed as 'in poverty' on this measure and has remained high since (35% on average over 2014-2016).

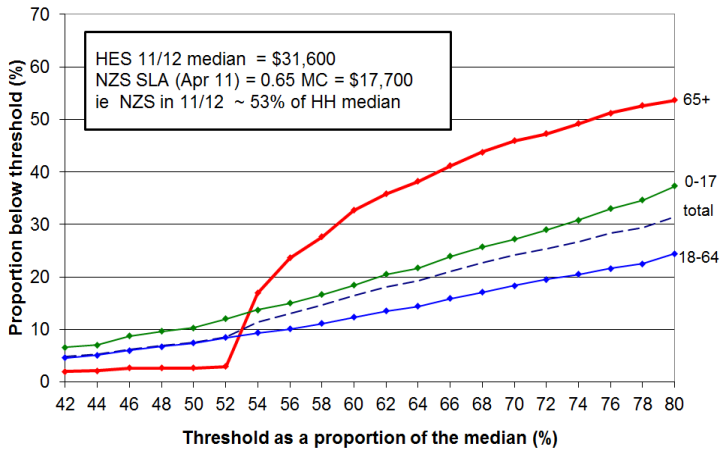
Table I.2
Proportion of older New Zealanders (65+) in households with BHC incomes below low-income thresholds ('poverty lines'), set at 50% and 60% of the median in the survey year (%)

	84	86	88	90	92	94	96	98	01	04	07	08	09	10	11	12	13	14	15	16
50% OECD equiv	2	2	8	2	1	1	1	3	2	9	18	14	19	13	10	9	10	15	11	15
50% NZ equiv	1	1	1	1	1	1	1	2	2	3	8	4	9	5	3	2	4	3	3	4
60% NZ equiv	14	17	25	20	3	1	3	25	20	37	38	38	35	34	30	31	29	37	32	36

The large variations in reported poverty rates for the 65+ group (using BHC incomes) can leave the misleading impression that there are significant changes in material wellbeing occurring for this group, when in fact there is very little change occurring.

The pensioner spike in the income distribution noted in Figure I.1 and elsewhere has implications for reporting on income poverty for the 65+ and for comparisons of subgroups within the population as a whole. **Figure I.4** illustrates the issue using HES 2012 data, showing the sudden rise in reported poverty rates for the 65+ just above 50% of the median which is the level of NZS for the survey period. Poverty rates for the 65+ are close to zero when a 50% threshold is used, but 31% using a 60% threshold (using the Revised Jensen equivalence scale). Other age groups have a much steadier increase in reported poverty rates as the threshold rises.

Figure I.4
Sensitivity of income poverty rates for the 65+ to the threshold used: BHC incomes, 2012



Using incomes after deducting housing costs (AHC incomes) to give more stable and reliable results

There are good grounds for using AHC incomes to compare subgroups, irrespective of the pensioner spike. These are discussed in Appendix 5 and in the Introduction. The pensioner spike for BHC incomes provides another rationale.

The AHC distribution still has some strong bunching but the pensioner spike is not as sharp. Furthermore, what remains of the spike is mainly above the 60% of median threshold for AHC incomes. Small shifts in the median or the threshold do not therefore have the same disproportionate and misleading effects on (trends in) poverty rates for the 65+ as they do when using BHC incomes. This is shown for 2012 in **Figure I.5** below.

Figure I.5
Sensitivity of income poverty rates for the 65+ to the threshold used: AHC incomes, 2012

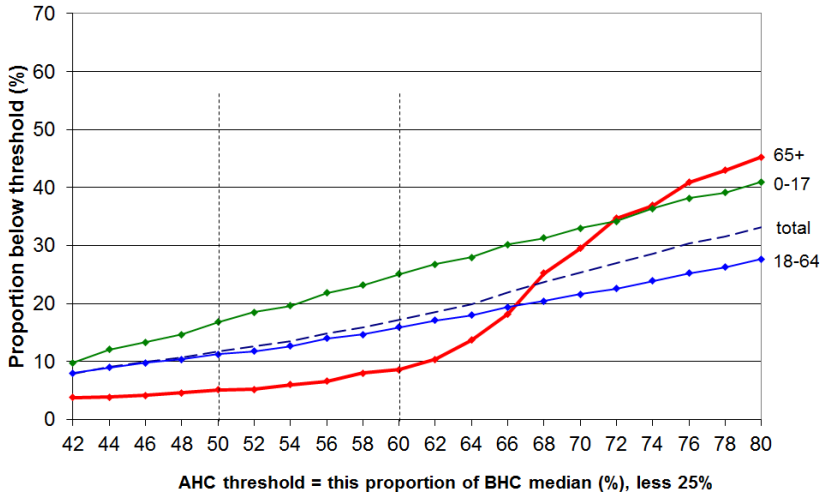


Figure I.6 below repeats Figure I.1 but for AHC incomes. Individuals are grouped by their household AHC incomes in multiples of $1500 pa ($30 pw). The graph shows how the BHC 'pensioner spike' at close to the 50% of median poverty line has moved up to above the 60% AHC threshold and has been flattened / dispersed a little.

Figure I.6
AHC household income distribution for older New Zealanders relative the rest of population, HES 2015

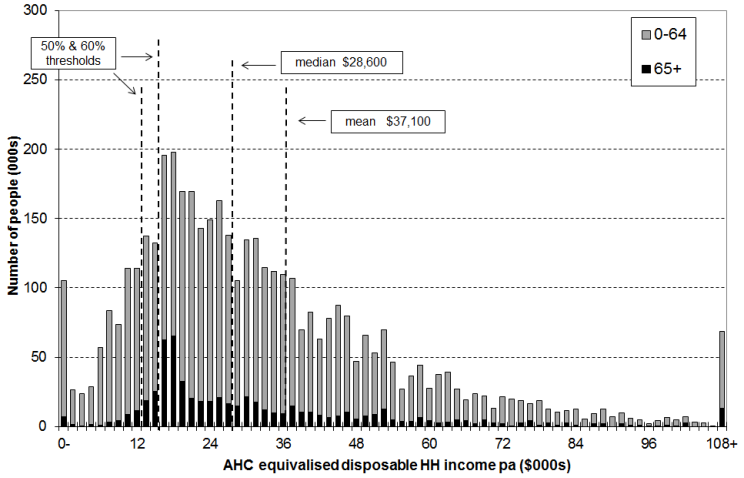


Table I.3A shows that the proportion of older New Zealanders below the 50% anchored line AHC threshold (CV-2007) has remained consistently lower than the population as a whole and reasonably low in its own right from 1982 to 2016. Those living on their own generally have higher proportions below the threshold than do those in couple households. **Table I.3B** shows the rates using the higher 60% of median AHC anchored line measure from 2007 to 2015. From 2011 to 2016 the rates have stabilised as the threshold moved down a little from the AHC clump just above the 60% line (see Figure I.6).

There is very little difference in poverty rates (ie low-income rates) for females and males.

Table I.3A
Proportions of older New Zealanders (aged 65+) in low-income households, by HH type: AHC CV-07 50% of median measure

	82	84	86	88	90	92	94	96	98	01	04	07	09	10	11	12	13	14	15	16
All 65+	3	2	4	5	6	6	7	7	8	7	6	7	5	5	5	5	3	4	4	5
Single 65+	5	3	9	12	13	10	13	11	14	9	14	10	9	10	8	8	5	4	7	7
Couple 65+	1	1	2	2	3	4	5	6	5	8	3	6	3	2	4	4	3	4	3	3
Total popln	8	9	8	9	10	20	22	21	18	18	17	12	12	12	14	12	12	13	11	11

Table I.3B
Proportions of older New Zealanders (aged 65+) in low-income households, by HH type: AHC CV-07 60% of median measure

	07	09	10	11	12	13	14	15	16
All 65+	14	9	10	9	10	8	9	8	9
Single 65+	23	16	23	14	13	12	14	14	15
Couple 65+	10	5	5	7	9	7	6	5	5
Total popln	18	17	18	19	17	16	17	16	14

See also Table G.3 for further information on income poverty trends for older New Zealanders using other AHC measures.

Sources of income for older New Zealanders

This section reports on the sources of income for older New Zealanders using a three-way division:

- government transfers - New Zealand Superannuation (NZS), Veterans Pension (VP) and other state support such as the Disability Allowance (DA) and the Accommodation Supplement (AS)
- income from employment and self-employment
- other private income from private superannuation and other investments.

NZS and VP make up around 98% of government transfers for older New Zealanders as a group. Around 6% receive the AS, and 18% the DA.[89]

For this subsection, older New Zealanders are taken to be those in the survey[90] aged 66 and over. Those aged 65 are not considered as almost all of them will have received NZS for only a part of the 12 months prior to interview.

All the surveyed 66+ can be classed as belonging to one of two economic family unit (EFU) types: couple EFU with at least one partner aged 66 or more, or one person EFU with the person aged 66 or more.[91] The analysis is at times kept separate for couple and one person EFUs as there are quite significant differences between the two groups regarding the amounts they receive from non-government sources.

In looking at the sources of income for older New Zealanders, the 66+ EFUs are ranked on their equivalised gross income and put into deciles for comparison. (These are not the deciles based on a ranking of the whole population.) Older New Zealanders are clustered more strongly in the lower four deciles of the population income distribution (35% were in the lower two deciles in 2012).

There are usually around 700 66+ EFUs in the sample. As the findings focus on stable patterns and clear trends rather than on smaller year on year changes, a sample of this size is adequate.

Summary of findings regarding the sources of income for older New Zealanders

- The great majority of older New Zealanders (aged 66+) are very dependent on NZS and other government transfers for their income
  - 40% have less than $100 pw from other sources, 40% of singles have no other income
  - the next 20% have on average around 70% of their income from NZS and other government transfers
  - those in couple EFUs generally have higher per capita non-government income than do those in single person EFUs.
- Around 40% of older New Zealanders receive more than half their income from sources other than NZS or VP
  - this group has grown in size in recent years (15% in 1998, 30% in 2009), mainly due to increasing non-government income for those in 'younger' couple EFUs (aged 66-75), and especially higher income from employment

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89 5% receive neither NZS/VP nor any other main social security benefit nor any other form of government financial support such as ACC or Student Allowance.

90 The HES gathers information on those in private dwellings. This means that older New Zealanders in residential care are not included in the survey findings.

91 In all other places this report uses the household as the income sharing unit, as the focus is usually on (household) income as an indicator of material wellbeing. This subsection has a different focus – the sources of income for older New Zealanders – and it uses the EFU as the income sharing unit rather than the household, as the EFU is better suited for the task. Some older New Zealanders live in wider households and share in and/or contribute to the overall standard of living of the household, sometimes having their living standards raised by the participation and sometimes having them lowered (eg where the rest of the household contributes little other income). Using the EFU enables the analysis to look just at the 66+ units to report their income sources, distinct from the incomes of the rest of the household.

Table I.4 provides more detail to support and enlarge on these summary findings. The right hand column gives the links to the relevant tables and charts that follow – these support and illustrate the summary above and the findings reported in the table. Around 98% of all government transfers to older New Zealanders come from NZS/VP. For some in lower income deciles, the extra state assistance (eg DA and AS) is significant and is more than the 2% average.

Table I.4
Summary of key findings about sources of income for older New Zealanders

2015 HES	Changes from 1989 to 2015	Ref
For the great majority, there is very high dependence on NZS …		Fig I.6
• NZS provided virtually all the income (98%) for the lower 40% (Q1 and Q2)	• there has been very little change in these proportions since 1989	Fig I.7
• NZS provided 70% of income for the next 20% (the middle quintile)	• there has been decline in this proportion since 2004, from 90% to 70%	Fig I.8
• for the next 20% (Q4), NZS provided just over 40% of the income	• this is down from the 65% to 70% that prevailed from 1989 to 1998	Fig I.6
• half reported less than $200 pw (per capita) from sources other than government transfers	• there was little change in this from 1989 to 2004 (in real terms), but recently this proportion has declined a little	Derived from Fig I.11 and I.7
• the lower 40% reported less than $100 pw (per capita) from sources other than government transfers	• there was little change in this from 1989 to 2004 (in real terms), but recently this proportion has declined a little	
… and single person EFUs are more dependent on NZS than are couple EFUs		
• 60% of all the income for single person EFUs came from government transfers, 40% for couples	• the proportion of all income coming from government transfers has declined since 1989, but the proportion for singles is always higher than for couples (eg 70% and 60% respectively in 1998, and 60% and 40% respectively in 2015)	Fig I.9
• 40% of singles report no other income, 60% report less than $100 pw – 15% & 30% for couples		
• of the 30% of older NZers reporting more than $500 pw (per capita) non-govt income, 2 in 3 were from couple EFUs and 1 in 3 from single-person EFUs		Derived from Fig I.11
For a smaller group (around 30%), income from other sources is significant and for this group the % of total household income coming from these other sources is increasing		
• other income made up more than half of total income for about 40% of all older NZers (25% of singles, 45% of couples)	• the size of this group has more than doubled since 1998 (15%), and is up on 2009 (30%)	Fig I.9 Table I.5
• for deciles 8 and 9 together, 30% of their income was from NZS	• this is down from 56% in 1998, 55% in 1989 and 46% in 2007	Fig I.6
• for 'younger' couples (aged 66-75) in deciles 5-6 of this group's income distribution, just under 60% of their income came from non-government sources	• this is up from 20% in 1998 and earlier, and more recently is driven by rising employment income for those in younger couples	Fig I.10
• for those in the top decile (mainly couples) only 14% of their income was from NZS	• this is down from 29% in 1989 and 23% in 1998	Fig I.6
Overall …		
• govt transfers made up 42% of reported income for older NZers as a group, but as the above findings indicate, this aggregate figure masks large differences across the deciles and between single person and couple EFUs	• this (42%) is down from 67% in 1989, 64% in 1998, and 57% in 2007	Fig I.6

Figure I.6
Proportion of gross income of older New Zealanders (66+) coming from government transfers (almost entirely NZS and VP)

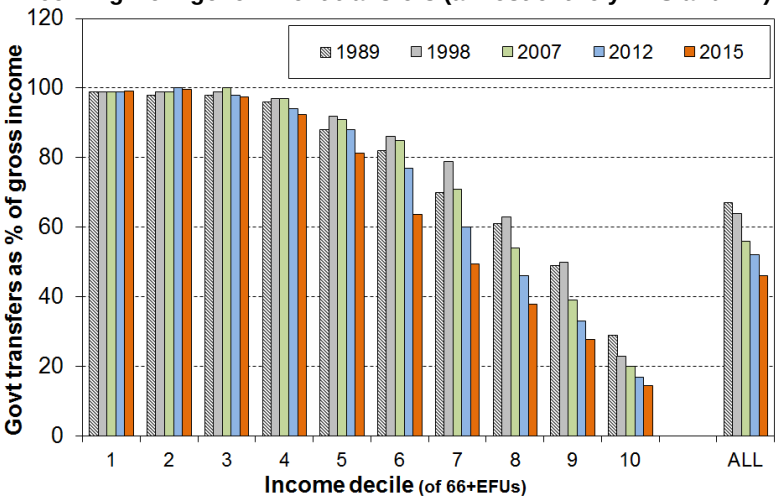


Figure I.7
Income sources for deciles 1-4, all 66+ EFUs

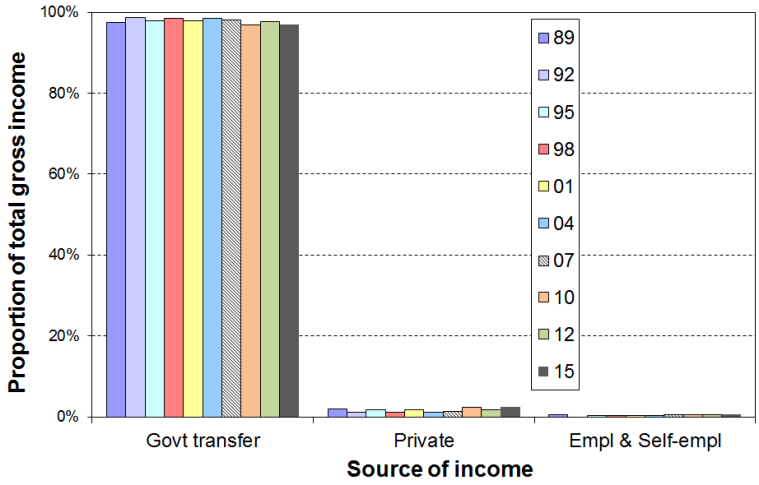


Figure I.8
Income sources for deciles 5-6, all 66+ EFUs

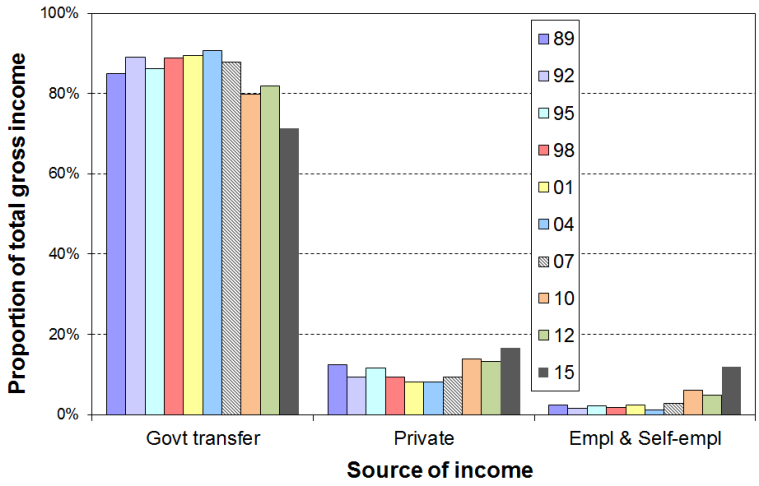


Figure I.9
Proportion of gross income coming from government transfers (almost entirely NZS and VP): one person and couple EFUs compared, HES 2015

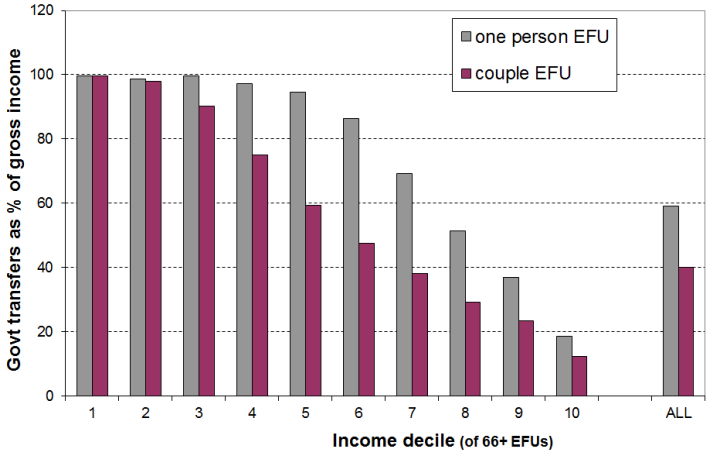


Table I.5
Proportion (%) of gross income coming from government transfers (almost entirely NZS and VP): All 65+, one person and couple EFUs, 1989 to 2015

Income decile of group	1	2	3	4	5	6	7	8	9	10	ALL
All 65+											
1989	99	98	98	96	88	82	70	61	49	29	67
1998	99	99	99	97	92	86	79	63	50	23	64
2009	99	99	99	95	87	73	57	42	33	20	53
2015	99	100	97	92	81	64	49	38	28	14	46
Single 65+											
1989	100	100	98	95	91	84	71	66	55	35	73
1998	99	98	100	99	95	90	84	70	55	27	71
2009	100	98	100	98	94	87	72	56	39	23	60
2015	100	99	100	97	95	86	69	51	37	19	59
Couple 65+											
1989	98	100	97	93	85	81	70	64	49	27	65
1998	99	100	98	93	89	79	69	57	43	19	59
2009	99	99	96	84	69	53	43	35	28	18	47
2015	100	98	90	75	59	48	38	29	23	12	40

Note: each group (all, single and couple) is ranked separately on their incomes, then divided into deciles – the deciles are therefore the selected group's deciles, not the deciles for the whole population

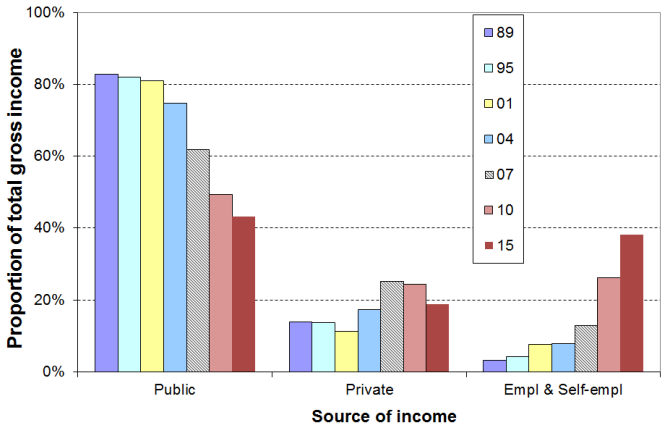
Income from employment is now a much larger component of total income for "younger" older New Zealanders (aged 66-75 yrs), especially couples

In 1989, 16% of income for couples came from employment or self-employment (on average over all couples aged 66-75). By 2001 this was at 23%, but in 2015 it was 41%.

This change is not happening across the whole distribution but is certainly evident from decile 5 and up. For example in deciles 5 and 6 (the middle of the gross income spectrum for couples) **Figure I.10** shows a strong and sustained increase in the proportion of income coming from non-government sources starting somewhere between 2001 and 2004, rising from 20% in 2001 to just under 60% in 2015. The growth in the contribution of employment income to this change is shown in the right-hand cluster of columns. Employment income for this group in 2015 made up almost the same proportion of total income as did NZS (~40%).

Investment income makes up a smaller proportion for this group in 2015 (19%) than in both 2007 and 2010 (25%), though the dollar value is about the same.

Figure I.10
Changing proportions from three sources for couples (aged 66-75) in deciles 5-6 for couples



Looking further up the income distribution (ie above the middle quintile used in Figure I.10), couples in deciles 7 to 9 also report large increases in employment income in both dollar and proportion terms. For example, in 2015 this group reports that 45% of their income comes from employment / self-employment compared with 17% in 2001 and 8% in 1989.

For the comparable group of singles there has been some increase in employment income but it is for a smaller proportion of individuals than for couples and the increase is not so marked.

there is good evidence that income inequality is increasing among the 65+ age group as indicated by the Gini trend line in **Figure I.11** below. This appears to be mainly as a result of the increasing employment income for younger couples (aged 66-75).

Figure I.11
Gini for 65+, household disposable income (BHC)

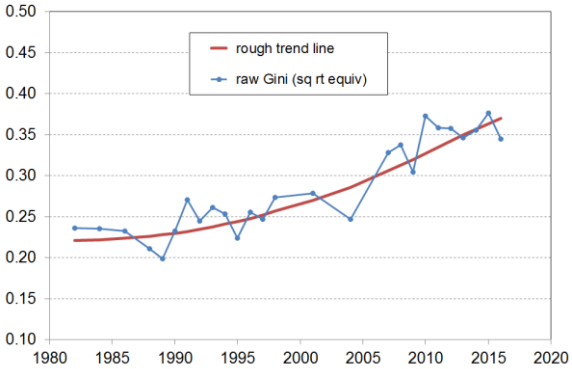


Table I.6 shows the amounts received by one person and couple EFUs (66+) from sources other than government transfers (ie from employment, self-employment, private superannuation and other investments). Each EFU type is ranked separately on their respective non-government incomes. Decile means and decile upper boundaries are given.

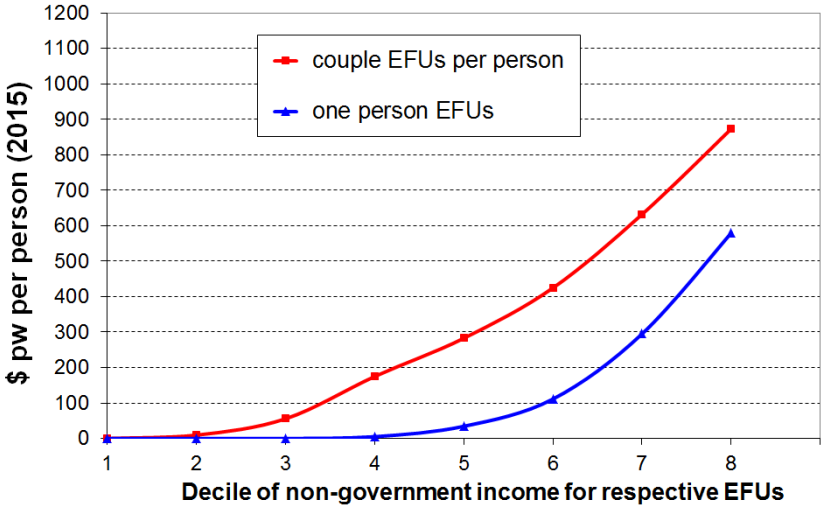
Table I.6
Amount received per week by 66+ EFUs from non-government sources by decile, HES 2015
(each EFU type is ranked separately on their respective non-government incomes)

		1	2	3	4	5	6	7	8	9	10	TOT
one person EFUs	mean	0	0	0	0	20	65	200	430	730	1700	320
	upper bndry	0	0	0	5	35	110	295	560	960	-	-
couple EFUs	mean	0	5	55	225	465	700	1030	1515	2100	4275	1040
	upper bndry	0	20	110	350	565	850	1265	1745	2475	-	-

Note: When making estimates of the number or proportion of individuals (rather than EFUs) receiving less than or more than a given amount from non-government sources, note that there are around 2.5 times as many individuals in couple EFUs than in single EFUs (ie the relative weighting is around 5:2).

Figure I.12 plots the upper boundaries from Table I.5 for deciles 1-8 and interpolates to provide a simple means of estimating proportions of older New Zealanders with non-government incomes above or below selected amounts. For couple EFUs, the Table I.6 amounts are halved to convert them to per capita amounts. The top two deciles are omitted to enable a sensible vertical scale to be used.

Figure I.12
Income from non-government sources for one person and couple EFUs (66+): weekly amounts per person, decile upper boundaries, deciles 1-8, HES 2015



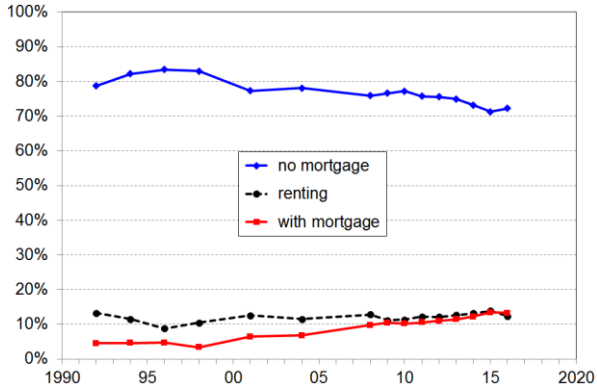
For example, for those in couple EFUs, 42% have less than $200 pw, and for one person EFUs, around 68% have less than $200 pw. There are around 150% more people in couple EFUs than in one person EFUs (5:2 ratio). The weighted average of 42% and 68% is 50%. So, in 2015, around half of older New Zealanders had income of less than $200 pw over and above government transfers. Around 40% have less than $100 per week over and above government transfers.

Tenure for older New Zealanders

Over the last two decades (1994 to 2016), the HES shows that home ownership for older New Zealanders has been steady at ~86%. Renters have been steady at ~12-13%, with 1-2% in a residual category that includes those living with others in a home that the other residents own and those boarding.

Since the mid 1990s there has however been a downward trend in the proportion of homeowners (aged 65+) whose dwellings are mortgage-free, down from 83% in the mid-1990s to 78% in the mid-2000s and to 72% on average in 2015 and 2016 (see **Figure I.13**). In the latest figures, 13% were in a dwelling for which there were still mortgage payments being made, the same proportion as those renting.

Figure I.13
Tenure for individuals aged 65+, based on HES data, 1992 to 2016, two year rolling average



The rising trend in the proportion of older New Zealanders (still) paying a mortgage is a potential concern because it increases the chances of there being more with inadequate after-housing-costs incomes. Whether this trend translates into a real-world increase in the proportion of older New Zealanders experiencing financial or material hardship depends on the characteristics of the households in question. For example, if the bulk of the increase in those with mortgages is households with higher incomes, or are households using their primary dwelling as security to raise funds for purchasing another property (eg for renting out), then there are few grounds for concern. If on the other hand the bulk of the increase is from less well-off households coming into "retirement" still paying a mortgage on the primary dwelling, then there are grounds for concern.

The version of the HES data currently held by MSD does not allow us to fully investigate the questions related to other properties, but the full HES dataset does allow this. Preliminary analysis of the full HES data by StatsNZ on MSD's behalf indicates that it is very unlikely that the increase is driven by any increase in the numbers using the primary dwelling as security for purchasing another. We expect to be able to report more fully on this in the next issue. In the meantime what we do know in relation to the issues raised is that:

- the increase is mainly for 65+ couples, not singles
- around 60% of the increase for couples from 2007-2009 to 2015-2016 is from households with at least one in full-time employment or self-employment, 40% from households with little or no income from paid employment – there is no data in the HES to tell us whether the employed group are employed because they want to be or because of economic necessity
- there is no evidence to date of any increase in the low-income trends for older New Zealanders using AHC measures
- there is no evidence to date of any rising hardship trend for older New Zealanders.

The report will continue to monitor trends and will seek further information from other sources to better understand the trend and its potential consequences, if any, for the material wellbeing of older New Zealanders.

Section J
International comparisons for low incomes and income inequality

The information for the international comparisons of income poverty (low incomes) and inequality in this section comes from three sources.

The OECD income inequality and low-income comparisons using household incomes come from information sent to the OECD by national experts based on national survey data and using common assumptions and definitions (the OECD's Income Distribution Database (IDD)). The OECD analysis for New Zealand mainly uses information supplied by Statistics New Zealand based on the 2012-13 HES, and some from earlier surveys. The latest comparisons across the OECD as a whole are available for most countries for calendar year 2012 (2012-13 surveys).[92]

The most significant difference between the OECD assumptions and definitions and those used in the rest of this report for New Zealand BHC analysis is that the OECD work uses an equivalence scale that treats children as costing the same as adults (the "square root scale"). This difference generally has only a small to modest impact on the level of various indicators at a given time, and a quite limited impact on trend analysis over time. The use of different equivalence scales can produce different directions for changes from one survey to the next when the changes are small. Long-term trends are not affected. [93]

The comparisons with the EU and other European countries draw mainly on survey-based information compiled by Eurostat for the EU and other European countries. The equivalence scale used in this source is almost identical to the Revised Jensen Scale used in this report for New Zealand analysis.[94]

The information on very high incomes based on tax records rather than sample surveys comes from the World Wealth and Income Database held by the Paris School of Economics.

The information for international comparisons of wealth inequality comes from the Luxembourg Wealth Study, the Credit Suisse Global Wealth Databook, and New Zealand Treasury analysis of the 2003-04 wave of the Statistics New Zealand's Survey of Family Income and Employment (SoFIE) dataset.

International comparisons of low incomes / income poverty

The OECD poverty / low-income indicator uses a moving line approach with a 50% of median BHC threshold. The EU poverty indicator uses a moving line 60% of median BHC threshold.

In essence, these fully relative measures provide a useful way of comparing how dispersed or compressed the income distribution is below the median on a country-by-country basis. When they are used as "poverty" measures for international league tables they are giving a comparison of the proportion of people from households that have incomes more than a defined distance from middle incomes for each country. This is consistent with a relative disadvantage notion of poverty and can be useful when looking at trends and relativities within a country, subject to the limitations discussed in Section E. They are, however, not so useful for international league tables purporting to measure "poverty".

The difficulty arises because people often (understandably) take the league tables to be about poverty understood as experiencing poor material living conditions assessed against some

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92 An updated IDD is due for release by the OECD in mid July 2017 at around the time of the printing of this Incomes report ready for release in late July.

93 See **Appendix 3** for comparisons of trends using different equivalence scales.

94 The OECD and Eurostat data used in this section is accessible on their websites.

common international standard. This is still a relative perspective, but the reference is no longer the middle incomes of a particular country, but some notion of minimum acceptable living conditions that is the same for all the (richer) countries being compared.

For example, in 2012, using the 60% of median EU measure, the Czech Republic had a poverty rate (10%) that was lower than the rates for Denmark, Sweden and France (13-14%), yet the Euro value of the poverty lines in each of the latter three countries are all above the median household income level for the Czech Republic. What this means is that the Czech Republic has less inequality in the lower half of the income distribution than the others **–** a smaller proportion more than 40% below the Czech median than other countries. The figures are often mistakenly interpreted or even portrayed as if the league table ranking means that the Czech Republic is doing better than the others for less well-off citizens against some unstated international reference level.

The EU faces this challenge even more pointedly than the OECD – for income poverty measurement, is the reference society the EU or the individual member country?[95] In contrast to the situation described above when the reference is the income levels in a single country, counting the whole EU as one notional country and taking a whole-of-EU median produces a poverty rate of 40% for the Czech Republic, 9% for France and Sweden, and 6% for Denmark (Nolan and Whelan, 2011: 61).

The issues are well illustrated in the two scatter-plots below. The charts draw on data from the OECD's 2011 *Society at a Glance* publication. **Figure J.1** shows that there is very little relationship between income poverty rates for OECD countries and the proportion who report in Gallup polls that they are finding it difficult or very difficult on their current income. On the other hand **Figure J.2** shows that there is a reasonably strong relationship between median household incomes (made comparable through the use of USD Purchasing Power Parities) and the proportion reporting income difficulties.

Figure J.1
Very weak relationship between income poverty and reported income difficulties

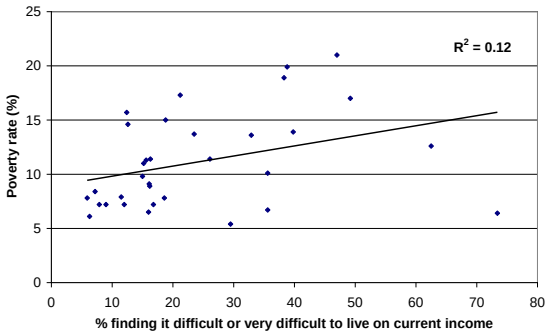
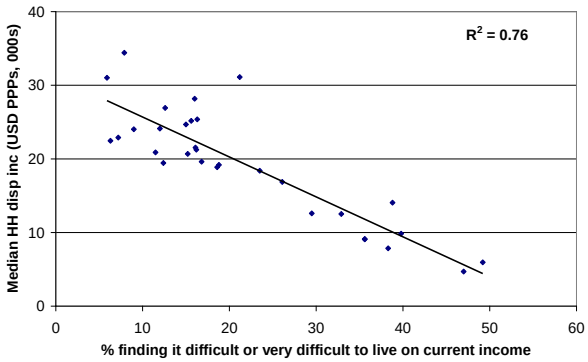


Figure J.2
Strong negative relationship between median household incomes and reported income difficulties



Note: Two outliers (Hungary and Greece) have been removed. When they are included the R^2 value drops to 0.61 – still a reasonably strong relationship.

[95] See, for example, Fahey (2007), chapter 1 in Ward and colleagues (2009), and chapter 4 in Nolan and Whelan (2011).

It appears as if respondents to the Gallup polls have in mind some notion of an internationally comparable minimum standard of living when they give their answers. In contrast, income poverty rates use the median income levels within countries as the benchmarks. The problem arises when people (understandably) interpret the international income poverty league tables as if they were using a common cross-country standard and give an indication of 'income difficulties'.

International comparisons using non-income measures

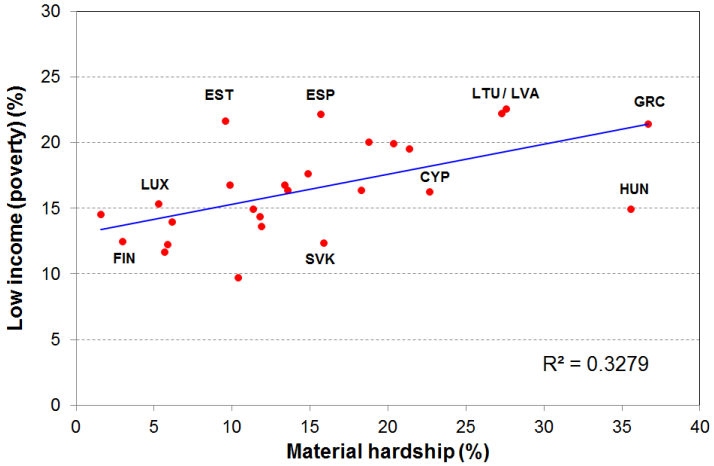
Partly in response to these concerns, the EU developed and adopted a 9-item deprivation index based on non-income measures (NIMs) as one of its primary social inclusion indicators. The OECD is also taking steps to develop international comparisons of material hardship based on NIMs, but progress is limited to date.[96] Although the use of NIMs also has its challenges and limitations, it provides another useful perspective to set alongside the comparisons based on income.

MSD's 2008 Living Standards Survey has items in it that allow comparisons of material deprivation with EU countries using an improved (and, at the time, unofficial) 13-item index (EU-13). A summary of findings from this research is included in the 2017 companion report using NIMs.[97]

In May 2017, the EU formally adopted the 13-item deprivation index (EU-13) as its official measure of social and material deprivation. Starting with the 2015-16 survey the HES collects the information needed to create the EU-13 index. When the EU publishes its full range of official and updated figures based on EU-13, the NIMs report will be able to update information on New Zealand's position relative to EU countries, hopefully in the next report.

In the meantime, EU deprivation rates using EU-13 are available for the whole population for 2015. **Figure J.3** uses that information, together with the published low-income rates to further examine the theme of the last two pages – namely, that ranking countries by relative-to-the-median low-income rates and calling it a poverty league table is misleading as such a ranking does not correspond to a ranking by actual living conditions, which is how many / most people hear it. Figure J.3 shows, for example, that Finland and Slovakia have very similar poverty rates (12%), but very different material hardship rates. The same applies for Luxembourg and Hungary, and the group at around 22-23% 'poverty' rates. These and similar findings raise serious questions about the credibility of the common practice of using a relative income approach for international comparisons of "poverty".

Figure J.3
Relatively weak relationship between low-income rates and material hardship rates for the EU, 2015



Sources: Low income rates are from http://ec.europa.eu/eurostat/data/database , and the hardship rates from the Luxembourg Institute for Socio-Economic Research https://www.liser.lu/?type=news&id=1426

[96] See Boarini and Mira d'Ercole (2006), and OECD (2008).

[97] See also Perry (2009), Section D, pp29ff.

Cautions when making comparisons between poverty figures across countries: summary

International league tables such as those produced by the OECD, Eurostat and UNICEF have a popular appeal, but need to be treated with considerable caution for several reasons:

- those identified as "poor" in two countries which have the same or similar reported income poverty rates may have quite different actual day-to-day living standards (as shown and discussed above)
- poverty rates for countries can bunch together, and small differences in rates can mean very large differences in rankings – comparison with the median or average rate for selected countries is therefore often more useful than the ranking itself for assessing or summarising relative performance
- some countries' reported rates can change significantly from year to year on a moving line (REL) approach, thus making the choice of comparison years crucial when reporting rankings.[98]

[98] Because international league tables almost always use 'moving line' (REL) thresholds, the income poverty rate for a country whose median income is falling in real terms can show a decrease in poverty, whereas a country whose median incomes are rising through strong economic growth can show a rise in poverty, even if in both cases the incomes of those with low incomes remain much the same in real terms.

Population poverty using a 50% BHC threshold

- On the OECD 50% of median moving line (REL) measure, the average New Zealand rate through the mid 1990s (1994 to 1996) was 9%, which was at the OECD median.
- By the time of the 2013 HES (approximately calendar 2012) the rate was 10%. **Table J.1** shows that this places New Zealand at the OECD median, similar to the UK (11%) and Canada (12%), lower than Australia (14%), and well below the United States (18%). Iceland, Denmark and the Czech Republic[99] have the lowest proportion with incomes below the 50% line (5-6%).

Table J.1
Population poverty rates (%) in the OECD-34, c 2012:
50% of median threshold (BHC)

Israel	18	Austria	10
Mexico	19	**New Zealand**	**10**
Turkey	18	OECD median	10
Chile	18	Switzerland	9
United States	18	Sweden	9
Japan	16	Slovenia	9
Korea	15	Germany	8
Greece	15	Ireland	8
Australia	14	France	8
Spain	14	Norway	8
Italy	13	Netherlands	8
Portugal	13	Slovak Republic	8
Estonia	12	Luxembourg	8
Canada	12	Finland	7
United Kingdom	11	Iceland	6
Poland	10	Denmark	5
Belgium	10	Czech Republic	5
Hungary	10		

Source: OECD Income Distribution Database, accessed on 20 July 2015 at www.oecd.org/social/income-distribution-database.htm

[99] But see the Introduction to this section on the misleading nature of this finding for the Czech Republic.

Population poverty using a 60% BHC threshold

- **Table J.2** shows New Zealand's relative position among selected European countries, Canada, the United States, Mexico and Australia using a 60% BHC threshold. The New Zealand figure (18%) is based on the 2013 HES (approximately calendar 2012), and the analysis uses the same equivalence scale as the Eurostat analysis. The New Zealand rate is just slightly above the EU median.
- For comparison purposes the figures for Canada, the US, Mexico and Australia (from the OECD Income Distribution database) should be reduced by one or two percentage points as the equivalence scale used in the OECD analysis gives population poverty rates approximately that much higher than the one used in the Eurostat analysis.
- In 2004, the New Zealand rate was 21% and the EU median was 16%.

Table J.2
Population poverty rates (%) in selected European countries, Canada, the US, Mexico and Australia c 2012:
60% of median threshold (BHC)

Mexico *	28	United Kingdom	16
Turkey	27	Switzerland	16
United States *	25	Germany	16
Greece	23	Ireland	15
Romania	23	Belgium	15
Spain	22	Luxembourg	15
Australia *	21	Hungary	14
Canada *	19	France	14
Lithuania	19	Austria	14
Italy	19	Sweden	14
Latvia	19	Slovenia	14
Estonia	18	Finland	13
Portugal	18	Denmark	13
New Zealand	**18**	Slovakia	13
Poland	17	Norway	10
EU -27	17	Netherlands	10
EU-15	17	Czech Republic	10
		Iceland	8

Sources: Most of the data in the table is drawn directly from the Eurostat statistical database for 'Living Conditions and Social Protection', accessed on 22 May 2014. The rates for Canada, the US, Mexico and Australia are drawn from the OECD Income Distribution Database. The OECD uses a different equivalence scale than Eurostat, but the difference that makes for these poverty rates is small and is not enough to impact significantly on rankings (see text above).

Child poverty comparisons using a 50% BHC threshold

- On the OECD 50% of median moving line (REL) measure, the average New Zealand child poverty rate through the mid 1990s (1994 to 1996) was 13%, rising to 15% in 2004.
- By the time of the 2013 HES (approximately calendar 2012) the rate was 13%. **Table J.3** shows that this placed New Zealand a little above the median for child poverty for the 34 OECD countries (11%), very close to Australia and Canada (13-14%).
- The rate remains unchanged at 13% on average for the 2015 and 2016 HES.

Table J.3
Child poverty rates (%) in the OECD-34, c 2012:
50% of median threshold (BHC)

Turkey	26	OECD median	11
Mexico	26	France	11
Chile	26	Belgium	11
Israel	24	Netherlands	10
Spain	21	United Kingdom	10
Greece	21	Austria	10
United States	20	Ireland	9
Italy	18	Korea	9
Portugal	18	Slovenia	9
Japan	16	Switzerland	8
Slovak Republic	15	Czech Republic	8
Canada	14	Sweden	8
Australia	13	Iceland	8
New Zealand	**13**	Germany	7
Poland	13	Norway	6
Luxembourg	13	Denmark	3
Estonia	12	Finland	3

Source: OECD Income Distribution Database, accessed on 20 July 2015 at www.oecd.org/social/income-distribution-database.htm

Child poverty comparisons using a 60% BHC threshold

- **Table J.4** shows New Zealand's relative position among selected European countries, Canada, the United States, Mexico and Australia using a 60% of median moving line measure (BHC). The New Zealand figure (20%) is based on the 2013 HES (approximately calendar 2012), and the analysis uses the same equivalence scale as the Eurostat analysis. It is at the EU median.
- For comparison purposes the figures for Canada, the US, Mexico and Australia (from the LIS database) should be reduced by one or two percentage points as the equivalence scale used in the LIS analysis gives population poverty rates approximately that much higher than the one used in the Eurostat analysis.
- New Zealand's rate in the 2004 HES (calendar 2003) was 25%, above the EU 2004 average of 20%. By the time of the 2007 HES, the rate had dropped to 20%, at the EU average. This change reflects the impact of the Working for Families package in raising the incomes of many (working) families with children from the 50% to 60% of median income range to above the 60% of median threshold.

Table J.4
Child poverty rates (%) in selected European countries, Canada, the US, Mexico and Australia c 2012:
60% of median threshold (BHC)

Turkey 2006	36	**New Zealand**	**20**
Mexico 2004	30	France	19
Spain	30	United Kingdom	19
United States 2004	29	Switzerland	18
Greece	27	Austria	18
Italy	26	Estonia	17
Canada 2004	25	Ireland	17
Latvia	24	Belgium	17
Luxembourg	23	Sweden	15
Hungary	23	Germany	15
Poland	22	Slovenia	14
Portugal	22	Czech Republic	14
Australia 2003	22	Netherlands	13
Slovak Republic	22	Finland	11
Lithuania	21	Iceland	10
EU-27	21	Denmark	10
EU-15	20	Norway	8

Sources: Most of the data in the table is drawn directly from the Eurostat statistical database for 'Living Conditions and Social Protection', accessed on 22 May 2014. The rates for Canada, the US, Mexico and Australia are drawn from the LIS Key Figures database at www.lisdatacenter.org accessed on 22 May 2014.

Children in workless households

There is more than one way in which the general concept of "children in workless households" is operationalised and reported by various national and international agencies.

The most straightforward way is to count the number of children in workless households and express this number as a proportion of all children (~16% in HES 2013). This report uses this approach.

A second way is to count up the number of households with children where there is no adult in work, and express this as a proportion of the number of all households with children. This "workless households with children" approach gives a very similar trend to that produced by this report's "children in workless households" approach, albeit the actual proportions can sometimes be very slightly different than in the first approach.

Table J.5 compares New Zealand with EU countries on the proportion of children in workless households. In 2012, New Zealand was at the high end of the table with a rate of 15%, similar to Hungary, and a little below the United Kingdom (17%). The figure for New Zealand is calculated using the sample weights derived by the Treasury for use with the HES.

Table J.5
International comparisons of the proportion of children living in workless households (%): EU and New Zealand figures are for 2012 (HES 2012-13)

Ireland	20	Estonia	9
United Kingdom	17	Greece	9
Hungary	16	Germany	9
New Zealand	**16**	Poland	9
Belgium	13	Italy	8
Lithuania	13	Sweden	8
Turkey	12	Portugal	8
Spain	12	Denmark	8
Latvia	11	Czech Republic	7
EU-27 avg	11	Netherlands	5
France	10	Austria	5
Slovakia	10	Finland	5
EU-27 median	9	Luxembourg	5

Source: Eurostat data accessed on 21June 2014

Older New Zealanders

Extra care needed here

Using household income as an indicator of material wellbeing has some significant and well-known limitations, especially for international comparisons. The reader is referred to the opening pages of this section, the framework described in Section A and to Section I for detailed discussion and analysis of the limitations of BHC income-based poverty comparisons, and the potential that they have for leaving misleading impressions as to how countries and groups within them are faring relative to each other. These risks especially apply to comparisons for older people (aged 65+).

Using the 50% of median threshold (OECD measure), New Zealand had one of the higher poverty rates in the OECD in HES 2008-09 for those aged 66+ (19%).

In previous OECD league tables (for c2000 and 2004) New Zealand had the lowest poverty rate in the OECD for the 66+ group (~2%).

The sudden increase occurred because the value of New Zealand Superannuation (NZS) was above 50% of the median household income in earlier years (2001, 2004) but fell just below it during 2009. There are many older New Zealanders whose incomes are little more than NZS so there is a clumping of 65+ households at around the NZS level. In 2001, NZS had a value of just under 60% of the median. From 2001 to 2009 the median rose in real terms at a faster rate than the real rises in NZS. In 2009 the OECD poverty line (50% of the median) cut through the clump thus producing a large change in the reported poverty rate for older New Zealanders. There is more detail on all of this in **Section I.**

By the 2013 HES (approximately calendar 2012) the New Zealand rate had fallen to 9%.

Table J.6
66+ poverty rates in the OECD (%) c 2012:
50% of median threshold (BHC)

Korea	47	**New Zealand**	**9**
Mexico	31	Portugal	8
Switzerland	24	Ireland	8
Japan	22	Estonia	7
Israel	21	Greece	7
Chile	21	Canada	7
United States	19	Spain	7
Turkey	18	Denmark	7
Slovenia	15	Australia	6
Belgium	11	Slovakia	6
Austria	11	France	5
Italy	11	Hungary	5
United Kingdom	11	Norway	4
Finland	10	Luxembourg	3
Poland	10	Iceland	3
Sweden	10	Netherlands	2
Germany	9	Czech Republic	2

Source: OECD Income Distribution Database, accessed on 20 June 2014 at www.oecd.org/social/income-distribution-database.htm

This sudden rise and fall of the income poverty rate for older New Zealanders can easily leave the misleading impression that there has been a very large and sudden change for the worse in the actual living conditions of many older New Zealanders, followed by an equally sudden

improvement. Neither conclusion is warranted. The rapid changes simply reflect the existence of the "pensioner spike" in the New Zealand income distribution. [100]

In its 2007 country report for New Zealand, the OECD noted that New Zealand has "successfully erased poverty among the elderly", basing its assessment on the information in the 2000 version of Table J.6.[101] To be consistent, it would have had to report for 2009 something along the lines of "poverty among the elderly in New Zealand is very high compared with other OECD countries and is clearly a matter that the country needs to address." If it had done so, it would have been consistent, but it would be misleading on both counts.

The opening pages of this section raised serious questions about the value and wisdom of international league tables which use income-based measures of poverty and which leave the reader with the impression that the rankings somehow reflect the degree of material hardship being experienced by different groups across the countries ranked in the table. The rapid and large changes for "poverty rates" for older New Zealanders as noted above provide another reason to treat such tables with great care, or even to not use them at all for international comparisons of "poverty".

Table J.7 compares poverty rates for older people using a 60% threshold for selected European countries and New Zealand. Using this higher threshold, poverty figures are more stable from year to year as the threshold is above most clumps or pensioner spikes in the income distributions.

Table J.7
65+ poverty rates in selected European countries and New Zealand (%) c 2012:
60% of median threshold (BHC)

Australia 2010	52	Germany	15
Switzerland	30	Romania	15
New Zealand	**29**	Spain	15
United States 2010	22	EU-27 and EU-15	14
Slovenia	20	Poland	14
Lithuania	19	Denmark	14
Belgium	18	Ireland	11
Finland	18	Norway	10
Sweden	18	France	9
Greece	17	Slovakia	8
Portugal	17	Czech Republic	6
Estonia	17	Netherlands	6
United Kingdom	16	Hungary	6
Italy	16	Iceland	4
Austria	15		

Sources: Most of the data in the table is drawn directly from the Eurostat statistical database for 'Living Conditions and Social Protection', accessed on 22 May 2014. The rates for the US and Australia are drawn from the OECD Income Distribution Database. The OECD uses a different equivalence scale than Eurostat, but the difference that makes for these poverty rates is small and is not enough to impact significantly on rankings.

When using household income as an indicator of relative material wellbeing, and especially for comparisons with other age-groups, this report takes the view that an AHC approach is more useful. The rationale for this position is set out and discussed in the Introduction (Section A), in Section I and in Appendix 5. Comparable AHC figures for the EU or OECD are not available.

[100] The rate for Ireland also changed by a large amount, although in their case the rate fell from 2004 (31%) to 2009 (13%). Figures for Australia rose from 27% to 39%. Changes for almost all other OECD countries were in the zero to three percentage point range.

[101] OECD (2007:11).

None of this is meant to imply that the comparison of household incomes within a country is of little or no use. The point is about the limitations of using household incomes for international comparisons of poverty and material hardship among those in the richer nations (eg OECD or EU), especially when it comes to the relative position of older New Zealanders.

Using non-income measures for international comparisons of hardship for older New Zealanders (65+)

The use of non-income measures (NIMs) provides a useful alternative way of assessing relative material wellbeing. The EU has developed and adopted an official measure of material hardship (deprivation) using NIMs. The 2008 New Zealand Living Standards Survey has the EU questions in it and this allows New Zealand to be located relative to European countries using the EU index.[102]

Figure J.4 shows that older New Zealanders have a much lower deprivation rate (3%) than their counterparts in most European countries. As for the population as a whole there is a reasonably clear division between the 'old' EU countries and those more recently gaining membership.

Figure J.4
Deprivation rates (% with 3+ enforced lacks) using the 9 item EU index, those aged 65+
EU-25 - MT + NO + IS +NZ (EU 2007, NZ 2008)

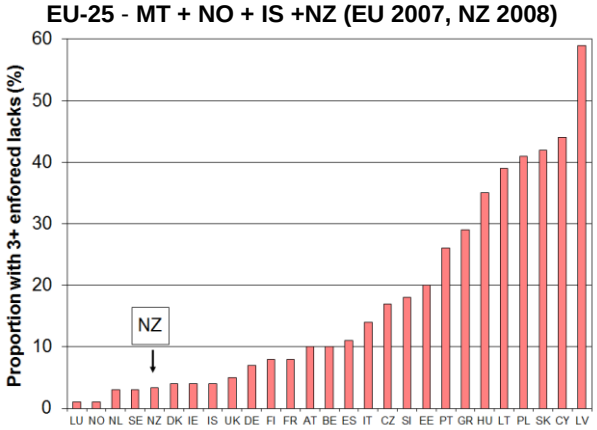


Table J.8
Deprivation rates (% with 3+ enforced lacks) using the 9 item index (EU-1), those aged 65+
EU-25 - MT + NO + IS +NZ (EU 2007, NZ 2008)

		% with 3+			% with 3+
Norway	NO	1	Spain	ES	11
Netherlands	NL	3	Italy	IT	14
Sweden	SE	3	Czech Republic	CZ	17
New Zealand	**NZ**	**3**	Slovenia	SI	18
Denmark	DK	4	Estonia	EE	20
Ireland	IE	4	Portugal	PT	26
Iceland	IS	4	Greece	GR	29
United Kingdom	UK	5	Hungary	HU	35
Germany	DE	7	Lithuania	LT	39
Finland	FI	8	Poland	PL	41
France	FR	8	Slovakia	SK	42
Austria	AT	10	Cyprus	CY	44
Belgium	BE	10	Latvia	LV	59

[102] See Perry (2015) for more on EU-9. As noted above, the EU has just recently adopted an enhanced deprivation measure (EU-13) as its official one. Rankings for those aged 65+ are much the same on EU-13 as on EU-9. See the companion MIMs report for more information on EU-13.

International comparisons of income inequality

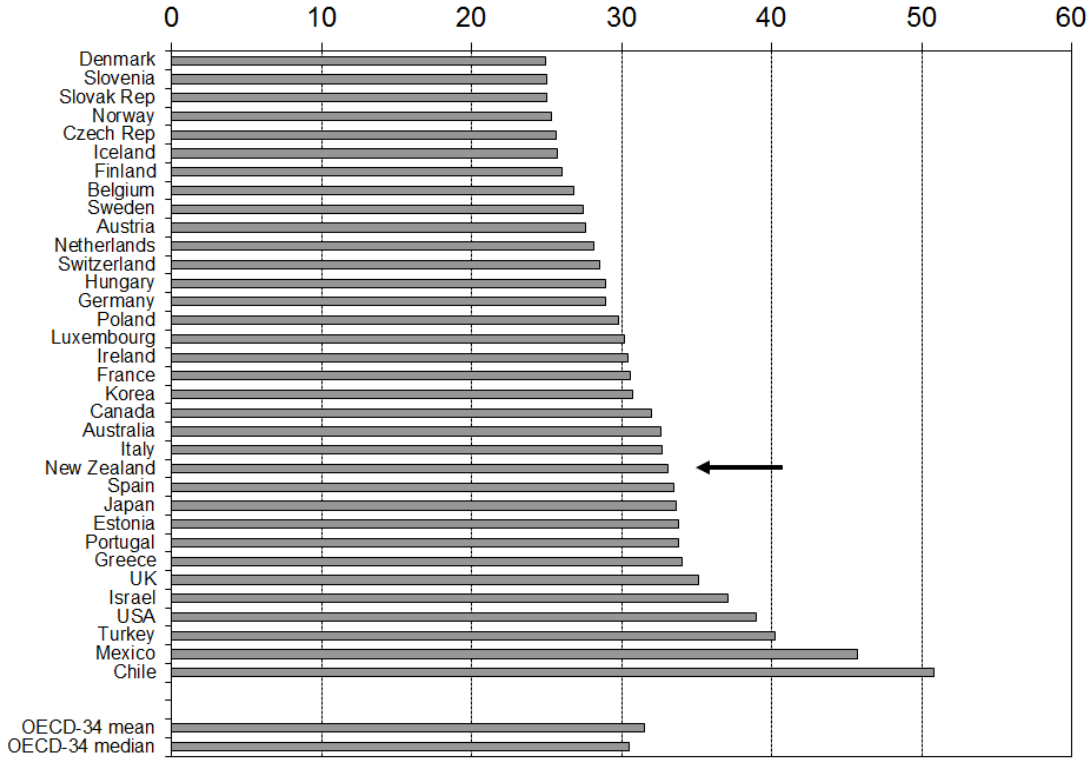
The latest full set of information available from the OECD is for 2012 (our 2012-13 HES).[103] International comparisons are given for the Gini coefficient, three share ratios for different decile groupings, and for the P90:P10 percentile ratio. The OECD sources do not have comparisons for the P80:P20 ratio.

In contrast to the share ratios and the percentile ratios the Gini coefficient takes the incomes of all individuals into account. It gives a summary of the income differences between each person in the population and every other person in the population. A difference of, say, $1000 between two high-income people contributes as much to the index as a difference of $1000 between two low-income people. The Gini scores (x100) range from 0 to 100 with scores closer to 100 indicating higher inequality and those nearer zero indicating lower inequality (ie greater equality).

Inequality comparisons using the Gini coefficient (c 2012)

Figure J.5 shows inequality rankings for 34 OECD countries for around 2012 using the Gini coefficient. There has been very little change since the last update for 2012. New Zealand's score of 33.1[104] gave a 2012 ranking of 23rd out of 34. Rankings are not generally a useful way of comparing countries on league tables as there is often a clustering that can mean that a very minor difference in score can be the difference between a ranking of, say, 10th and 17th. Distance from the median and relativity to countries with whom comparisons are traditionally made are more useful approaches. On the latest OECD figures (c 2012), New Zealand's Gini score of 33 was close to those of Australia and Italy (33), a little lower than the UK (35), and a little higher than Canada (32). The OECD-34 median was 31. Countries such as Denmark, Norway and Finland have lower than average inequality (Ginis of 25-26). The US score was 39.

Figure J.5
Income inequality across the OECD: Gini coefficients (x100) c 2012, whole population



Source: OECD Income Distribution database, accessed on 24 July 2015.

[103] An OECD update is due in mid July 2017 at around the time of the printing of this Incomes report ready for release in late July.

[104] The Gini score used here is 33, the trend-line figure shown in Figure J.5 below and elsewhere.

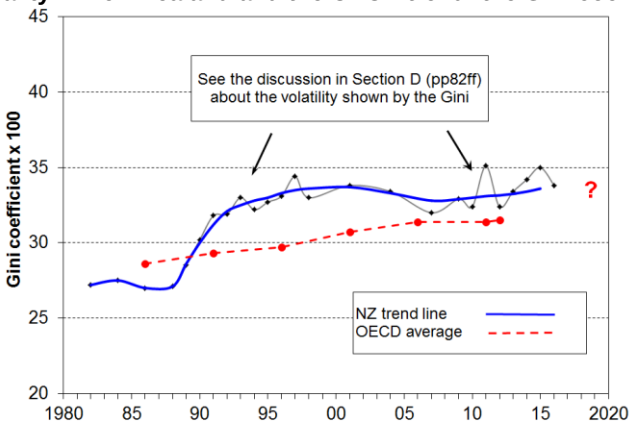
Changing inequality in the OECD and New Zealand: 1982 to 2013

Figure J.6 shows the way inequality as measured by the Gini coefficient has changed in New Zealand over the last thirty years.

From the late 1980s to the mid 1990s income inequality in New Zealand increased significantly and rapidly, taking New Zealand from well under the OECD average to well above. From the mid 1990s to 2013 the trend-line for New Zealand was relatively flat while the OECD average has risen, thus bringing the two lines closer together.

In recent years the Gini income inequality figures have been volatile. The issue is discussed in detail in Section D (pp82ff) where the report notes the significant impact on the Gini trend of the random fluctuations in the number of very high income households captured in the HES sample from survey to survey, as well as the impact of the GFC on investment returns, employment and wages over the years from 2008-09. There is no conclusive evidence yet of any sustained rise or fall in income inequality using the Gini measure since the mid 1990s. The trend-line is almost flat. The reader is referred to Section D for the details of the report's analysis of the impact of the fluctuation in high-income households that happen to get captured in the sample.

Figure J.6
Inequality in New Zealand and the OECD trend: the Gini coefficient



Inequality comparisons using three share ratios

Another approach used by the OECD is to compare the share of total income received by higher income households compared with the share received by lower income households. Three share ratio measures are reported here:

- the D10 to D1 ratio, comparing the top decile share with the bottom decile share
- the Q5 to Q1 ratio, comparing the top quintile share with the bottom quintile share
- the D10 to D1-4 ratio, comparing the top decile share with the share from the bottom four deciles (the Palma measure).

The Palma: the ratio of the top decile share to the share for the lower four decile shares

The Palma measure or ratio is a relatively new addition to the suite of inequality measures used for international comparisons. It is named after Chilean economist Gabriel Palma whose 2011 paper brought the measure and its rationale to light.[105] The OECD now reports the Palma in its Income Distribution database.

At one level, the Palma is just another share ratio in the wider family of share ratios. It has several features however that make it worth a second look:

[105] See Palma (2011).

- Palma found that among middle income and richer countries those in deciles 5-9 receive around 50% of the total income share, and that this share size seems reasonably stable over time as well as over countries. These are the middle to upper-middle income households between the "rich" and the "poor". **Figure J.7A** shows the share for New Zealand has been fairly stable at around 55% from 1990 to 2014.
- He also found that the remaining 50% or so (45% for New Zealand) of total income was split between the top 10% and bottom 40% in quite different ways across the countries he looked at. This inspired the first part of the title for his 2011 paper - "Homogeneous middles and heterogeneous tails".
- He found that the correlation between the Palma and the Gini is close to perfect across the 150 countries in the World Bank dataset he used.
- Given that the Palma is much easier to explain than the Gini, and that it ranks countries in the same order, then he and others are proposing that it might be a useful alternative to the Gini for international comparisons.[106] For example, what does it mean in practice to say that one country has a Gini of 42 and another 31? On the other hand, a Palma of 2.1 compared with a Palma of 1.7 has specific and easily grasped meaning in terms of the ratio of higher incomes to lower incomes, with the "middle" remaining constant. The jury is still out on whether it can / ought to / will replace the Gini, but it certainly has the communication edge over the Gini.
- **Figure J.7B** shows the impact on the Palma trend of fluctuations in the number of very high income households captured in the HES surveys (see Section D for a detailed discussion).

Figure J.7A
Proportion of total income received by deciles 4 to 9, 1982 to 2016

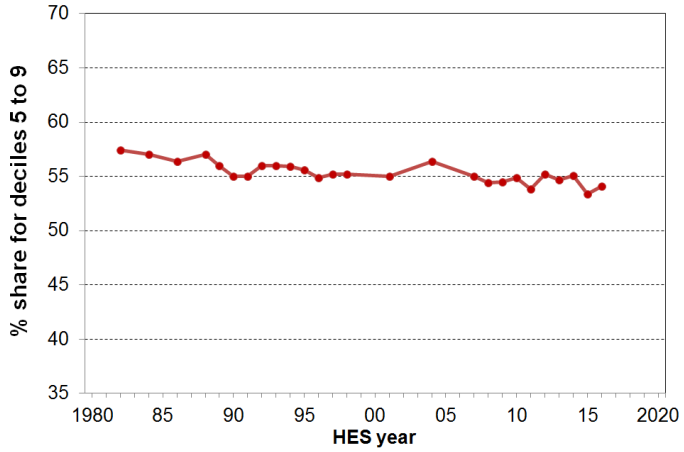
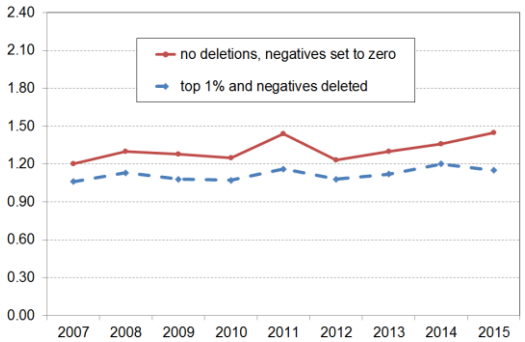


Figure J.7B
Impact of fluctuations in sampled very high income households on the trend for the Palma ratio, 2007 to 2016



[106] Cobham and Sumner (2014).

Table J.9 reports the three share ratios (D10:D1, Q5:Q1, and the Palma) for around 2011 for the 34 OECD countries. New Zealand is at or just above the middle of the rankings on each of the three measures.

Table J.9
Income inequality using income share ratios, OECD, 2011

	D10:D1	Q5:Q1	D1:D1-4 (Palma)
Denmark	5.3	3.6	0.87
Slovenia	5.3	3.6	0.81
Finland	5.5	3.8	0.93
Czech Republic	5.5	3.7	0.89
Iceland	5.6	3.6	0.86
Belgium	5.8	4.0	0.91
Slovak Republic	5.8	3.9	0.89
Luxembourg	5.9	4.0	0.97
Norway	6.1	3.8	0.85
Sweden	6.3	4.1	0.96
Netherlands	6.6	4.1	0.99
Switzerland	6.9	4.4	1.04
Germany	6.9	4.4	1.07
Austria	7.1	4.4	0.99
Hungary	7.3	4.5	1.04
France	7.4	4.7	1.18
Ireland	7.7	4.7	1.10
Poland	7.7	4.8	1.11
New Zealand	**8.2**	**5.2**	**1.22**
Estonia	9.1	5.4	1.20
Canada	8.5	5.2	1.19
Australia	8.5	5.4	1.23
United Kingdom	9.6	5.6	1.40
Portugal	9.9	5.8	1.36
Italy	10.2	5.6	1.22
Korea	10.2	5.7	1.13
Japan	10.7	6.2	1.30
Israel	12.5	7.4	1.55
Greece	12.6	6.3	1.30
Spain	13.8	6.7	1.34
Turkey	15.2	8.4	1.99
United States	16.5	8.2	1.74
Chile	26.5	13.0	2.93
Mexico	30.5	13.7	3.27

Source: OECD Income Distribution Database, accessed on 20 June 2014 at www.oecd.org/social/income-distribution-database.htm

Note: The 8.2 figure for New Zealand in the D10:D1 share ratio is slightly higher than the figure Statistics New Zealand produces and which the OECD therefore uses. We agree on the 2012 figure (HES 2013) of 8.3. MSD and Statistics New Zealand will continue to resolve the minor difference. It makes no difference to New Zealand's ranking on the measure.

Long-run trends for (very) high incomes

While the bulk of the international comparisons of inequality trends and rankings use the incomes of all households (eg the Gini), or most households (the P90:P10), or at least those of the top and bottom 10% (S10:S1), recent public debate and protest has often been about the way in which those with very high incomes have been receiving a disproportionate share of the growth in overall income compared with the rest (hence the catch-cry some years ago of "we are the 99"). Those with very high incomes (for example, the top 1%) make up a small share of the population but their incomes make up a relatively large share of total income (and total income tax paid).

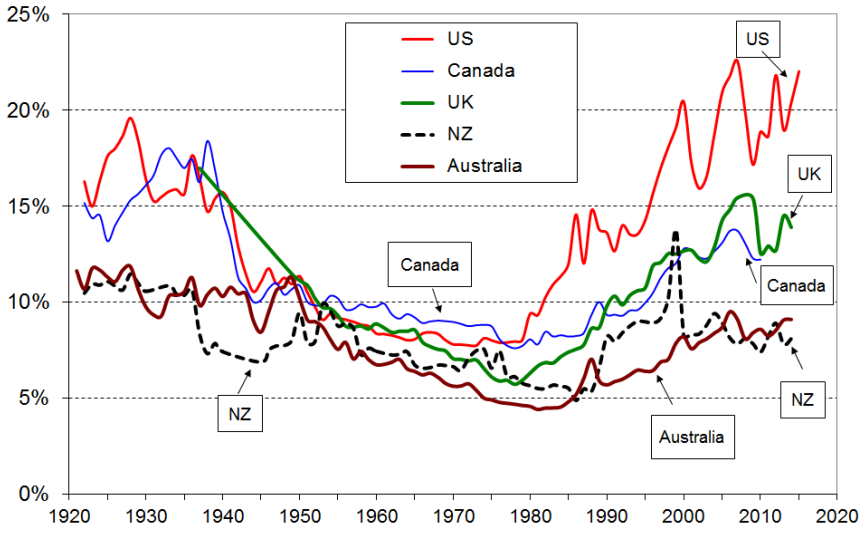
Until recently there was no reliable and internationally comparable data on very high incomes as sample surveys such as the HES do not have large enough samples to pick up enough such households to enable robust figures to be reported. Long-run time series on very high incomes based in the main on income tax data have recently become available on the World Top Incomes database, largely due to the work of Tony Atkinson (UK), Thomas Pikketty (France) and Emmanuel Saez (US). See for example, Atkinson and colleagues (2011) and Alverado and colleagues (2012).

Figure J.8 shows the share of total income received by those with the top 1% of income from the 1920s to around 2013 for the US, the UK, Canada, Australia and New Zealand.

For the US, the UK and Canada there is a clear U-shaped curve with the share of total income received by the top 1% rising fairly steeply for the US and the UK from the mid 1980s, more than doubling from 8% to 19% in 2011 for the US and from 6% to 15% for the UK (although the UK figure has declined to 13% in 2011). For New Zealand and Australia the proportion of total incomes received by the top 1% is less than for the US and the UK, but the rise from the mid 1980s to the mid 2000s is still steep. Ireland also has a U-shaped curve.

Not all OECD countries show the U-shaped curve. For example, France, the Netherlands, Germany and Japan show more of an L-shaped curve: they do not show the rapid rise from the mid-1980s that the English-speaking countries do, remaining steady in the 5-10% range (which is where New Zealand and Australia have ended up in 2010 to 2011).

Figure J.8
Very high income: share of income received by top 1%, 1920 to c 2014



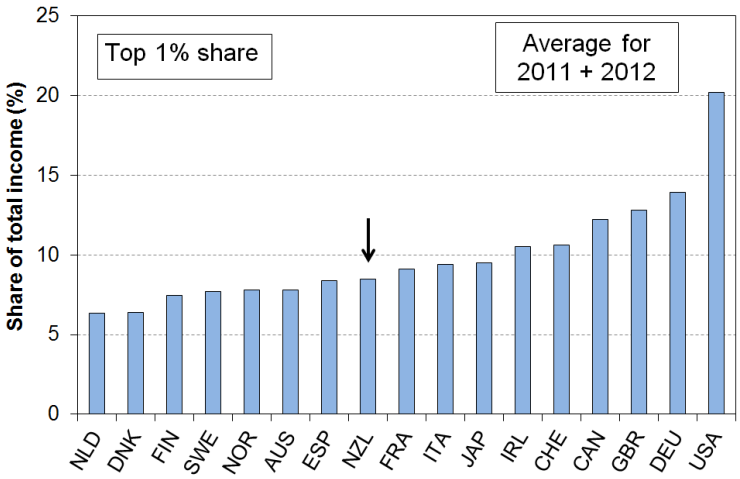
Source: World Wealth and Income database accessed on 12 July 2017

The long-run perspective in Figure J.7 can tell more than one story. Taking the end of the "great compression" (1950 to 1980) as the starting point, the conclusion is that for the five English-speaking countries in the graph, inequality (understood as the share of income received by the top 1%) increased strongly to 2014+. With the 1920s as the starting point, the "great compression" can be seen as the "aberration" and now the distribution has returned to where it was ninety years ago.

Figure J.9 shows selected OECD countries ranked by their top 1% income share. The top 1% in New Zealand received around 8% of all taxable income on average in 2011 and 2012 (before tax). New Zealand's top 1% share is in the low to mid range for OECD countries with whom we traditionally compare ourselves: it is higher more than in Denmark, Finland and Sweden (5 to 7%), similar to Norway, France and Australia, lower than Ireland (11%) and Canada (12%), and much lower than the UK (14%) and the US (20%).

For almost all OECD countries, the latest figures are all higher than in the 1980s (eg 10% higher for France, 40% for NZ and Japan, 60% for Ireland and Canada, 90% for the UK and Australia, and 120% higher for the US).

Figure J.9
Share of gross income received by top 1% (2011 & 2012, or latest available)



Figures J.10 and J.11 show the trends for the five English-speaking countries shown in Figure J.7 but this time for the top 5% (with the top 1% removed) and the top 10% (with the top 1% removed). The long-run and more recent trends are much flatter for these income groups.

Figure J.10
Very high income: share of income received by the top 5% (less the top 1%), 1920 to 2011

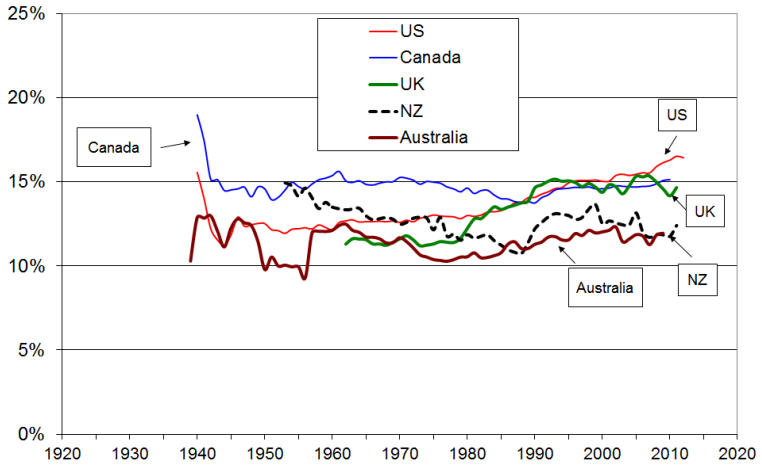
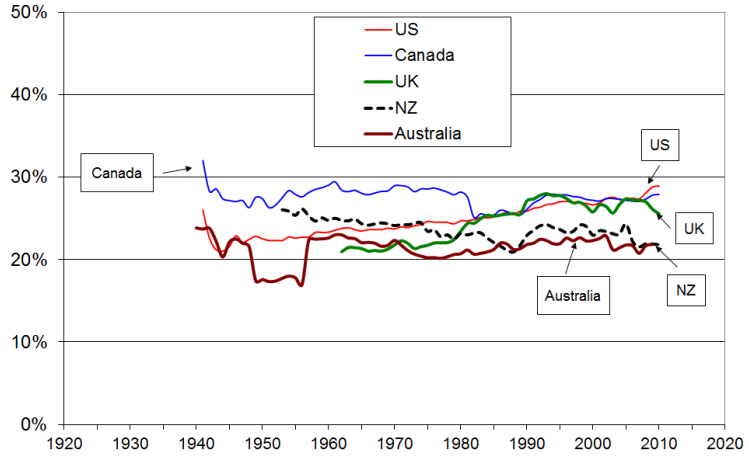


Figure J.11
Very high income: share of income received by the top 10% (less the top 1%), 1920 to 2011

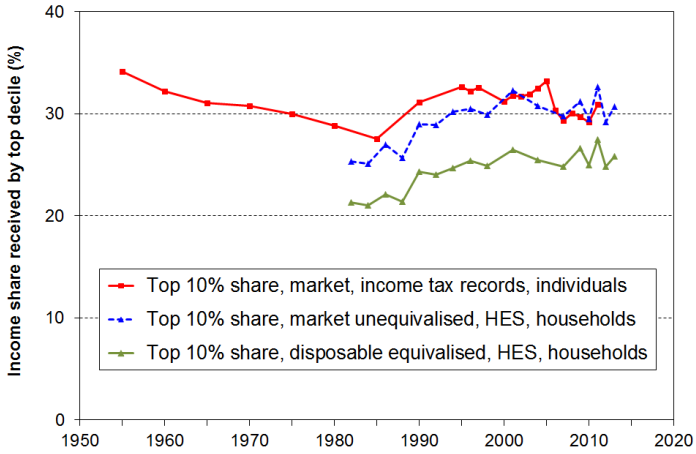


Long-run perspective for the share of income received by the top decile

As noted above, the HES analysis in this report and much of the OECD international comparative analysis are based on sample surveys that begin in the mid 1980s, at the end of the "great compression". This means that analysis based on these surveys show a generally rising inequality for many countries.

This point is well illustrated in **Figure J.12** using the more common "top decile share" measure. The graph shows the rising trend for the HES data from the 1980s, but from the longer perspective from 1955, the income data shows firstly the "great compression" to the 1980s, then a rise to the mid 2000s before falling investment income reduced the share. There is still a broadly U-shaped trend as in Figure J.8 for the top 1% of individuals, albeit the "U" is more flattened.

Figure J.12
Share of income received by top 10%, 1955 to 2013



Source: Alvaredo and colleagues (2012), and MSD analysis of HES data.
Note: The data points for 1998 and 1999 for the upper line are omitted to avoid distraction from the main trends – these points were unusually high, reflecting the shifting of income into earlier years ahead of an anticipated tax rise for the top income bracket in 2000.

Correcting the Gini for very high incomes missed in surveys

The Gini inequality figures used by the OECD and others for international comparisons are based on sample surveys. These are known to under-estimate the number of people and households with very high incomes (eg the top 1%). This means that the resulting Gini figures are lower than they would be if the samples were properly representative.

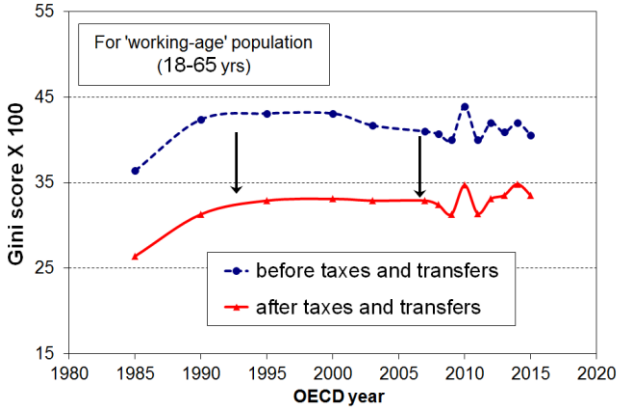
Atkinson (2007) and more lately Alverado (2010) have come up with a formula to correct the sample-based Gini by adding information from the tax records about high individual incomes. If $G_{(sample)}$ is the usual Gini score, then $G_{(corrected)} = S + (1-S) * G_{(sample)}$ where S is the share of total income received by the top 1% or other small group. A key assumption in the derivation of the formula is that the top incomes group is very very small, albeit their income share is non-trivial.[107]

The implication for New Zealand is that any countries with more than 8% share for the top 1% will have a corrected Gini that increases more than New Zealand's does (see Figure J.8 above). The correction puts New Zealand nearer the OECD median compared with the uncorrected Gini as New Zealand's top 1% share is relatively low.

The inequality-reducing impact of taxes and transfers

Figure J.13 shows the inequality-reducing impact of taxes and transfers by comparing the Gini scores for household market income and household disposable income – that is for household incomes before and after taxes and transfers (for those of 'working-age', aged 18 to 65 years).

Figure J.13
Gini scores (x100) for market and disposable household income, 1985 to 2015 (18-65 yrs)



For working-age New Zealanders (aged 18 to 65 years), the reduction in the household market income Gini was 21% in 2012 (the latest generally available comparison year). As shown in **Figure J.13**, this reduction is similar to Canada, but less than Australia and the UK (~25%), and much less than many European countries such as Denmark, France and Austria (33-36% reductions). The median OECD reduction for 2012 was 27%.[108]

There is an argument that the inequality-reducing impact of the tax-transfer system will of necessity be lower in countries in which the unemployment rate / benefit receipt is lower, all else equal (see text on next page). Many of the OECD countries in **Figure J.14** which have higher inequality-reducing impacts have unemployment rates close to New Zealand's (eg Germany, Norway, UK, Australia, all in the 4-6% range, NZ (5%)). This suggests that other factors are at play.

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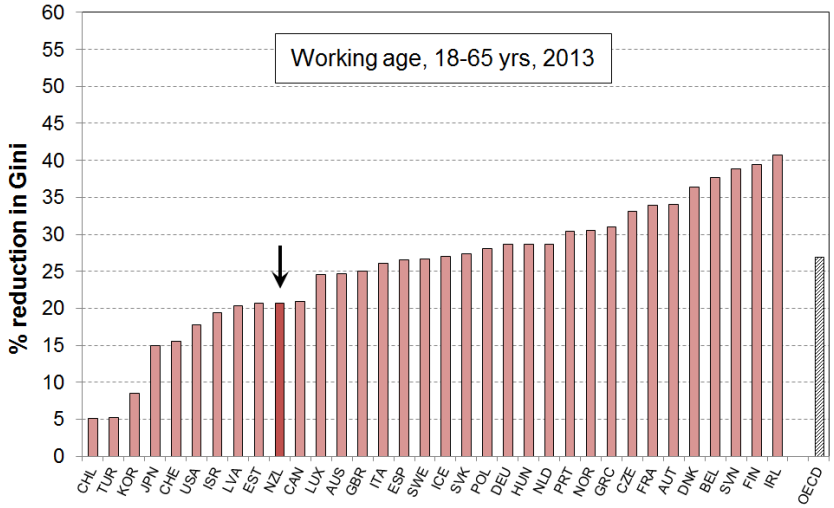
[107] See Förster and colleagues (2014: 30) for an application of the correction to trends in the US.

[108] See the OECD's 2015 country report for New Zealand (OECD (2015), Fig 19, p33), and the OECD Income Distribution Database, accessed on 24 April 2017 at: www.oecd.org/social/income-distribution-database.htm

Figure J.14
Reduction in market income inequality (Gini) from taxes and transfers for working-age population (18-65 yrs), OECD comparisons



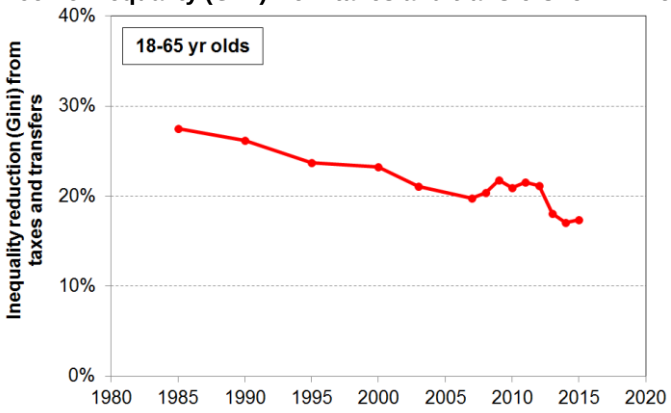
Source: Alvaredo and colleagues (2012), and MSD analysis of HES data.

For the whole population, New Zealand's reduction in inequality in 2012 was 28% compared with the OECD median of 37%. In the 2017 country report for New Zealand the OECD observes that the New Zealand figure *"reflects the less-than-average redistribution through taxes and transfers"* (OECD, 2017b: Fig 1.c).

Longer-run trend

Figure J.15 and **Table J.10** show the trend in the inequality-reducing impact of taxes and transfers in New Zealand for the "working-age" population for the three decades from 1985 to 2015. There has been a steady reduction in impact except for the deviation from the trend during the years immediately after the Global Financial Crisis.

Figure J.15
Reduction in market income inequality (Gini) from taxes and transfers for NZ working-age population



In its 2015 country report for New Zealand, the OECD notes the trend and observes that it reflects "*reforms that reduced the progressivity of the tax system and lowered benefit replacement rates*" (OECD, 2015: 32). This explanation could reasonably be applied to the 1985 to 1995 period, but it is an incomplete explanation for the overall downward trend since the mid-1990s. The trend since the mid-1990s also reflects the decreasing numbers receiving a main working-age benefit in that period (see Figure C.5 above). If there are fewer with zero or very low market income (ie when numbers on a benefit decline), then the inequality-reducing impact of the tax and transfer system on market income inequality will by definition be lower, all else equal. This first principles view is

supported by the deviation from the trend in the immediate post-GFC period. This rise reflects the fact that in this period there were more with zero or low market income, so the tax and transfer system had a larger starting base to work on and the trend line properly shows the greater impact of the tax and transfer system. In other words, the trend of the inequality-reduction impact (Figure J.14) is driven by three factors: (a) changes in market income inequality; (b) policy settings for taxes and transfers; and (c) the numbers in receipt of transfers.

In a paper for the June 2017 meeting of the Council of Ministers, the OECD presented updated comparative figures for the reduction in market inequality (OECD, 2017a). New Zealand's ranking is much the same in this updated analysis as it is in Figure J.13 above.[109] The paper notes (p30) that "*on average across OECD countries, redistribution is currently 2 percentage points lower than in 2005. Redistribution fell particularly in Sweden, Israel and New Zealand, while it increased in countries hit harder by the crisis such as Portugal, Greece, Ireland and Iceland*." The statement is correct in its claim about a strong net fall for New Zealand, but the fact of the rise through the post-GFC downturn, noted above, is an important part of the overall narrative and understanding of what this measure is actually telling us.

Table J.10
Gini scores (x100) for market and disposable household income, and % reduction in income inequality (Gini), 1985 to 2015 (18-65 yrs)

HES year	OECD year	Before taxes and transfers (market income)	After taxes and transfers (disposable income)	Reduction (%)
1986	1985	36.4	26.4	27
1991	1990	42.4	31.3	26
1996	1995	43.1	32.9	24
2001	2000	43.1	33.1	23
2004	2003	41.7	32.9	21
2008	2007	41.0	32.9	20
2009	2008	40.7	32.4	20
2010	2009	40.0	31.3	22
2011	2010	43.9	34.7	21
2012	2011	40.0	31.4	22
2013	2012	42.0	33.1	21
2014	2013	40.9	33.5	18
2015	2014	42.0	34.8	17
2016	2015	40.6	33.5	17

Notes for Figures J.12, J.13 and J.14, and for Table J.10:

1 HES year 'n' is reported as 'n-1' in the OECD Income Distribution Database and related publications (eg 2013 is reported as '2012').

This analysis has looked only at household incomes, personal income tax and government cash transfers. The full redistributive impact of the (welfare) state needs to also take account of the value to households from public health and education services and child-care subsidies, and the impact of indirect taxes (especially GST) and so on.[110] Different countries have different balances across these components, so using a more comprehensive approach may lead to a different ranking.

[109] This updated information is expected to be included in a publicly accessible OECD document, due to be released in July 2017 in association with the updated promulgation of their Income Distribution Database.

[110] See p46 above on 'Final Income'.

Summing up

- The inequality-reducing power of the tax and transfer system on market income inequality has steadily declined for New Zealand from 27% to 17% over the last three decades,1985 to 2015 (using the Gini).

- The size of the impact reflects not only the original level of household market income inequality but also changes in policy settings and in the number in receipt of a main working-age benefit (the latter has declined since the mid-1990s except for a brief rise post GFC).

- The inequality-reducing power of the New Zealand's tax-benefit system is currently relatively low compared with that for other OECD countries, including those who (like NZ) have lower unemployment rates (eg Germany, Norway, the UK and Australia). It is below the OECD average.

Summary

Income inequality in New Zealand, 1984 to 2013 HES

		1984	1994	2004	2009	2012 & 2013 for HES, 2011 & 2012 for tax records
Household disposable income, adjusted for household size … data from sample surveys (HES)	Gini x 100 (trend-line)	26.6	32.5	32.9	32.9	32.9
	Share ratio, D10 to D1	6.1	8.2	9.1	8.6	8.3
	Share ratio, Q5 to Q1	4.1	5.1	5.5	5.4	5.3
	Share ratio, D10 to D1-4 (Palma)	0.92	1.21	1.31	1.29	1.27
	Percentile ratio, P90 to P10	3.5	4.1	4.2	4.4	4.2
	Percentile ratio, P80 to P20	2.4	2.7	2.9	2.9	2.7
Individual market income … data from tax returns – avg of year noted and the one either side	Top 1% share	5.6	8.9	9.0	7.8	8.5
	Top 10% share	28	33	33	30	31
	Top 10% - 1% share (ie P90 to P99)	23	24	24	22	22

Income inequality in New Zealand compared with selected other OECD countries, c 2011-2012

(%)	NZ	OECD-34 median	DNK	NOR	FIN	FRA	AUS	CAN	UK	US
Gini x 100 (trend-line)	32.9	30.5	25.3	25.0	26.1	30.9	32.4	31.6	34.4	38.9
Share ratio, D10 to D1	8.2	7.6	5.3	6.1	5.5	7.4	8.5	8.5	9.6	16.5
Share ratio, Q5 to Q1	5.2	4.8	3.6	3.7	3.7	4.7	5.4	5.2	5.6	8.2
Share ratio, D10 to D1-4 (Palma)	1.27	1.18	0.87	0.85	0.93	1.18	1.27	1.19	1.40	1.74
Percentile ratio, P90 to P10	4.2	3.8	2.9	2.9	3.2	3.6	4.5	4.1	4.1	6.1
Top 1% share – tax records	9	The latest available from 2009 to 2012	6	8	7	9	9	12	13	18
Top 5% share – tax records	21		17	19	21	22	21	27	28	35

Sources: OECD Income Distribution Database, accessed on 25 June 2014 at www.oecd.org/social/income-distribution-database.htm
World Top Incomes database accessed on 7 July 2015

Comparisons between Australia and New Zealand

Table J.10 shows that household income inequality in Australia and New Zealand (c 2011) was similar on six measures.

Table J.10
Income inequality: New Zealand and Australia compared (avg for 2010 and 2011)

	New Zealand	Australia
Gini (OECD)	32.4	32.7
80:20 percentile ratio	2.7	2.6
90:10 percentile ratio	4.2	4.4
S10:S1 share ratio	8.2	8.7
Q5:Q1 share ratio	5.2	5.4
Palma	1.27	1.27

Source OECD Income Distribution Database, accessed on 20 June 2014 at www.oecd.org/social/income-distribution-database.htm , and Table S.5 in ABS (2013).

Section K
Income mobility and low-income persistence

The income information in the earlier sections of the report is based on data from repeat cross-sectional surveys from the Household Economic Survey (HES) series. For each survey a different sample of households is selected and different individuals are interviewed each time.

For this section, the income information is based on seven waves of longitudinal data from Statistics New Zealand's Survey of Family, Income and Employment (SoFIE) which began in October 2002. Here the same individuals are followed from one wave of the survey to the next. Longitudinal data give a quite different perspective on trends over time and make possible a richer analysis that can address a new set of questions around income mobility and the persistence of low-income. For example:

- If 20% of New Zealand children are identified as poor in a given year, what proportion of these stay poor over several years or even longer, and for how many is the low income experience 'just' a temporary one?
- How much does the household income of individuals change over time? Do most people remain in much the same relative position over 5-10 years, or do most move quite a lot?
- How does income mobility in New Zealand compare with mobility in other countries?
- Higher income inequality is sometimes seen as more tolerable if there is reasonably high income mobility. How much does income mobility reduce single-year income inequality when inequality is measured for incomes averaged over increasing numbers of years?

Source of the SoFIE analysis used in this section

The SoFIE figures used in this section are based in the main on the analysis recently published in Carter and Imlach Gunasekara (2012). [This source document is referred to as UO from here on.] This is the first time that findings of this sort have been available for New Zealand. A few tables and findings in this section are based on unpublished SoFIE analysis kindly provided by the UO authors. The international comparisons and some secondary analysis are from other sources as noted.

This section includes:

- A brief description of the SoFIE data and some of its limitations to be aware of when interpreting the findings.
- An outline of the different ways in which income mobility is conceptualised and measured.
- Findings on income mobility with international comparisons.
- An outline of the different ways in which low-income persistence / poverty dynamics is conceptualised and measured.
- Some findings on low-income persistence and the relationship between cross-sectional (current) poverty rates and poverty rates from a longitudinal perspective.

The SoFIE data

The initial SoFIE sample in wave one (2002-03) comprised around 11,500 households and almost 30,000 respondents (22,000 aged 15+). By wave seven (2008-09), just under 14,000 adults (over 15 years) were left, 66% of those in wave one. The overall attrition rate (63% remaining after seven waves) is comparable to other similar international longitudinal surveys such as Australia's HILDA (69%) and the UK's BHPS (67%).

The analyses in UO use a 'balanced panel' made up of SoFIE participants who were eligible at wave 1 and who responded in all seven waves, giving a usable sample of just under 19,000.

Three features of the SoFIE data have implications for the interpretation of the findings reported in UO and in this section:

- Unweighted sample numbers are used for all the analysis. The attrition noted above was greater among Maori, those with low income and sole parents.[111] This can lead to attrition bias. To partially address the potential bias issues arising from attrition, longitudinal surveys generally use longitudinal weights to adjust the sample back to the original sample composition. Unfortunately, no suitable longitudinal weights were available for the analysis reported in UO. This means, for example, that median and mean incomes will be over-estimated and the estimated proportion with low incomes will be under-estimated more and more in later waves
- The income measure used is gross equivalised household income – that is, household income from all sources before the deduction of income tax but including all reported transfers and Working for Families tax credits, adjusted for household size and composition. For the analysis of the distribution of income and especially for low-income (poverty) analysis, disposable equivalised household income is the standard income measure used – that is, household income from all sources less income tax, adjusted for household size and composition. Households are ranked a little differently when using gross and disposable incomes as the total household tax deduction depends on the way the household income is distributed across adult household members. Income tax is higher, for example, for a multi-adult single earner household than for a multi-adult multi-earner household with the same gross income. It also means that the usual 50% and 60% of median low-income or poverty thresholds give different proportions as 'poor' than when using disposable (after tax) household income. The 50% measure gives a population low-income rate of around 15% on average over the seven waves, and the 60% measure gives an average of 24%, compared with 12% and 18% using disposable household income.
- In common with all income surveys there is measurement error. This is especially the case for the bottom income decile (see Appendix 8 for information on this for the HES).

These features have three main implications for interpreting and using the findings reported in this section:

- The figures here and in the source do not support highly detailed conclusions, for example for population groups or for small changes from wave to wave. The findings reported in this section are kept at a high enough level to ensure that the figures are robust enough to support them.
- It is preferable to look at the poverty persistence findings using the 50% of median figures for gross household income as these are closer to the more usual poverty figures reported than are the ones using the 60% of median gross household income (which in effect look at the lower quartile).
- Transitions from decile one will have more noise associated with them than transitions from other parts of the distribution. This section does not use any of these decile one transitions per se in reaching any conclusions on income mobility or movement out of income poverty. The bottom quintile is the smallest low-income group used for that purpose.

[111] See UO Table A:1 for detail.

What is meant by income mobility and how is it measured?

The income mobility that is the focus of this section is about the changes in the equivalised (gross) household income of individuals over several years.

In broad terms, these changes can come about through changes in either the level of income of the individual or of some other adult household member, or through changes in the composition of the household itself (eg older children moving out, new children being added, changes in partnering arrangements, and so on). The impacts of the latter changes are captured through the equivalisation of the household incomes. (See Section A for information about equivalisation.)

The number of years (waves) over which changes in income are observed varies from study to study. Intra-generational studies range from shorter-term (say, 2 to 10 years) to longer-term ones which cover a greater part of a person's life-course (say, 15 to 30 years). Others look at inter-generational changes and associations where the focus is on the relationship between the income of parents and that of their children. The SoFIE study falls into the shorter-term intra-generational group with eight waves from 2002-03 to 2009-10. UO uses data from the first seven waves, 2002-03 to 2008-09.

There are several ways to conceptualise and measure income mobility.[112] The three most straightforward to describe and implement are:

- income mobility as change in relative position
- income mobility as absolute change in income – that is, change in income in real terms
- income mobility as measured by the reduction in income inequality as longer income windows are used.

The two sub-sections that follow focus on the first two approaches, relative positional change and absolute change. Inequality analysis using SoFIE data is underway but has not yet been published. Some international analysis from the UK and Australia is available.[113]

Income mobility as change in relative position

To describe changes in relative position individual survey participants are first ranked by their household income, then they are grouped into quantiles (eg quintiles, deciles or even smaller categories). Transitions between quantiles from one wave to the next or to later waves can then be derived.

When looking at the whole population, not everyone can be upwardly mobile on the relative position definition. In the aggregate, income mobility on this approach is close to a zero-sum analysis: for every person who moves up at least one moves down, and so on.[114] For a population group, however, the analysis is not necessarily zero sum provided the quantiles used are those of the population as a whole, as they are in this section. A further factor to take into account is that the relative sizes of population groups may change over the course of a longitudinal study.

Some of those who are reported as changing quantiles will have moved from just under (over) a quantile boundary to just over (under) it – these are the boundary hoppers. The actual change in income from one wave to the next for these people may be quite small. In fact, some who remain within the quantile will have had a greater change in income than the boundary hoppers, but this larger change is not reflected in the quantile change statistic on the relative position approach.

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[112] See Jenkins (2011) for a recent and comprehensive discussion of these and other approaches using British data (BHPS).

[113] See, for example, Table 4.4 in Wilkins (2014) for analysis based on HILDA data.

[114] It is rare that the number of rises is exactly the same as the number of falls. Consider for example the situation where a person moves from decile one in wave one to decile ten some waves later. If that person were the only one with a change in income, then one goes up and nine go down in relative position. With a large sample and the usual employment, wage and demographic changes that occur over several years, the movements are such that the number of rises is usually fairly close to the number of falls.

Within the change-in-relative-position approach, one way to provide estimates of positional (im)mobility, taking into account the boundary hopper possibilities and measurement error, is to report on positional change as transition from, say, a given quintile in one wave to a position in a later wave which is either in the same quintile or in the decile either side, where this is possible. Another way of addressing the issue is to examine changes in real incomes per se rather than positional changes relative to the rest.

Income mobility as change in real income

Change in real income over several waves is a very useful indicator of income mobility, reflecting some aspects of change that the relative approach misses. For example, in contrast to the positional change approach, an increase in income for everyone counts as upward mobility even if all relative positions are unchanged. In the relative approach, this scenario would be reported as zero mobility. It is not a zero sum analysis and it is not susceptible to the boundary hopper issue that can arise in the relative position approach.

Benchmarks for high, medium and low relative mobility?

There is no single statistic that can satisfactorily summarise the degree of relative income mobility nor any simple set of statistics that can cover the range of questions that different users may wish to put to the data.

Nor is there any commonly accepted benchmark of what is 'high' mobility and what is 'low' mobility.

Countries that have long-running longitudinal studies are able to compare mobility in recent years with mobility a decade or more ago in their own population. New Zealand is not in that position. The best that we can do for New Zealand on this matter is to:

a) compare ourselves with other countries, using quintile or decile transitions over time periods of similar length

b) compare the relative movement of various sub-populations within New Zealand to identify those more mobile and those less so

c) decompose mobility into 'immobility', and 'short-range' and 'longer-range' upward and downward mobility.

Selected findings on income mobility

Wave-on-wave mobility (changes in relative position), with international comparisons

The focus of the analysis in this section is on the changes over the full seven-wave window that the UO SoFIE data covers, with some shorter windows used at times to facilitate international comparisons. These multi-year net changes reflect the cumulative effect of repeated short-run changes from one wave to the next.

Table K.1 shows the average movement from one wave to the next for the six wave pairs w1/w2, w2/w3, and so on.[115]

Individuals are ranked by their household's income in one wave then grouped into quintiles. For the next wave the same individuals are again ranked and allocated to quintiles according to their household's new income at that time. For each quintile in the first wave the percentage of individuals ending up in each of the quintiles in the next wave is calculated. For example, two thirds (65%) of those in the lower quintile remain there on average from one wave to the next, 23% move up to the second quintile, and so on. The cells on the diagonal (shaded) show the proportion remaining in the same quintile across the period.

Table K.1
Income quintile transition probabilities (%) for one wave to the next: averages over all 6 wave pairs, 2002 to 2008, all respondents

		Quintile in wave (i+1)				
		1	**2**	**3**	**4**	**5**
Quintile in wave(i)	**1**	**65**	23	7	3	2
	2	20	**52**	20	5	2
	3	7	17	**50**	21	5
	4	4	6	18	**54**	19
	5	3	3	6	17	**72**

Source: Table 4 in UO

On average, 41% of the whole SoFIE sample moved to a new quintile between wave pairs – that is, 59% remained in the same quintile in the next wave.

A comparison is available for selected European countries. Nolan and Erikson (2007) use longitudinal data from the European Community Household Panel (ECHP) for most of the EU-15 countries[116] and report that on average 55% remained in the same quintile from wave 1 to wave 2. At this very high level, at least, New Zealand's mobility / immobility is similar to that in other more economically developed countries (MEDCs).

This general finding is supported at several places in the rest of this section.

[115] Table L.1 shows the average for the six two-wave pairs. The proportions are in fact very similar for each of the two-wave pairs.

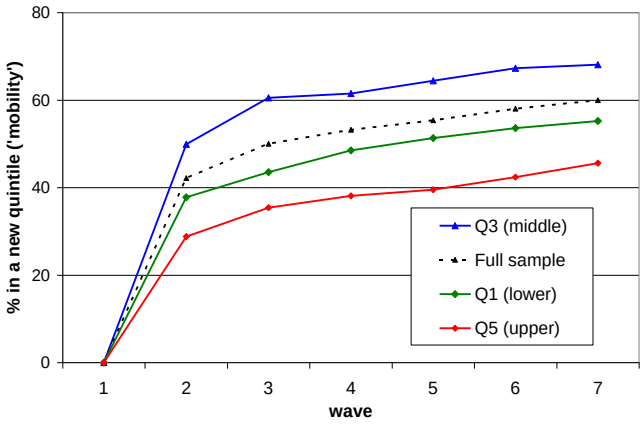
[116] The EU-15 countries are those who were EU members prior to the enlargement in 2004. Nolan and Erickson (2007) report on 12.

Quintile transitions over the seven SoFIE waves, with international comparisons

The focus now moves to looking in more detail at the changes that occur over multi-wave windows, especially the full seven-wave window that the current release of SoFIE data allows.

Figure K.1 shows that as the income window increases mobility increases (and immobility decreases), as one would expect. By w7, 60% have moved from their original quintile, 40% remain in the same one. The upper quintile has the least mobility with just over half (54%) of those in Q5 in w1 being there again in w7.

Figure K.1
Proportion who move from their original quintile over the seven SoFIE waves: all in sample



Source: Author's calculations based on unpublished decile transition tables provided by UO authors.

Figure K.1 makes it look as if there is a very large amount of movement between w1 and w2, much more than for later transitions. The reason for the difference is that whatever wave is taken as w1, the w1 to w2 transition is different from any other transition in that in all the others it is possible to return to the quintile or decile of origin (w1), whereas this is not logically possible for the w1/w2 transition. For a w1/w2 transition, an individual either stays or moves – they cannot 'return' to w1.

Table K.2 shows the w1 to w7 transitions by initial location in the income distribution (and repeats some of the information shown in Figure K.1). For example, the first row in Table K.2 shows that 45% of those in the lowest income quintile in w1 were still there in w7, 29% had moved up to the second quintile and so on. The cells on the diagonal (shaded) show the proportion remaining in the same quintile across the period.

Table K.2
Income quintile transition probabilities (%) from w1 to w7, SoFIE: 2002 to 2008, full sample

		Quintile in w7 (2008)				
		1	2	3	4	5
Quintile in w1 (2002)	1	**45**	29	14	9	4
	2	25	**35**	23	12	5
	3	13	18	**31**	26	11
	4	9	11	21	**34**	25
	5	7	7	12	20	**54**

Source: Table 5 in UO

Table K.3 shows the same types of transitions for Australia based on their HILDA survey. There are strong similarities between Tables K.2 and K.3. The only difference of note is that New Zealand seems to have more mobility out of the lower quintile than Australia does, 55% compared with 42%. It is not clear on the evidence available whether this difference is 'real' or simply a

product of different methodologies (eg gross rather than disposable income, and unweighted rather than weighted data). What is clear is the remarkable similarity at all other points.

Table K.3
Income quintile transition probabilities (%) for Australia, using HILDA, 2001 to 2008, whole population

		Quintile in w8 (2008)				
		1	2	3	4	5
Quintile in w1 (2001)	1	**58**	23	10	5	4
	2	27	**33**	21	15	6
	3	14	21	**30**	23	13
	4	9	12	21	**34**	24
	5	4	8	15	22	**51**

Source: Table 6.6 in Wilkins et al (2011)

Table K.4 shows that income mobility in New Zealand is similar to that in Canada over a five-wave window, with the same exception as for the comparison with Australia.

Table K.4
Comparison of relative (positional) income mobility in Canada and New Zealand: transition probabilities (%) to higher and lower quintiles, w1 to w5, full sample

		New Zealand (2002-06)		**Canada** (2005-09)	
		to a higher quintile in w5	to a lower quintile in w5	to a higher quintile in w5	to a lower quintile in w5
Quintile in w1	1	51	0	43	0
	2	37	24	41	20
	3	35	30	34	29
	4	24	36	24	38
	5	0	40	0	40
	Avg	29	26	28	25

Source: Table A.3 in the UO Appendix, and Table 3 in Statistics Canada (2011).

Table K.5 provides further international comparison (with EU countries this time) showing again that income mobility over 5 waves in New Zealand is very similar to that in other MEDCs.

TableK.5
Income quintile transition probabilities (%) for w1 to w5, EU-15 and New Zealand: whole population

		Most of EU-15	**NZ**
Quintile in w1	**1**	50	49
	2	'generally about one third'	39
	3		36
	4		40
	5	60+	61
	Avg	40-45	45

Sources: Nolan and Erikson (2007) for EU figures
Author's calculations based on unpublished decile transition tables provided by UO for the NZ figures

Note: EU-15 are the pre-2004 members of the European Union

Decile transitions over the seven SoFIE waves, with international comparisons

Table K.6 repeats Table K.2, this time using deciles. Table K.6 is more fine-grained and used on its own or together with Table K.2 it can provide a more textured picture of income mobility and immobility. While it is more susceptible to issues arising from regression to the mean and to overstated mobility arising from boundary hoppers, with a little care it is a valuable analytical tool. One of the most notable features of Table K.6 is the very high immobility in decile 10, the highest decile: almost half of those who were there in w1 are there again in w7. This contrasts strongly with the middle deciles which experience much more mobility. Even though the lower three deciles and decile 8 have somewhat less mobility than the middle deciles, they are still relatively mobile compared with those starting in decile 10.

Table K.6
Income decile transition probabilities (%) from w1 to w7:
2002 to 2008, all respondents

		Decile in w7 (2008)									
		1	2	3	4	5	6	7	8	9	10
Decile in w1 (2002)	1	**24**	21	14	13	7	6	6	4	3	3
	2	18	**27**	19	12	9	6	4	3	1	1
	3	10	20	**24**	15	11	10	5	3	3	1
	4	9	11	14	**17**	14	12	9	7	5	2
	5	8	6	8	13	**19**	17	11	10	6	3
	6	7	5	6	9	14	**15**	18	13	8	6
	7	6	4	6	6	9	15	**17**	17	13	8
	8	5	4	4	6	9	9	15	**19**	19	10
	9	5	2	4	5	5	9	10	15	**26**	20
	10	5	3	2	3	5	4	6	10	17	**46**

Source: Unpublished table provided by UO.

International comparisons are available using decile transitions. They provide further support for the finding that at the population level, the overall degree of income mobility for New Zealand appears to be very similar to that for other MEDCs.

Chen (2009) gives comparisons for Canada, the USA, Germany and Great Britain using two measures based on a five-wave window, one of immobility and one of upward mobility. In **Figure K.2** and **Figure K.3** these statistics are replicated for New Zealand (albeit on gross rather than disposable income), and on these comparisons New Zealand's mobility picture is again very similar to these other MEDCs.

Figure K.2
Immobility: in same decile in w5 as in w1

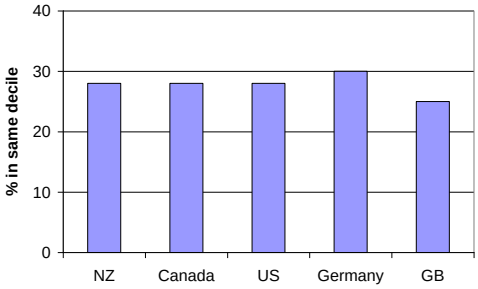
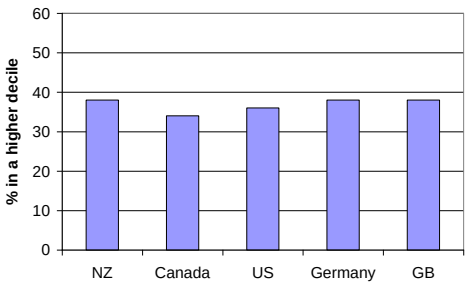


Figure K.3
Upward mobility, at least one decile up, w1 - w5



Source: Figs 2 & 3 in Chen (2009), and Table A.3.

For Great Britain Jenkins (2011, Table 5.1) reports that for 1991-1998 (using BHPS data) 54% remained in the same decile as they started in or were in an immediately adjacent decile. Jenkins refers to this as an 'immobility index'. The New Zealand figure for seven waves was 53%.

Table K.7 repeats Table K.6, this time limiting the respondents to those aged under 58 years. By removing those who were aged 58+ in wave one, the impact on the reported transitions of those whose incomes drop significantly when they 'retire', and of those aged 65+ on relatively fixed incomes, is eliminated. The deciles used in Table K.7 are population deciles, not the deciles for the group aged under 58 years. The main impact of removing those aged 58+ is on deciles 2 and 3 (higher percentage of those under 58 years move out). A slightly higher proportion remain at the top (deciles 9 and 10).

Table K.7
Income decile transition probabilities (%) from w1 to w7:
2002 to 2008, respondents aged 0-57 years in w1

		Decile in w7 (2008)									
		1	2	3	4	5	6	7	8	9	10
Decile in w1 (2002)	1	**26**	18	13	13	7	6	6	4	3	4
	2	22	**18**	16	14	11	6	6	4	1	1
	3	12	13	**16**	18	14	13	6	4	4	2
	4	10	9	11	**17**	15	14	11	7	6	2
	5	9	5	8	12	**19**	17	11	11	6	3
	6	8	3	6	9	13	**14**	18	14	9	6
	7	7	3	4	6	9	14	**17**	18	14	9
	8	6	3	3	6	9	9	15	**19**	20	11
	9	5	2	3	5	5	8	10	15	**27**	22
	10	5	2	2	3	4	4	6	10	16	**47**

Source: Unpublished table provided by UO.

Based on the decile transition table for those aged 0-57 years in wave one:

- of those starting in deciles 1-3, just over half were still there in wave 7, a quarter had moved up to deciles 4 and 5, and a quarter into the top half (deciles 6-10)
- of those starting in the middle of the income distribution (deciles 4-6), 43% were still there in wave 7, 35% had moved up to deciles 7-10, and 23% had moved down.
- of those starting in the top decile, 63% were still there or were in decile 9 in wave 7.

Income mobility as change in real income ('absolute' mobility)

Income mobility can also be looked at in terms of changes in real (CPI-adjusted) income. On this basis it was found that (during a period when cross-sectional incomes were growing on average for all deciles):

- 20% of those starting in the lowest quintile experienced a net decrease in real income over the 7 waves, 30% doubled their income, and the remaining 50% all experienced real increases of substance, albeit less than double
- overall, 38% experienced real declines, and for a third of these the decline was significant (40%+)
- for the middle quintile, two in three (64%) experienced a real increase in income, and the increase for two thirds of these was greater than 20%
- 60% of those in the top quintile (Q5) in w1/w2 and almost half (47%) of those in Q4 experienced real decreases, with most of these experiencing decreases of more than 20%.

What is meant by low-income persistence (poverty persistence) and how is it measured?

In order to capture the different aspects of individuals' low-income experiences from a longitudinal perspective and to do so in a manageable way, a range of taxonomies and categorisations are used in different studies and reports. In this report three approaches are used:

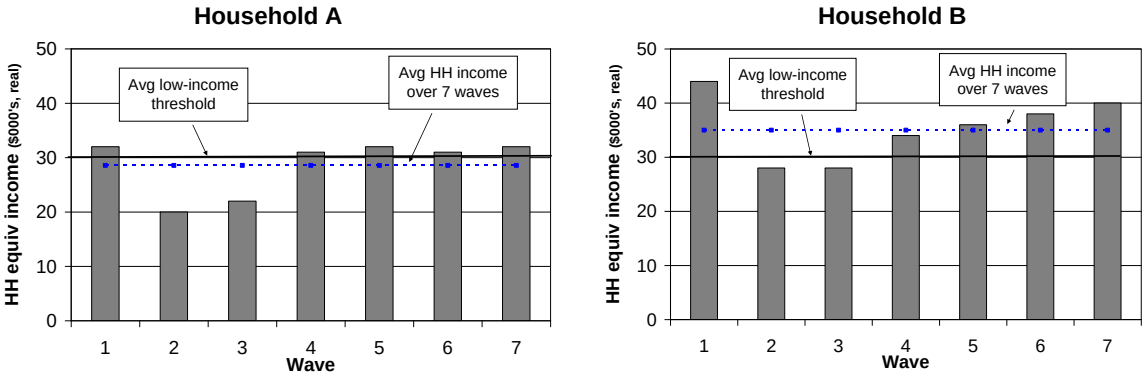
- number of waves in low income in a given window
- proportion of individuals in low income in w1 who are in low income in subsequent waves
- comparison of average income with the average poverty line over the full 7 waves to produce 'chronic' low-income figures.

The first two approaches are self-explanatory and straightforward to understand. One of their limitations however is that they cannot distinguish between those on the one hand who move out of low income and go well above the line and those on the other hand who go from just below the line to just above it and vice versa (the boundary hoppers).

One way to get a better understanding of these movements and to deal with the issue of boundary hoppers is to look at people's average income over the seven waves and to compare that with the average low income (poverty) line over the seven waves. People whose average income is below the average low income (poverty) line over the seven waves are said to be in chronic low income (poverty).

Figure K.4 uses a stylised approach to illustrate the chronic poverty concept. Both households represented in the diagrams are in (current) poverty for 2 waves out of the 7. Household A in the left-hand graph is in chronic poverty, but household B on the right is not. The window used does not have to be 7 waves. It could for example be 4 waves, and if the survey has a long enough life, a trend in the relationship between current and chronic poverty can be established.

Figure K.4
Stylised diagram showing the value of the chronic low-income concept for summarising multi-wave poverty



By examining the relationship between those in chronic poverty and those in current poverty in each wave, a useful set of findings emerges that has value in itself, but which also allows us to look at cross-sectional income poverty findings with longitudinal eyes.

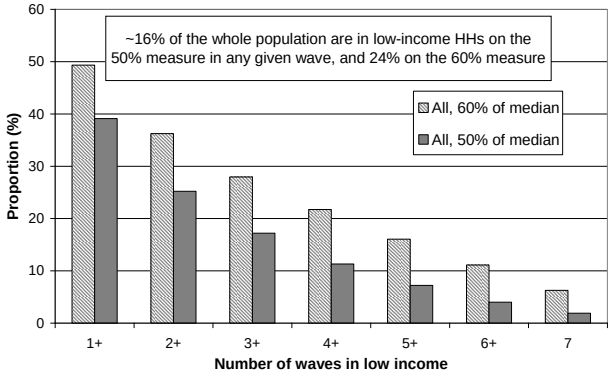
Selected findings on low-income persistence (poverty persistence)

Some of the findings in the income mobility section above are relevant in this one too (for example, the ones under Table K.7 above on the destination after 7 waves of those starting in deciles 1-3).

Number of waves in low income (poverty)

Figure K.5 shows the cumulative number of waves that people were in low income (poverty) over the seven waves, using both the 50% and 60% of gross median thresholds.

Figure K.5
Cumulative number of waves in low income, whole population



Source: Derived from Tables 8 and 9 in UO.

(As discussed above, it is preferable to use the figures generated using the 50% of gross median threshold when looking at income poverty persistence.) Although only a very small proportion were in poverty for all 7 waves (2%), Figure K.5 shows that 40% of the population experienced income poverty at least once in seven the seven waves. This means that more than double the number who are reported as in poverty in any one wave (15%) actually experience poverty at least once in the seven waves.

Findings of this sort are very common across countries like Australia, Canada, the UK, Germany and others in the OECD. It arises from the fact that in any wave, out of those who are identified as poor or in low income there are two groups: those who are more permanently in low income, and those who are only temporarily or sometimes in low income. This latter group becomes quite sizeable over seven waves and produces the finding above. The section below on chronic low income picks up on this theme.

Proportion in low income in w1 who are found in low income in subsequent waves

Table K.8 uses the bottom quintile to define low income, and shows the proportion still in low income in subsequent waves. Just under half (45%) are still in or are back in low income after 7 waves and just over half (55%) have moved up.

Table K.8
Persistence of low income for those in low income in a starting wave: (low income = in bottom income quintile), all respondents

		In low income in this subsequent wave					
		w2	w3	w4	w5	w6	w7
In low income in this starting wave	w1	62	57	51	49	46	45
	w2	-	65	-	-	-	-
	w3	-	-	66	-	-	-
	w4	-	-	-	66	-	-
	w5	-	-	-	-	66	-
	w6	-	-	-	-	-	66

Source: Author's calculations based on unpublished tables provided by UO.

Chronic low income

Counting the number of waves for which people are below a given poverty line is a straightforward approach but it clearly has limitations, and can be misleading in the impression it leaves. For example, the fact that so few remain in poverty for all or all but one of the seven waves can point to the conclusion that mobility is sufficient to address most concerns that are raised by cross-sectional low-income issues. As this "chronic poverty" section will show, this is not the case. The main limitation of the number-of-waves approach is that it does not pick up those whose incomes fluctuate from below to just above the line, and vice versa.

One way to address the issue of how best to report on poverty persistence, given that for many households their incomes fluctuate from just above to just below the poverty line and vice versa, is to look at people's average income over the seven SoFIE waves and to compare that with the average poverty line over the seven waves. People whose average income is below the average poverty line over the seven waves are said to be in chronic poverty.

By examining the relationship between those in chronic poverty and those in current poverty in each wave, a useful set of findings emerges that allows us to look at cross-sectional income poverty findings with longitudinal eyes.

To be in chronic low income, an individual's average household income over the seven waves must be less than the average low-income rate over that time (see Figure L.4 above). **Table K.9** compares the current and chronic poverty rates for the whole population, children and Maori. The chronic poverty rate is typically around 80% of the current poverty rate, a little higher for Maori.

Table K.9
Current and chronic low-income rates

	current (%)	chronic (%)
50% of gross median		
whole population	15	11
children(0-11 yrs in w1)	19	16
60% of gross median		
whole population	26	21
children (0-17 yrs in w1)	29	24
Maori	36	32

However, those in chronic poverty do not form a subset of those in current poverty in a given wave. **Figure K.6** below summarises the relationship between current and chronic low income. Some who are in current poverty in a particular wave are not in chronic poverty. Similarly, some who are in chronic poverty are not in current poverty each wave.

Figure K.6
Current and chronic poverty:
the chronic oval (on the right) is around 70-80% the size of the current oval (on the left), but not all in the chronic oval are in the current oval

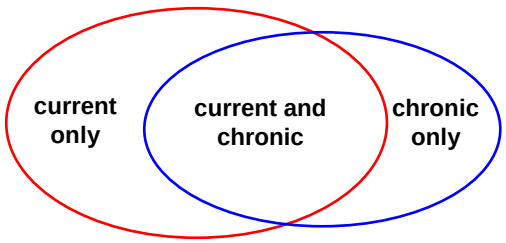


Table K.10 summarises the rate and composition figures for current and chronic poverty. A straightforward way to read the table (for the 50% gross rows) is:

- for the population as a whole: out of every 100 in current poverty at any time 50 are also in chronic poverty, and in addition another 20 not in current poverty are in chronic poverty
- for children, out of every 100 in current poverty at any time 60 are also in chronic poverty, and in addition another 20 not in current poverty are in chronic poverty.

Table K.10
Composition for current only, chronic only and both, and rates for current (total) and chronic only

	composition (% of current)			rate (as % of group)	
	current only	overlap	chronic only	current (total)	chronic only
Whole population					
60% gross	35	65	+15	26	4
50% gross	50	50	+20	15	4
Children					
60% gross (0-17, w1)	35	65	+18	29	5
50% gross (0-11, w1)	40	60	+20	18	4
Maori					
60% gross	25	75	+16	36	6

The SoFIE has run its course and New Zealand does not have a longitudinal survey that collects income data that will allow further analysis as above. The SoFIE findings do however allow us to look at and interpret cross-sectional rates with longitudinal eyes:

- in any wave, around half are in both chronic poverty and current poverty, the other half being only in current poverty (ie more temporary or transient poverty)
- the people in this more transient group change a lot over seven waves which is why it turns out that the number in low income at least once in seven waves is around double the number in low income at any one time (see above)
- in addition to those identified as being in current poverty in a wave there is another group who are in chronic poverty but not in current poverty
- chronic poverty rates are around 70% of the cross-sectional rates for the population as a whole and more like 80% for children
- very similar findings have been produced for the UK and Australia.

This picture is in some ways similar to the one we have for the beneficiary population. At any given time, a majority of those on benefit will have been on benefit for many years. A smaller number are new entrants or fairly temporary recipients. Over several years the number who have been on benefit at any time is much greater than the number on benefit at a particular point in time because of the cumulative effect of these temporary recipients.

The number-of-waves-in-poverty approach can easily lead to an overly optimistic view of the ability of income mobility to resolve low-income issues for the bulk of low-income households.

Section L
Wealth

Wealth is a key component of a household's economic resources as discussed in the Introduction (Section A).[117] For example, households with low incomes but relatively high wealth levels are able to achieve higher actual living standards than low-income households with low wealth levels. In practice, especially for working-age households, income and wealth are reasonably (but far from perfectly) correlated. Most who are counted as income poor also have negligible financial assets and very low net worth.

In OECD countries, the measurement of wealth is not as developed as wage and income measurement, but the OECD now has some official figures for some countries available using a reasonably harmonised approach

Building on the experience of the Luxembourg Income Study (LIS), a group of researchers and institutions is developing the Luxembourg Wealth Study (LWS), an international project to assemble unit record data on household wealth into a coherent database.

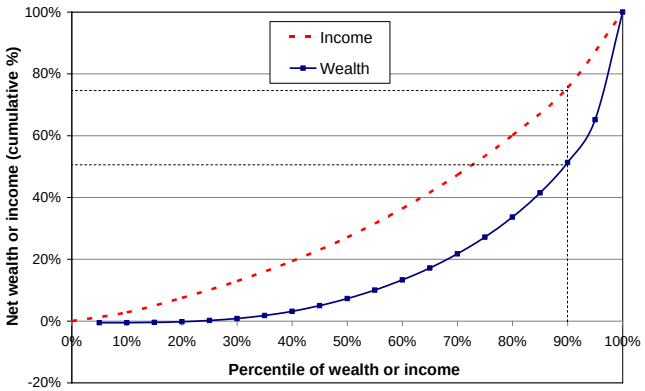
The other source of international comparisons comes from the Credit Suisse project as reported in their Global Wealth Databook (Davies et al, 2015).

The HILDA datasets from Australia also have very useful wealth information (Wilkins, 2014, 2016).

Wealth inequality

Wealth is distributed much more unequally than income (especially disposable income after tax and transfers). As shown in **Figure L.1**, in New Zealand in 2003-2004 the top wealth decile accounted for around 50% of the total wealth, whereas the top income decile accounted for 25% of the total income (see Figure B.4). The Gini for income in 2003-04 was 32, and the wealth Gini was 69. This degree of wealth inequality is not greatly different to what prevails in many other OECD countries (see below for details). The net worth module in the 2015-16 HES has produced very similar findings.[118]

Figure L.1
Wealth and income distribution in New Zealand, 2003-2004: cumulative frequency (%)



Source: Wealth data is from unpublished New Zealand Treasury analysis of wave 2 (2003-2004) of Statistics New Zealand's Survey of Family, Income and Employment. Income data is from the 2003-2004 HES.

Note: The income sharing unit for the incomes analysis is the household. The distribution is of individuals according to their household's income For the wealth analysis the sharing unit is the EFU ('family'). The wealth graph would be slightly differently shaped using the household as the sharing unit, but the finding that wealth inequality is much higher than income inequality is robust.

[117] A household's wealth or 'net worth' is its total assets (financial and non-financial) less its total liabilities (mortgage and other home-secured debt, vehicle loans, credit card and instalment debt, educational loans, loans from financial institutions, informal debt, and so on).

[118] See http://www.stats.govt.nz/searchresults.aspx?q=net%20worth%20wealth for the latest from StatsNZ.

International comparisons of wealth inequality

Table L.2 shows some of the findings from the OECD wealth database – the share of total wealth held by the top wealth decile for fourteen OECD countries with New Zealand ranked based on SoFIE (2003-04) and HES (2014-15) data which give similar results.

Wealth inequality in New Zealand is not greatly different to what prevails in many other OECD countries, close to Canada and France but a little more unequal than Australia and the UK on this measure.

Table L.2
Wealth inequality: shares of total wealth held by the top wealth decile (%)

USA	76
Austria	62
Netherlands	60
Germany	59
Portugal	53
New Zealand	52
Canada	50
France	50
Norway	50
UK	47
Finland	45
Australia	45
Italy	44
Spain	43
Greece	39

Sources: OECD Wealth database, accessed on 30 August, 2016. For New Zealand, the source is Statistics New Zealand (2007), analysis based on the Survey of Family, Income and Employment (2003-04), and Statistics New Zealand's analysis of the 2014-15 HES.

Wealth mobility: changes over several years using HILDA data

Australia's longitudinal Household, Income and Labour Dynamics in Australia survey (HILDA) can report on changes in the wealth of the household that individuals were in in 2010 compared with their situation in 2002.[119]

Wilkins (2014) reports that:

- 59% of those in the top wealth decile in 2002 were still in the top wealth decile 8 years later, and 77% were still in one of the top two deciles. There is therefore good evidence of wealth persistence, at least over the relatively short term.
- Those who entered the top decile over the eight years before 2010 are slightly more likely to come from lower down the wealth distribution than where those who exit the top decile fall to. For example, 9% in the top decile in 2010 came from deciles 1-5 in 2002, whereas only 5% of those in the top decile in 2002 were in deciles 1-5 in 2010.

[119] Wealth data is collected each four years in the HILDA: 2002, 2006, 2010 and 2014. The analysis reported on this page from Wilkins (2014) is not updated for 2014 in Wilkins (2016).

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Appendices

Appendix 1

Key specifications for the incomes analysis in this report

Decision point	Option used in this report	Comment
income sharing unit	household (HH)	see Appendix 2
income concept	equivalised disposable HH income (ie after-tax cash income, adjusted for HH size and composition) - before deducting housing costs (BHC) - after deducting housing costs (AHC)	see Appendix 5
housing costs	rent, mortgage (principal and interest) and rates on principal residence	
equivalence scale	Revised Jensen 1988	see Appendix 3 for sensitivity analysis using different scales
unit for presentation of results	individual	individuals are grouped by individual characteristics or by those of their HH or family (EFU)
types of low-income thresholds or 'poverty lines'	'moving line' thresholds – set relative to the median for the survey year (REL) 'fixed line' thresholds – set in a base year (2007) and kept at a constant value (CV) in real terms by CPI adjustment	the 'fixed line' approach is sometimes referred to in the literature as an 'absolute' approach
setting of low-income thresholds or 'poverty lines'	REL thresholds set at 50% and 60% of the median HH income (BHC) CV thresholds set at 50% and 60% of the 2007 median HH income (BHC), and adjusted forward and back by the CPI AHC thresholds are set at 25% less than the corresponding BHC threshold	see Appendix 7 for a discussion of the rationales for the particular thresholds selected note that 60% CV-98 threshold ≡ 50% CV-07 threshold (serendipity)
adjusting for inflation	use the average CPI for the survey year	see Appendix 8
method for ranking the population and determining median	rank all individuals on the equivalised income of their respective HHs and identify the middle person (a 'person-weighted' approach)	some rank HHs and take the middle HH (a 'HH weighted ' approach) – see Appendix 4
data set adjustments	negative incomes are set to zero for poverty depth measures, adjustments are made for households with implausibly low incomes	See Appendix 8

Appendix 2

Income Sharing Unit

Estimates of rates of income poverty typically use the income of the household or some version of the (co-resident) family as the indicator of the individual's resources and economic well-being. This assumes that all members of the income sharing unit (ISU)[120] share equitably in the resources and experience a similar standard of living. Although this assumption clearly does not hold in all cases, it is defensible as an approximation to the complex reality of intra- and inter-ISU patterns of sharing (cf Bradbury, 2003:25). Some grouping of individuals is necessary for determining poverty status, if only because the alternative of using only individual income as an indicator of available resources or economic well-being is clearly highly unsatisfactory. For example, on an individual approach all dependent children would be classed as 'in poverty'.

This report uses the household as the ISU, in line with international practice.

The reader is referred to the 2007 report for an extended discussion of the implications of the choice of ISU.

[120] The ISU is sometimes referred to as the unit of income aggregation.

Appendix 3

Equivalence scales: sensitivity of results to choice of scale

Equivalisation reflects the two common sense notions that:

- a larger household needs more income than a smaller household for the two households to have similar standards of living (all else being equal)
- there are economies of scale as household size increases.

Most sets of equivalence ratios also assume that children cost less than adults.

Equivalising is a means of standardising household incomes in terms of household size and composition so that the relative material well-being of households of different sizes and compositions can be analysed. The adjustment also makes comparisons over time more realistic because it takes into account the changes over time in the composition and average size of households.

While considerable research has been undertaken to try to estimate appropriate values for equivalence scales, no universally accepted 'correct' set of equivalence ratios has emerged, even when household size and composition are the only factors being considered.

Ideally, equivalence scales would also take into account other factors such as the age of children, the costs of being employed, the extra costs of disability, the differing costs faced by people in different geographical locations, the different ratios needed for households of the same type but of different incomes, and so on. Such considerations further complicate an already fraught estimation process and the common practice is to settle for simpler scales as a rough-and-ready but better-than-nothing approximation.

The primary equivalence scale used in the analysis in this paper, the 1988 Revised Jensen Scale (RJS), is (by design) a mid-range scale. In practice it is very close to what has come to be known as 'the modified OECD scale' which is now used by EUROSTAT, Australia, the United Kingdom and others. This scale assigns the first adult a value of 1.0, the second and subsequent adults 0.5 and children 0.3.[121] Canada uses a similar equivalence scale for its 'Low Income Measures' (LIMs), with second and subsequent adults assigned 0.4 and children 0.3.

For international comparisons the OECD and the Luxembourg Income Study (LIS) use a scale where children and adults are treated as if they costed the same. Economies of scale are taken into account by using an elasticity of 0.5, which implies much higher economies of scale than the RJS. The scale is sometimes known as the 'square root scale' as it is calculated by taking the square root of the number of people in the household.

None of the above scales are directly empirically based. For New Zealand, the best available empirically based scale is that developed by Michelini, although even its strongest advocate recognises that 'there is a strong case for more effort to improve its estimation' (Easton and Ballantyne, 2002).

These scales are compared in **Table 3.1** below for different household types.[122]

[121] The scale is called the 'modified' OECD scale because there was an earlier scale which assigned 0.7 to each additional adult and 0.5 to each child which in 1982 the OECD suggested for possible use in countries which did not have their own equivalence scale. This came to be known as the '(old) OECD scale' even though the OECD rarely used it. For its incomes analysis, the OECD uses neither the 'old' nor the 'modified' OECD scales, choosing instead the 'square root scale' noted above.

[122] Throughout the rest of the report the one person HH is used as the reference for equivalising. This is done in part to have a reasonably sensible unit of 'dollars per equivalent adult'. In Tables 3.1 and 3.2 the couple household is used as the reference to make the comparison of different scales over different HH types easier to grasp in these tables. The reference HH used makes no difference to any analysis.

Table 3.1
Comparison of five equivalence scales

HH type	RJS 1988	'Modified OECD'	Michelini	Canada's LIMs	'Square Root' scale
(1,0)	0.65	0.67	0.57	0.71	0.71
(1,1)	0.91	0.87	0.83	0.93	1.00
(1,2)	1.14	1.07	1.06	1.14	1.23
(2,0)	1.00	1.00	1.00	1.00	1.00
(2,1)	1.21	1.20	1.22	1.21	1.23
(2,2)	1.41	1.40	1.45	1.43	1.42
(2,3)	1.58	1.60	1.65	1.64	1.59
(3,0)	1.29	1.33	1.38	1.29	1.23

Notes: 1 A (2,3) HH has 2 adults and 3 dependent children, and so on.
2 Some of the scales in the table make fine adjustments for the age of the child. This aspect is omitted to keep the comparisons straightforward.
3 The source for the Michelini ratios is Easton and Ballantyne (2002).

The five scales are very similar for their relative assessment of couple, two parent and three adult households. Where the most significant differences occur is in the implied relative costs for single person and single parent households. For example, the Michelini scale implies (relatively) lower costs for these latter households, which means that compared with the results using the Jensen scale the Michelini scale would lead to fewer people below the threshold from sole parent households and single person households, while having similar rates for couples and two parent households.[123] This first principles 'thought experiment' analysis is confirmed empirically by Easton and Ballantyne (2002) – see **Table 3.2** below.

Table 3.2
Comparison of poverty rates by HH type
using the RJS 1988 and Michelini equivalence scales
and the BDL threshold (BHC)

	RJS 1988	Michelini
(1,0)	12	7
(1,1)	34	17
(1,2)	61	48
(2,0)	8	8
(2,1)	16	16
(2,2)	16	17
(2,3)	22	25
(3,0)	8	10
Children	20	21

Source: Table 6.6 in Easton and Ballantyne (2002),

For the purposes of reporting on inequality and hardship using household incomes, overall trends are largely unaffected by the choice of equivalence scale from among the five scales above and those similar to them. Reported poverty levels at a point in time and the composition of those identified as poor can be affected by the choice of scale, but the high level findings as to the relative position of various sub-groups are robust to the choice of scale.

[123] The Michelini scale implies very limited economies of scale in going from a single person to a two person HH.

Figure 3.1 shows the trend in nominal medians from 1982 to 2004 using the RJS 1988, the modified OECD and the square root scales. The values using the RJS 1988 and the modified OECD scale are so close that the lines are coincident over most of the period. The square root scale gives a higher median in each survey because its assumption of greater economies of scale lead to a lesser change from the unequivalised household income for each household.

Figure 3.1
Sensitivity of medians to choice of equivalence scale (BHC incomes)

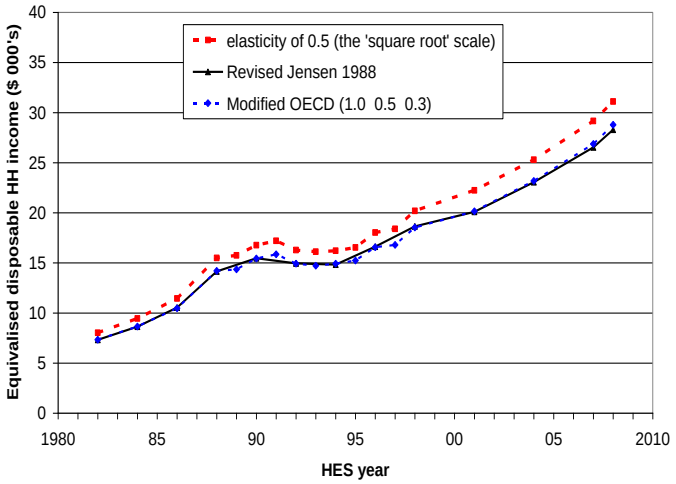
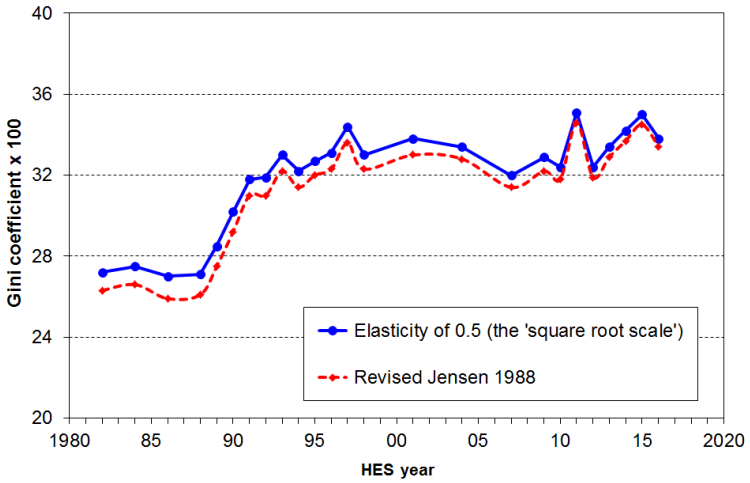


Figure 3.2 shows the similarity of the trends for the Gini coefficient using the RJS 1988 and square root scales.

Figure 3.2
Sensitivity of Gini coefficient to choice of equivalence scale (BHC incomes)



Figures 3.3 and 3.4 show trends in low-income rates for the whole population and for children respectively, using a 60% of contemporary median threshold (REL approach) and three different equivalence scales. Long-run trends are unaffected by the choice of scale, although relative changes between adjacent reporting years do vary a little.

Figure 3.3
Sensitivity of low-income rate to choice of equivalence scale: whole population, using a threshold of 60% of the contemporary median (BHC)

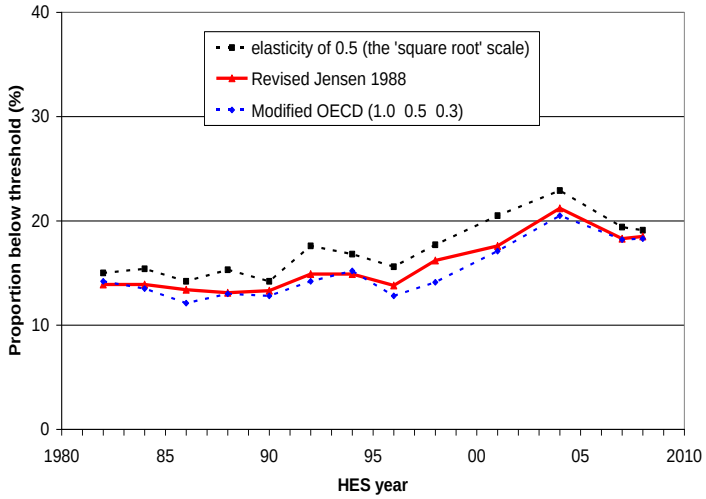
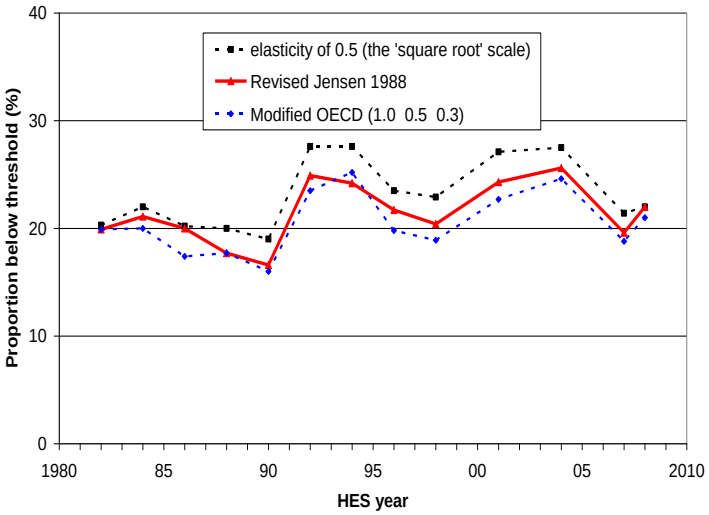


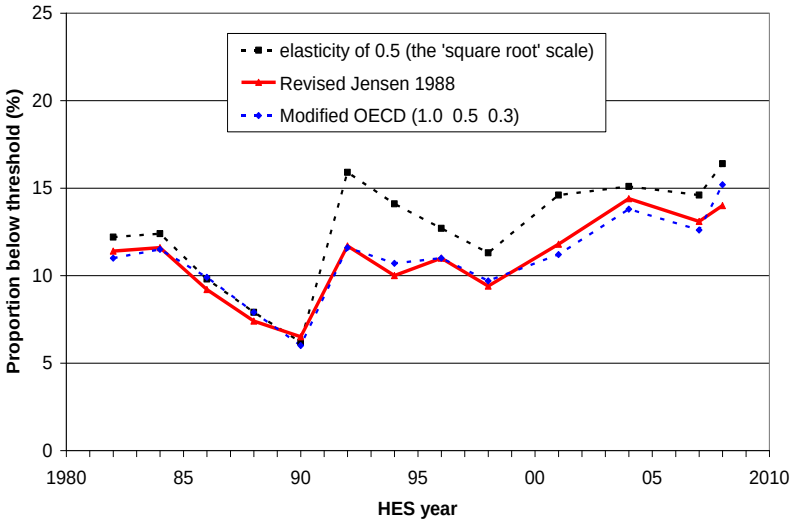
Figure 3.4
Sensitivity of low-income rate to choice of equivalence scale: children (0-17), using a threshold of 60% of the contemporary median (BHC)



See also **Appendix 11** for trends using 50% and 70% of median thresholds, and for updates through to 2016.

Figure 3.5 shows trends in low-income rates for children (0-17 years) using three different scales and the 50% of median REL measure. As expected, the modified OECD and RJS 1988 scales produce very similar results. The big difference in this case is the much higher rates produced by the square root scale in the first half of the 1990s. In relation to households with children the square root scale makes an implicit assessment of higher costs for sole parent families than do the other two. This will generally lead to higher reported child poverty rates using the square root scale, and in particular years, the REL threshold using the square root scale will move enough to just go above a large cluster of families whose sole income source is the Domestic Purposes Benefit together with other government transfers. This can lead to a fluctuation in the relative trends.

Figure 3.5
Sensitivity of poverty rate to choice of equivalence scale:
children (0-17), using a threshold of 50% of the contemporary median (BHC)



See also **Appendix 11** for trends using 70% of median thresholds, and for updates through to 2016.

Choice of scale for AHC incomes analysis

This report uses the same equivalence ratios for AHC analysis as for BHC analysis. There is however a case for using a different set of scales for AHC analysis than for BHC because there are greater economies of scale for accommodation than for other expenses. The AHC scales should reflect the more limited scope for economies of scale when looking only at residual income after housing costs have been deducted (AHC).

The UK's *Households Below Average Income* reports now use such a scale for their AHC analysis. Instead of attributing an extra 0.50 for second and subsequent adults as it does for the BHC case (Table 3.1 above, the modified OECD scale), it uses 0.72 (DWP, 2013). This reflects the more limited scope for economies of scale for adults in non-accommodation costs. The child factor increases only slightly from 0.30 to 0.34. For the purposes of comparing scales it is easier to re-base them to a couple household having a value of 1.00. This makes the first adult 0.58 (=1.00/1.72), second and subsequent adults 0.42 and children 0.20.

Table 3.3 below compares the BHC and AHC scales that the UK now uses.

Table 3.3
Equivalence scale used in the UK for AHC analysis
compared with the one used for BHC analysis and with the Revised Jensen Scale

HH type	**RJS 1988**	**'Modified OECD' scale for BHC analysis**	**'Companion' scale for AHC analysis**
(1,0)	0.65	0.67	0.58
(1,1)	0.91	0.87	0.78
(1,2)	1.14	1.07	0.98
(2,0)	1.00	1.00	1.00
(2,1)	1.21	1.20	1.20
(2,2)	1.41	1.40	1.40
(2,3)	1.58	1.60	1.60
(3,0)	1.29	1.33	1.42

In adopting the 'companion scale' for AHC analysis, three sets of relativities are changed compared with staying with 'modified OECD' scale for AHC analysis too:

- those between singles and couples – the unequivalised income needed by a single-person HH to reach the same potential living standards as a couple is lower when using the HBAI scale;
- those between sole parent and two parent households - the unequivalised income needed by a sole parent HH to reach the same potential living standards as a two parent HH is lower when using the HBAI scale;
- those between a two adult HH and a household with 3+ adults – the unequivalised income needed by the latter to reach the same potential living standards is higher when using the HBAI scale..

The consequence of this is that poverty rates for single-person households and sole parent households could be expected to reduce somewhat relative to those for couples and two parent households respectively, when using the companion scale. For households with 3+ adults the rates can generally be expected to rise somewhat relative to those for two adult households. The lower panels in **Table 3.4A and 3.4B** confirm this. The tables also show that poverty structure remains much the same in that the those sub-groups with higher rates remain relatively high and those with lower rates remain relatively low. **Table 3.4C** shows that trends are not impacted.

While the theoretical purity of using an alternative scale for AHC analysis is attractive, in practice the difference is not so great as might be expected. This result gives reasonable support for the protocol adopted in this report – the same set of scales is used for BHC and AHC analysis – but points to the need to report on the sensitivity of findings to the choice of a scale that recognises that on an AHC basis there is much less scope for economies of scale.

Table 3.4A
Proportions below a 60% REL threshold, HES 2004 (AHC incomes): comparisons using three different equivalence scales

	RJS 1988	'Modified OECD'	HBAI 'companion' scale for AHC analysis
Total population	20	20	19
0-17	28	27	26
18-24	23	23	24
25-44	19	20	19
35-64	15	14	14
65+	9	9	7
By household type			
Single 65+	18	19	11
Couple 65+	5	4	4
Single < 65	30	30	26
Couple < 65	13	13	13
SP with children	65	57	49
2P with children	19	20	19
Other family HHs with children	17	19	23
Other family HHs, adults only	12	12	13
Non-family HHs	25	25	26

Table 3.4B
Proportions below a 60% REL threshold, HES 2013 (AHC incomes): comparisons using three different equivalence scales

	RJS 1988	'Modified OECD'	HBAI 'companion' scale for AHC analysis
Total population	18	19	19
0-17	25	24	25
18-24	19	20	24
25-44	19	20	20
35-64	15	15	15
65+	10	12	10
By household type			
Single 65+	18	18	9
Couple 65+	9	8	8
Single < 65	32	32	29
Couple < 65	13	13	13
SP with children	61	54	53
2P with children	16	16	16
Other family HHs with children	17	25	30
Other family HHs, adults only	12	15	20
Non-family HHs	10	11	12

Table 3.4C
Proportions (%) below a 50% REL threshold, HES 2001 to HES 2016 (AHC incomes): time series comparison using Jensen and HBAI scales

		2001	2004	2007	2010	2013	2015	2016
ALL	**RJS 1988**	13.2	14.3	13.0	13.6	13.8	14.4	14.1
	HBAI	13.4	13.3	12.9	12.5	13.3	13.7	13.5
0-17yrs	**RJS 1988**	21.1	19.2	16.4	19.5	19.1	19.7	17.4
	HBAI	20.7	16.5	15.7	17.1	18.1	17.8	15.2

For the population overall, the HBAI scale reduces measured poverty by one half to one percentage point, and for children (aged 0-17 yrs), by one to two percentage points. The trends are the same for each.

Appendix 4

Analysis unit: sensitivity of results to choice of household or individual for calculating medians and reporting poverty rates and inequality

This report attributes the equivalised household income to each household member as an indicator of each individual's 'access to resources' or material wellbeing. Individuals are then ranked on this income for division into deciles, establishing medians and counting numbers below poverty lines, and so on. This is standard practice internationally.

Before this approach became the standard, some of the literature ranked households rather than individuals. The median income was the middle household's income and the number in 'poverty' were the number of households below a given line.

Figure 4.1 shows that the different ways of ranking make only a very minor difference for medians.

Figure 4.2 shows that there are some noticeable differences for year-on-year comparisons for population poverty rates depending on whether one counts households or individuals, but the overall longer-term trend is not affected by the decision.

Figure 4.1
Median equivalised household incomes ($2014): comparison using the middle individual and the middle household

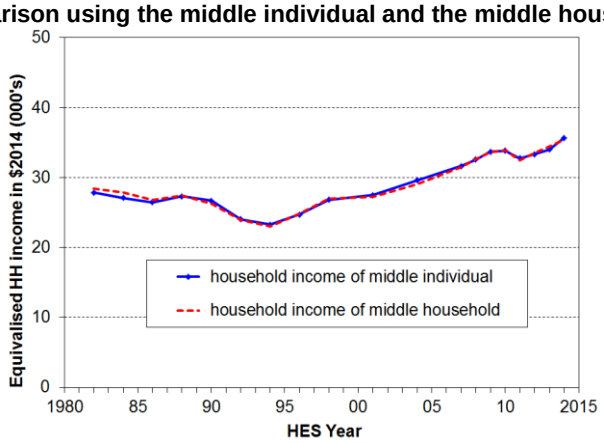
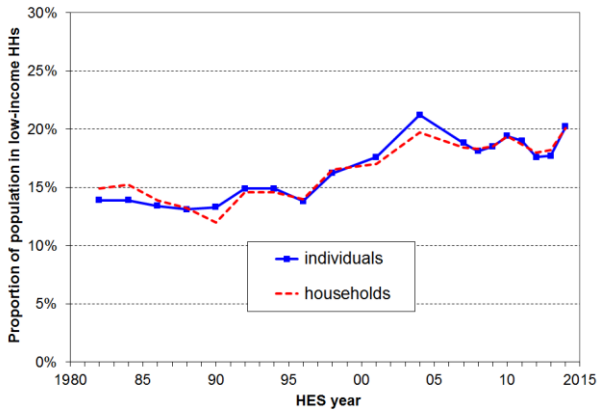


Figure 4.2
Proportions below the 60% REL threshold (BHC): comparisons using individuals and households



Appendix 5

Incomes before and after deducting housing costs (BHC and AHC)

The report provides information based on household income both before deducting housing costs (BHC) and after deducting housing costs (AHC).[124]

Housing costs include all mortgage outgoings (principal and interest) together with rent and rates for all household members.[125] Repairs and maintenance and dwelling insurance are not included. Any housing-related cash assistance from the state (eg Accommodation Supplement) is included in household income.

For reporting on overall trends in household income and on income inequality, there is value in seeing the similarities and differences between the two measures and in understanding the differing stories they tell.

For reporting on trends in income poverty over time and for comparing hardship across subgroups of the population, the report again reports on both BHC and AHC measures, but recommends the use of AHC measures as the preferred measure.

The use of BHC measures is generally taken as the self-evident starting point. They are important for assessing the adequacy of market and social assistance incomes for delivering a minimum acceptable standard of living. Their use also ensures that the material well-being of those on low incomes who choose to live where accommodation is less expensive (eg some rural areas) or who live in 'cheap' sub-standard accommodation is not left overstated (relatively) as the use of an AHC approach on its own can do.

The rationale for the report's position that AHC analysis should also be reported, and that the AHC approach is preferable for sub-group comparisons in New Zealand is that:

- First, variations in housing costs do not correspond to similar variations in housing quality. Such variations can occur for housing in different regions, but is most significant when comparing the material well-being of age-groups. Many older individuals are in households that have good accommodation and relatively low housing costs (eg those living in mortgage-free homes). Many in an earlier part of the lifecycle have a similar standard of accommodation but relatively high accommodation costs. This variation in costs for the same or similar consumption is higher than for other budget items. This suggests that housing costs should be deducted from income to get a more reliable assessment of relative material well-being across different sub-groups.
- Second, many would argue that the theoretically most acceptable way of dealing with issues around incorporating housing benefits (direct and indirect) and housing costs is to add the imputed value of indirect housing benefits to the income measure and then on the basis of this fuller measure to calculate poverty rates and so on. However, apart from any conceptual or theoretical challenges faced by this approach, there is a practical difficulty in that the value of imputed rent of owner-occupied housing and of government housing subsidies is not often (reliably) available. For the purposes of comparing the economic well-being of different groups using an incomes measure, deducting housing costs from cash income (the AHC approach) can be seen as an approximation to the theoretically more comprehensive approach of estimating and adding imputed rent for homeowners.[126] This rationale is in effect a variant of the first point made above.

[124] BHC income is the same as disposable or after-tax cash income. AHC income is sometimes referred to as income adjusted for housing costs, disposable income net-of-housing-costs, or 'residual income'.

[125] There is an argument for excluding repayment of mortgage principal from housing costs on the grounds that it is simply a form of near-compulsory saving. This report includes repayment of principal in housing costs on the grounds that for most mortgages there is little scope for adjusting principal repayments to help cope with 'tight times' and that it is in effect income not available to households in the short to medium term for other uses.

[126] See Ritakallio (2003) , Fahey, Nolan and Mâitre (2004), and Figari and colleagues (2012).

- Third, once a household is committed to a particular residence, outgoings on housing costs cannot easily be adjusted or put off in 'tight times' as they can for other expenses like entertainment and recreation, and even to some degree for basics like food and clothing. The primary focus of this report is on trends in inequality and hardship and it is important to understand trends in 'residual income', taking housing costs as a given fixed cost in effect.
- Fourth, housing costs represent a very significant proportion of the total spending of many low-income households. These housing costs make up on average around a quarter of the budget for working-age low-income households. For many with low incomes, housing costs make up much more than a quarter of the budget. This is the key context for the first three points above.
- Finally, a unique characteristic of the New Zealand BHC income distribution is the very large 'pensioner spike' at around the value of New Zealand Superannuation. This occurs close to a 60% of median poverty line (BHC) and can lead to large variations in reported poverty rates for the 65+ group over time, leaving the misleading impression that there are significant changes in material wellbeing occurring for this group. In addition, the same issue can lead to similarly misleading comparisons with the relative wellbeing of other age-groups. An AHC approach avoids these issues and is more suitable as the primary measure (for New Zealand at least). This is further discussed in Section H.

The above arguments are generally seen as sufficient to justify at least the reporting on AHC measures alongside BHC ones. This report goes one step further and recommends the AHC approach for comparing poverty trends over time and especially for examining sub-group relativities, primarily because of the implications of the pensioner spike. Four counter-arguments are sometimes raised when considering the issue.

- First, some would argue that housing costs are like any other cost a household faces. Different households make different choices as to what to prioritise in the budget. It is argued that it is no more justified to deduct housing costs than, say, food costs, which can also vary between households of similar size and composition. One of the challenges to this view is already captured in the third point above – once a household is committed to a particular residence housing costs cannot easily be adjusted or put off in 'tight times' as they can for other items.

- Second, it can be argued that an AHC approach understates the relative standard of living of those whose material well-being is higher as a result of paying higher housing costs for better accommodation. The flip-side of this is that a BHC approach overstates the standard of living of those whose housing costs are high relative to the quality of their accommodation.

- Third, when considering changes over time, the AHC approach understates improvements in living standards when higher real housing costs do reflect improving standard of living. The flip-side of this is that a BHC approach may overstate the improvements in living standards when the Accommodation Supplement rises to offset higher rents. BHC income rises, but there is no commensurate rise in living standards.

- Fourth, for international comparisons a BHC approach is needed because that is the metric used internationally. This is true, but the updating over time is usually done on a 'moving line' (REL) approach, not on a 'fixed line' (CV) approach as this report and the Social Report use as the more fundamental approach.

None of the proposed counter-arguments appear conclusive. In addition, the AHC approach is well supported by the rationale outlined earlier above, and the issue of the 'pensioner spike' remains a very awkward one for a BHC analysis of income poverty trends for this age-group and for assessing sub-group relativities.

Appendix 6

Rationale for setting of low-income thresholds or 'poverty lines'

Different countries and different researchers set low-income thresholds or poverty lines in a number of different ways. The two broad types of approach are to take proportions of the median or mean of the income distribution as the low-income thresholds (a distributional approach) or to use information from outside the distribution based on budget standards, expenditure data, 'asking the people', or a mixture of all three.

This report uses a distributional approach, based on 50% and 60% of median household equivalised income, drawing support for the decision from a range of considerations outside the income distribution. For updating thresholds over time, both 'moving line' (relative threshold) and 'fixed line' (constant-value threshold) approaches are used. The conceptual differences between the two are discussed in Section E.

BHC thresholds

The 60% of median threshold (BHC) has been formally adopted by EU member states as the EU's primary measure of income poverty. It is also used by the UK as one of its three indicators in its composite official measure of child poverty. The OECD uses the 50% threshold for the bulk of its international comparisons but it also collects and uses analysis based on a 60% threshold.

Despite the reasonable consensus around the use of 50% and 60% thresholds there is an inherent arbitrariness about the choice of any particular percentage of the median.[127] There are however some considerations that provide support for their use, for New Zealand at least.

First, the focus group research with low-income householders carried out by the New Zealand Poverty Measurement Project (NZPMP) found that budgets for minimum adequate income that allows a household to live independently without recourse, for example, to a foodbank, equated to around 60% of the median household income in the early 1990s.[128] The research was not intended to imply that the 60% threshold was fixed for all regions and for all time. Indeed the NZPMP reports indicate that in Auckland for example the budget information suggests a higher threshold of around 66% of the median, with a lower figure for rural areas. More recent focus group work by the PMP team still points to minimum budget requirements on average of around 60% of the median.[129]

Second, the 50% threshold is as low as is reasonable to go on the grounds that anything much under 50% is below social assistance levels which generally lie in the 50% to 65% range. Apart from the self-employed, there should therefore not be great numbers with reported incomes much under the 50% line.[130]

Third, the 50% threshold is as low as is reasonable to go on the grounds that anything less than 50% takes the BHC threshold too far into the bottom decile where income is generally an unreliable indicator of access to resources. Even 50% itself is on the edge in this regard for some purposes. It is possible to devise a defensible rule for deleting or adjusting the most glaring cases for which there is evidence that the reported incomes are unreliable indicators of potential living standards, but this usually requires expenditure information which is not always available in surveys.[131]

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[127] For many years 50% of the mean was commonly used as a poverty line or low-income threshold. 60% of the median is usually close to 50% of the mean.

[128] Stephens et al (1995); Waldegrave et al (1996); Waldegrave et al (2003).

[129] Personal communication with the NZPMP team (23 November 2006).

[130] See Whiteford (2009: 49) for a similar observation regarding Australian income figures and some related discussion.

[131] See Appendices 8 and 9 for further discussion of the matter of noise in the lowest decile.

Fourth, NZS has ranged from 48% to 67% in the period 1982 to 2010. This suggests some sort of broad consensus that incomes in this ball-park are the minimum acceptable for older New Zealanders.

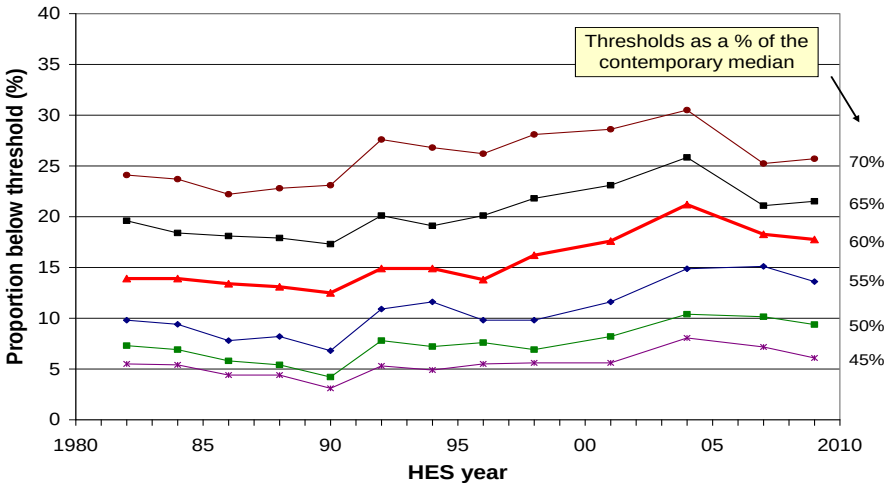
Fifth, the 1972 Royal Commission on Social Security operationalised the principle of 'participation and belonging' by defining a minimum-income level which came to be known as the Benefit Datum Line (BDL) (Easton, 1995a). When the BDL is adjusted by the CPI it is equivalent to 50% of the median for the 2004 HES. Given the general growth in affluence over the three decades following 1972 it would be unlikely that a poverty line lower than the BDL in real terms would command great support.[132]

Sixth, readers are encouraged to look at the low-income thresholds noted in **Tables E.3** and **E.4** and to make their own call on the reasonableness of these as 'poverty lines'. It is not likely that many would find them overly generous.[133]

Finally, while the choice of threshold makes a significant difference for reported poverty levels at a given time, the choice very rarely makes a difference to the direction of trends and has very little impact on the identification of those groups most at risk of hardship.[134]

Figure 6.1 shows the proportion of people in low-income (BHC) households for a range of thresholds set relative to the contemporary median (the 'moving line' approach). Note that the trend lines move in reasonable synch.

Figure 6.1
Proportion below median-based thresholds (BHC, REL)



[132] If the BDL were updated by wage inflation it would be equivalent to a level much higher than 50% of the 2008 median.

[133] See Bradshaw et al (2008) for a recent UK perspective based on 'asking the people'.

[134] The exception is older New Zealanders. Because a substantial proportion of those aged 65+ are in households receiving just NZS or NZS plus only a little more, the choice of BHC threshold relative to NZS makes a very large difference to reported poverty rates for this group. This is discussed in Section I.

AHC thresholds

There are two (related) questions to consider in setting AHC thresholds:

- ☞ what concept of housing costs is to be used?
- ☞ what rationale is available to guide the setting of AHC thresholds?

Concept of housing costs

This report defines housing costs (HC) fairly narrowly to include mortgage outgoing paid by the household, rent, rates and other payments to local authorities. Repairs and maintenance items are not included. This makes the HC concept different from that used in the HES 'housing group' category which includes 'property maintenance goods' and 'property maintenance services'. Dwelling insurance is a possible candidate but are not counted either.

There are good arguments for both wider and narrower conceptualisations of housing costs for the purposes of reporting on hardship and inequality. There is however a very practical matter that directs us to the narrower HC concept: the new 'incomes only' HESs for the years in between the three-yearly full HESs (HES 2008 is the first of these) do not have any information on repairs and maintenance costs, as these are derived from the expenditure diary which will not be used for these surveys. If AHC poverty and inequality measures are to be produced each year, then the narrower concept has to be used.

The full Housing Group costs and the HC costs are distributed differently across the income distribution. Housing Group costs are around 24% of total expenditure for each gross income decile. On the other hand, rent, mortgage and rates (the HC concept) are a smaller proportion of outgoings for middle income households than for poorer households. This has implications for the way the AHC thresholds are set.

Rationale for setting AHC thresholds

On the basis of the consensus around the 50% and 60% thresholds for BHC analysis it would seem straightforward to simply use AHC thresholds set at 50% and 60% of the AHC median.

There are two sets of evidence that suggest an alternative approach needs to be considered.

First, AHC medians have been some 18% to 22% lower than BHC medians since 1996. This means that if we used a straight distributional approach to setting the AHC thresholds (eg 50% and 60% of the AHC median), then a given AHC threshold would also be 18% to 22% lower than the corresponding BHC one for the period. The implication of this is that a household with a BHC income just below 60% of the BHC median is declared AHC poor if its housing costs are anything more than 20% of its BHC income.

This (20%) is a very low proportion of income being spent on housing for a low-income household. It is unrealistic and does not square with a range of considerations which point to the use of 25% or 30-33% as reasonable figures. Some of these considerations are that:

- Lower-income working-age households on average spend proportionately more than middle-income households do on housing understood in terms of rent, mortgage and rates (around 25% compared with around 20%, since 1996).
- New Zealand's income related rents policy uses a 25% setting.
- The entry thresholds for receipt of the Accommodation Supplement (AS) for renters are set at 25% of net household income. (Note that recipients generally pay more than 25% of their household income (including the AS) on housing as the AS does not fully cover the remaining amount).

- There is some rule-of-thumb international consensus that poorer households spending more than 25% to 30% of their BHC income on housing are AHC poor.[135]

The second piece of evidence is that the NZPMP's focus groups point not only to a BHC threshold of around 60% of the median, but also to a minimum of 25% of the BHC budget being required for housing costs. If the NZPMP research is to guide the choice of 60% for BHC analysis, then in the interests of internal coherence it should also guide for AHC thresholds.

These considerations provide a rationale for setting the AHC threshold equal to the BHC threshold less 25% (at least), rather than simply using a distributional approach based directly on the AHC median, which produces an AHC threshold only 18-22% lower than the corresponding BHC one, depending on the year.

The 'deduct 25% (or 33%)' approach also has the advantage of not being influenced by what happens to housing costs for middle-income households, which would be the case if a straight distributional measure were used. If the proportion that middle-income households spend on rent, mortgage and rates rises over time (as it has) then the distributional AHC poverty lines would fall over time and, all else equal, AHC poverty rates would be reported as falling even though nothing was changing for the poor. This is not a desirable property for a poverty measure.

Using 33% rather than 25% as the allowance for housing costs when constructing an AHC poverty line?

As indicated above, 25% is the minimum allowance for housing costs that is reasonable to make for low-income households. There is a case too for using something more like a third (30-33%). The decision depends in the end on a judgement call as to whether an AHC household budget of BHC threshold less 25% or one of BHC threshold less 33% is more congruent with our notion of "minimum acceptable". **Table 6.1** below gives the 'BHC less 33%' thresholds. See Table E.3 for 'BHC less 25%'.

Table 6.1
50% and 60% low-income thresholds for various household types (AHC), ($2016, pw)

AHC = BHC less 33%		**REL** ('moving')		**CV** ('anchored' /'fixed')	
Household type	Equiv ratio	50% of 2016 median	60% of 2016 median	50% of 2007 median in $2016	60% of 2007 median in $2016
One-person HH	1.00	245	255	205	245
SP, 1 child	1.40	340	410	290	345
SP, 2 children	1.75	425	515	360	430
SP, 3 children	2.06	505	605	425	510
Couple only	1.54	375	450	315	380
2P, 1 child	1.86	455	545	385	460
2P, 2 children	2.17	530	635	445	535
2P, 3 children	2.43	595	710	500	600
2P, 4 children	2.69	660	790	555	665
3 adults	1.98	485	580	410	490

Note: see Table E.3 for BHC less 25%

Using 33% rather than 25% as the allowance for housing costs lowers the AHC poverty lines in dollar terms. This leads to lower reported AHC poverty rates.

[135] For example, Australia's Affordable Housing National Research Consortium sets a benchmark for 'housing stress' for the lower 40% of the household income distribution at 30%, and Canada's Mortgage and Housing Corporation uses 30% in its 'affordability' measure. Auckland's Regional Affordable Housing Strategy focuses on households with incomes in the bottom four deciles and uses a 30% rule. It notes that this definition is consistent with those used by a number of other countries. See CHRANZ (2004), *'Housing Costs and Affordability in New Zealand*'.

Figure 6.2 shows the difference it makes if the allowance for housing costs were increased to 33% instead of 25%. The reported population poverty rate is lowered as there are fewer low-income households with OTIs >33% than with OTIs > 25%. As is evident from the graphs, the AHC poverty rates are reasonably sensitive to the decision about what % of BHC median income to deduct to construct the AHC thresholds. For example, in HES 2015, the overall population rate using the AHC 60% of median REL (moving line) measure becomes 17% rather than 20% using the 33% and 25% deductions respectively. Trends remain the same whether the 25% or 33% allowance is made.

Figure 6.2
Proportions below the 60% REL threshold (AHC) using 25% and 33%: full population

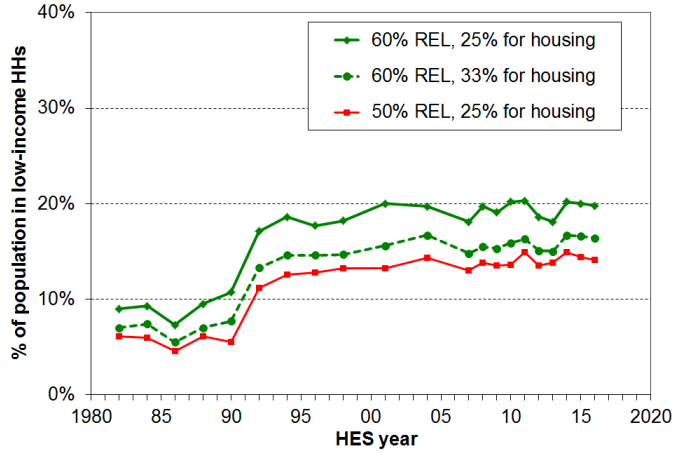
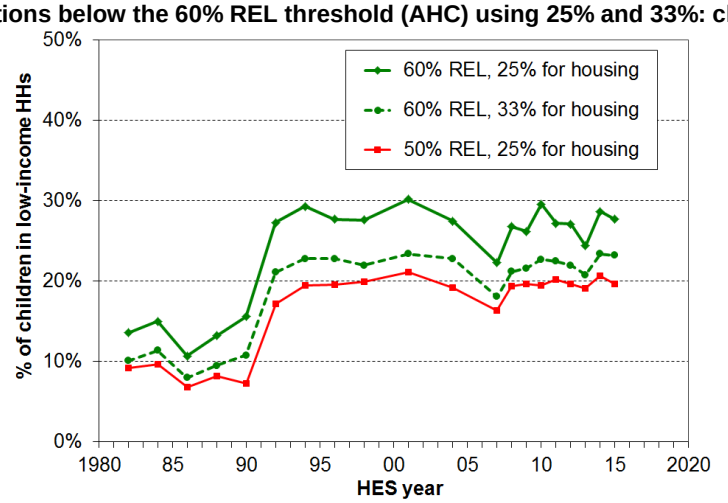


Figure 6.3 repeats Figure 6.2 for children. In HES 2014, the child poverty rate using the 60% of median REL (moving line) measure becomes 23% rather than 29%.

Figure 6.3
Proportions below the 60% REL threshold (AHC) using 25% and 33%: children



Using non-monetary indicators (NMIs) to illustrate the sorts of restriction on living standards experienced by low-income households

From 2007 the Household Economic Surveys have gathered NMI information from a subset of the items that make up the ELSI scale used in Section L.

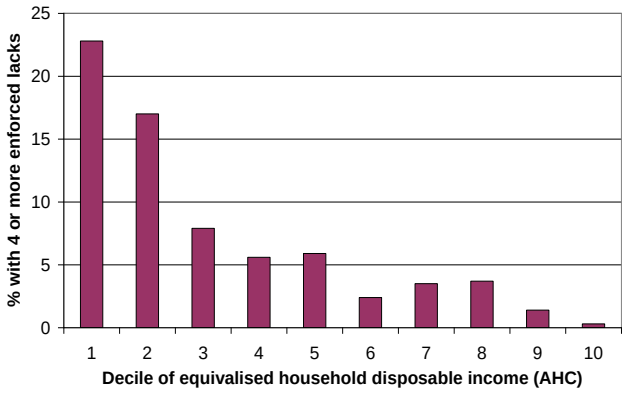
The graph and table below use selected NMIs from the HES and from the 2008 Living Standards Survey (LSS) to illustrate some of the restrictions on day-to-day living standards experienced by low-income households. Of particular relevance to the theme of this Appendix (setting poverty thresholds) is the evidence they give for the actual experiences of many in the bottom quintile (AHC incomes). These low-income households:

a. have quite significant restrictions on their day-to-day living standards compared with what is the typical experience of most of the rest of the population
b. are excluded through lack of financial resources from many aspects of what society more generally would consider to be a minimum acceptable standard of living.

This is the essence of what it means to be in poverty in a more economically developed country, as discussed in Section E.

Figure 6.4, based on NMI data from the 2010 HES, clearly shows the much greater risk of hardship for low-income households than for most of the rest of the population. The 11 items used are all either necessities or ones that are commonplace among the bulk of the population, or both. The graph shows the proportions reporting either an 'enforced lack' of an item because of the cost, or the decision to 'economise a lot' on the item so as to be able to pay for other basics. The lower two deciles stand out as being quite different in their risk of hardship compared with most of the rest of the population. There is no definitive cut-off between the low-income group (lower two deciles) and the rest, in line with the material wellbeing framework discussed in the Introduction, but the difference in risk is clear.

Figure 6.4
Proportion reporting not having / economising a lot on 4 or more of 11 basic items, because of cost: all households, HES 2010

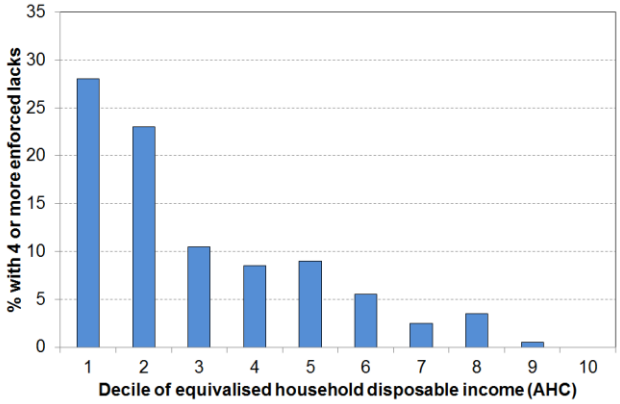


The 11 items used in Figure 6.4 are of two types:

- 7 'enforced lacks' of basics that the respondent 'wants' but cannot have or do because of the cost:
  - telephone
  - good pair of shoes
  - heating available in all main rooms
  - contents insurance
  - give presents to family or friends on special occasions
  - have family or friends over for a meal at least once a month
  - have a week's holiday away from home each year
- 4 'economising' items. The survey gives the option of 'not at all', 'a little' and 'a lot' as a response. The graph uses only the more stringent ' lot' response:
  - gone without fresh fruit and vegetables to help keep costs down ('a lot')
  - put off buying new clothes for as long as possible to help keep costs down ('a lot')
  - postponed or put off visits to the doctor to help keep down costs ('a lot')
  - did not pick up a prescription to help keep down costs ('a lot')

Figure 6.5 repeats Figure 6.4, using a different set of (13) basics and based on data from HES 2014 and 2015. The pattern produced is very similar.

Figure 6.5
Proportion reporting not having / economising a lot on 4 or more of 13 basic items, because of cost: all households, average of HES 2014 and HES 2015



The 13 items used in Figure 6.5 are of four types:

- 4 'enforced lacks' of basics that the respondent 'wants' but cannot have or do because of the cost:
  - a meal with meat, fish or chicken (or vegetarian equivalent) at least each second day
  - two pair of shoes in good condition and suitable for daily activities
  - suitable clothes for special occasions
  - give presents to family or friends on special occasions

- 6 'economising' items: the survey gives the option of 'not at all', 'a little' and 'a lot' as a response. The analysis for the graph uses only the more stringent 'a lot' response:
  - gone without fresh fruit and vegetables to help keep costs down ('a lot')
  - put off buying new clothes for as long as possible to help keep costs down ('a lot')
  - postponed or put off visits to the dentist to help keep down costs ('a lot')
  - put off or cut back on local trips to keep costs down ('a lot')
  - put up with feeling cold to keep costs down ("a lot")
  - delayed replacing or repairing appliances to keep costs down ("a lot")

- 1 housing issue
  - 'major' problem with dampness or mould in the accommodation

- 2 financial stress items
  - late with paying power or other utility bill more than once in last 12 months (because of budget constraint, not through forgetting)
  - received help from a foodbank or other community organisation for money, food or clothes, etc, more than once in last 12 months

Appendix 7

Indices used to adjust for inflation

Household incomes and low-income thresholds are adjusted for inflation at various places in the report. Incomes are converted to 2010 dollars for reporting on income trends in real terms. For the reporting on trends in income poverty based on a 'fixed line' approach, thresholds are based on proportions of the 2007 median and are held constant in real terms over other years.

The adjustments for inflation are carried out using CPI full year averages for a March year up to and including the 1998 survey and a June year from 2001. For BHC incomes Statistics New Zealand's CPIQ.SE9A series are used – taking the average of the four quarters for the appropriate periods. AHC incomes and thresholds from 1989 are adjusted using the index from the All Groups less Housing series (CPIQ.SE9NS1010) using the same averaging approach as for BHC. For 1982 to 1988 the AHC adjustments are based on the author's extrapolation of the series. The reported trends in AHC incomes and the size of low-income populations are not sensitive to different assumptions within a plausible range for the index in the estimated years.

Table 7.1 contains the indices used in the report to adjust for inflation.

Table 7.1
Indices used to adjust incomes for inflation

HES year	BHC	AHC
1982	375	*418*
1984	455	*503*
1986	569	*613*
1988	740	*782*
1989	778	823
1990	828	857
1991	873	902
1992	888	918
1993	897	929
1994	910	935
1995	932	947
1996	962	972
1997	983	989
1998	994	993
2001	1044	1051
2004	1113	1107
2007	1213	1186
2008	1251	1219
2009	1292	1261
2010	1316	1283
2011	1366	1335
2012	1396	1362
2013	1407	1366
2014	1429	1379
2015	1438	1379
2016	1443	1371

Appendix 8

The bottom income decile: income often not a reliable indicator of material wellbeing

While household income is far from perfect as a measure of material wellbeing it is generally a useful enough indicator. There are however some households for whom it would clearly be highly misleading to take their incomes as even a rough and ready indicator of their material living standards. This assessment is based on comparisons with information beyond the incomes reported in the survey:

- some households have implausibly low incomes, well below the minimum social support levels
- some have reported expenditures well above their reported incomes
- some meet both criteria.

Some of these households (whether with implausibly low incomes *per se*, or with expenditure well above reported income) will be declaring income from self-employment. This can legitimately be much lower than reported expenditure – the declared income may even be negative. Others will have accurately reported their incomes but will have had access to loans, gifts or savings in one form or other which have been used for purchasing goods and services. Others will have intentionally or unintentionally under-reported their incomes.

This Appendix provides an assessment of the significance of the impact of the issue on the key indicators used in the report, and concludes that with the exception of indicators of poverty depth the noise does not unduly compromise the results. To provide both a means of making the assessment and a means of mitigating the impact on poverty depth measures, the Appendix also outlines and applies a noise reducing protocol to modify the dataset.

Most of the unreliability is in the bottom decile

Households with implausibly low incomes are of course found only in the bottom decile (bottom tenth of the income distribution). The reported incomes of many at the bottom are less than the incomes provided by government cash benefits or New Zealand Superannuation. This points to mis-reporting or data entry errors.

Those reporting expenditure much higher than reported income are found in most parts of the income distribution but the bulk of them are found in the bottom decile.

- For example, of all those in households reporting expenditure which is more than three times their income, around 75% to 80% are in the bottom income decile in any survey year.
- In any survey year, around one quarter to one third of those in the bottom decile are in households with this high expenditure-to-income ratio. No other decile is like this in regards to expenditure so greatly exceeding income for so many.
- Average household expenditure for the bottom decile is typically around 2.5 times the average reported income and is more like the reported expenditure of the third and fourth income deciles;
- A sizeable proportion of those in the bottom decile (eg 50% in the 2004 HES) report expenditure higher than the incomes of households at the top of the second income decile.

There is therefore clear evidence that for many of the households in the bottom decile household income is a very unreliable indicator of access to resources and of material wellbeing. In other words, there is considerable ‘noise’ at the bottom end of the distribution. Whatever the explanation is, it would be misleading to assume that the bottom 10% on the income distribution also have the lowest living standards.

Impact of bottom decile noise on key indicators

All of this can have a significant impact on some of the key indicators used in this report. The most significant impact is on measures of poverty depth (see Section E), with a more moderate impact on reported income levels at the top of the bottom decile (P10 incomes). The impact on reported poverty rates at a point in time and on the relative composition of those identified as poor depends on the poverty line used, with the greater impact occurring for lower thresholds.

On the other hand, the noise in the bottom decile does not have a significant impact on the medians as the bulk of households in question remain below the median even if their expenditures were taken as better estimates of their actual income than what was reported as such. There is in general no significant impact on reported trends in inequality and poverty.

Table 8.1 below illustrates the differential impact of the 'noise' on various sub-groups and across different thresholds. It shows the proportion of various sub-groups whose household incomes put them below the income threshold in question, but whose expenditure is more than double the selected threshold. Note the large amount of noise when using a 40% threshold, and that even the 50% threshold is marginal on the criterion used.

Table 8.1
Proportions (%) of sub-groups in income poverty whose expenditure is more than double the selected low-income threshold, HES 2004 (BHC)

	Poverty lines as a % of the 2004 median (BHC)			
Sub-group	**40%**	**50%**	**60%**	**70%**
Self-employed	59	42	30	26
0-17	29	11	7	4
18-24	68	55	37	14
25-40	50	25	17	11
41-64	50	26	14	9
65+	22	8	6	5
Two parent with any dep ch	24	9	9	6
Sole parent with any dep ch	51	18	5	2
HHs <65 with 2+ adults, no dep children	68	59	38	21
Population overall	**46**	**24**	**13**	**8**

The self-employed make up only around 5% to 6% of the poor, whichever threshold is used, and their poverty rates are around a quarter to a third less than the rest of the population. The self-employed are not therefore the main source of the noise at the bottom end of the distribution. The main source is working-age households with two or more adults and no dependent children, whatever their income source.

Bottom decile noise is a recognised problem

The unreliability of bottom-decile incomes as an indicator of living standards is not an issue that is unique to New Zealand.

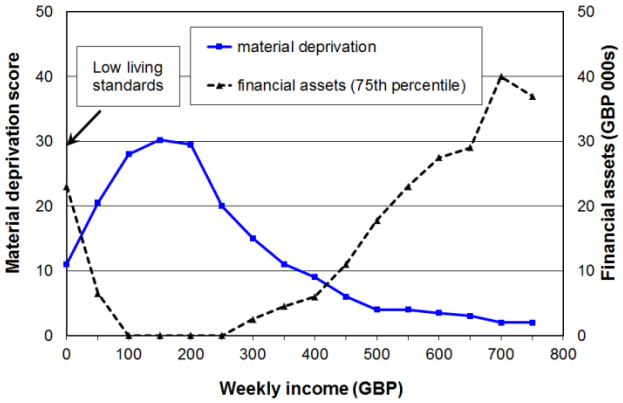
Because of the problems with the bottom decile, the Australian Bureau of Statistics (ABS) has for many years used deciles 2 and 3 (rather than deciles 1 and 2) as their bottom 'quintile' to encapsulate low-income households (ABS, 2011). This is an extreme approach which makes the production of income poverty figures impossible and unnecessarily excludes some of the (truly) most vulnerable households in the lowest decile. In their latest release of income distribution figures the ABS has revised their approach. They use an adjusted low-income quintile which excludes households with incomes in the lowest two income percentiles (ABS, 2015).

In the United Kingdom, the Department for Work and Pensions warns in its *Households Below Average Incomes* publications that incomes in the bottom decile cannot be taken as a reliable

guide to living standards.[136] They follow through on this in their poverty tables by printing in italics the estimates based on a 50% of median threshold to remind the reader of the greater uncertainties using that threshold compared with using the 60% and 70% thresholds.

One of several pieces of research that supports the UK position is reported in Brewer at al (2009). **Figure 8.1** shows that material deprivation increases as expected as household income falls, as expected. However, for households with very low incomes (under around GBP150 per week), material deprivation falls (living standards rise). This is partly explained by the observation that these very low-income households have on average much higher financial assets than the 'low-income' counterparts.

Figure 8.1
Some very low-income households with children have good financial assets – these enable these households to avoid the low living standards that their income alone suggests they would experience



Source: Brewer et al (2009), Tables 5.1 and 5.2

The Luxembourg Incomes Study (LIS) bottom codes to lift all household incomes to at least 1% of the mean equivalised household income.

The New Zealand Poverty Measurement Project (NZPMP) recognised the problem and sought to address it by deleting from the dataset those self-employed who declared losses and those whose expenditure was more than three times their income. The effect of this adjustment to the dataset is to slightly reduce reported poverty rates.[137]

The approach used in this report to reduce the noise in the bottom decile

In selected circumstances this report uses the HES expenditure data to impute a more plausible income to households whose reported incomes are very low compared with their expenditure. All those households with reported expenditures of more than three times reported income are given a notional income equal to the average of their reported income and expenditure.[138]

Figure 8.2 shows that this adjustment significantly reduces the noise at the lower end of the distribution as the imputed incomes more reasonably represent these households' access to financial resources.

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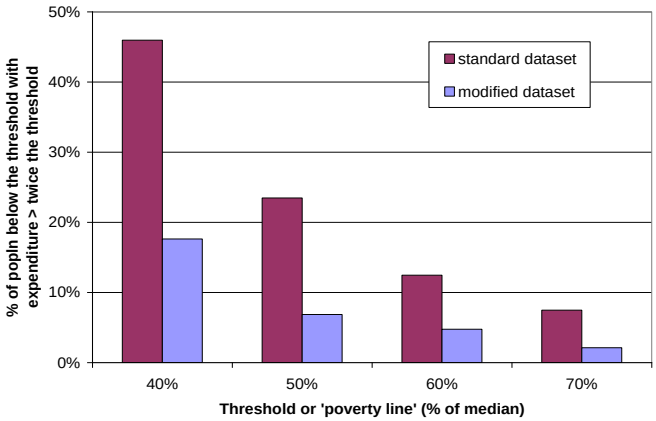
136 "Comparisons of household income and expenditure suggest that those households reporting the lowest incomes may not have the lowest living standards. The bottom 10 per cent of the income distribution should not, therefore, be interpreted as having the bottom 10 per cent of living standards." (DWP, 2013:21).

137 See Stephens, Waldegrave and Frater (1995: 99) and Stephens and Waldegrave (2001: 81). Note that the removal of the identified records raises the median and therefore the threshold. This has an upward impact on the number below the threshold. The deletion of records naturally has a downward impact. The net reduction occurs because the latter factor is the stronger.

138 This imputation method may not capture all those whose incomes do not give a reasonable indication of material wellbeing. One such group is those who under-report both income and expenditure.

Compared with the option of removing the relevant households from the data set, this approach has the advantage of not impacting on the size and composition of the population and sub-population estimates using the standard Statistics New Zealand weightings.[139]

Figure 8.2
'Noise' reduction using the modified dataset:
proportion of the population below selected thresholds and with expenditure > double the selected threshold (HES 2004)



Note: In the modified dataset, all HHs with expenditure more than three times their income are assigned an imputed income equal to the average of their expenditure and income. 75% of these HHs come from the lowest decile and 84% from the lowest two deciles.

Table 8.2 repeats Table 8.1 to show how the imputation approach reduces 'noise' as indicated by the proportions of the poor from various subgroups who have expenditure more than double the selected income poverty line. Table 8.1 uses the standard HES dataset. Table 8.2 uses the modified dataset.

Table 8.2
Proportions (%) of sub-groups in income poverty whose expenditure is more than double the selected threshold, HES 2004 (BHC) – modified dataset (see text)

	Poverty lines as a % of the 2004 median (BHC)			
Sub-group	**40%**	**50%**	**60%**	**70%**
Self-employed	*	*	12	5
0-17	13	5	3	2
18-24	*	20	12	2
26-40	23	8	7	2
41-64	23	6	6	2
65+	0	0	3	2
Two parent with any dep ch	21	5	5	3
Sole parent with any dep ch	7	6	1	0
HHs <65 with 2 or more adults, no dep children	25	21	13	3
Population overall	18	7	5	2

Notes: An asterisk (*) in a cell indicates that the sample numbers are too small to provide reliable estimates for that cell

What indicators are changed most by reducing the noise at the bottom end?

For reporting on poverty depth the noise at the bottom has a significant impact[140]. This can be seen from the results for the mean poverty depth in **Table 8.3** below. The mean poverty depth figures are significantly different (lower) when the modified dataset is used. This is to be expected

[139] This adjustment is not possible in the new incomes-only HES (starting with HES 2008) as no expenditure diary is kept.
[140] Poverty depth and the Total Poverty Gap are defined and discussed at the end of Section E.

given that the mean depth is strongly influenced by the proportion of households with very low incomes.

Table 8.3
Comparison of poverty depth (%) using the standard and modified HES 2004 datasets (BHC)

	Poverty lines as a proportion (%) of the median (BHC)					
	40%		50%		60%	
	Std	Modified	Std	Modified	Std	Modified
Median poverty depth	27	12	20	18	16	12
Mean poverty depth	43	23	33	23	25	19

Figure 8.3 shows that estimates of the Total Poverty Gap are also considerably higher when using the standard dataset as so many decile one households having implausibly low low incomes.

Figure 8.3
Total Poverty Gap
(BHC, 60% 1998CV threshold):
estimates compared for standard and modified datasets

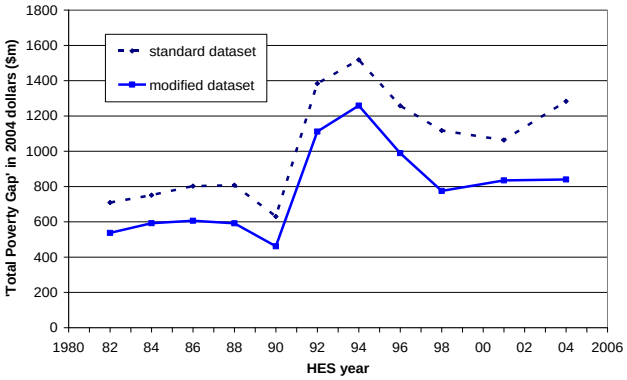


Table 8.4 compares the poverty rates for the various subgroups using the standard and modified datasets. Unsurprisingly the poverty rates using the modified dataset are all lower than when using the standard set. Note though that the reported poverty rates for the population as a whole and for sub-groups of special policy interest (children, those in sole-parent households and older New Zealanders) are not greatly changed by using the modified dataset. The largest differences are for those aged 18 to 24 and for working-age households with two or more adults and no dependent children.

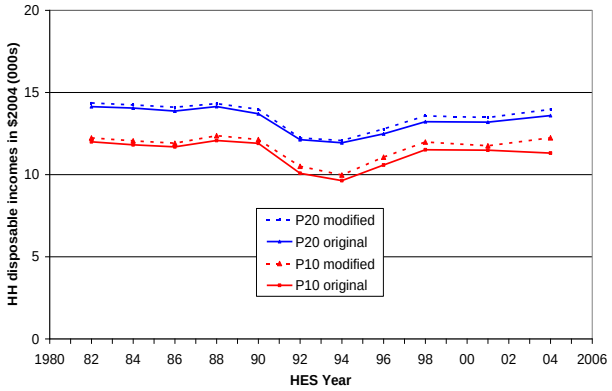
Table 8.4
Comparison of poverty rates (%) using the standard and modified HES 2004 datasets (BHC)

	Poverty lines as a % of the median (BHC)					
	40%		50%		60%	
Sub-group	Std	Modified	Std	Modified	Std	Modified
Self-employed	4	1	8	5	15	12
0-17	6	5	15	14	26	26
18-24	9	4	14	8	18	13
26-40	5	4	10	8	16	15
41-64	5	4	9	7	16	15
65+	1	1	3	3	37	38
Two parent with any dep ch	3	3	9	9	16	17
Sole parent with any dep ch	12	10	34	31	60	59
HHs <65 with ≥ 2adults, no dep children	6	2	10	4	14	8
Population overall	5	4	10	9	21	20

The differences between the two sets of results would have been larger if an exogenously determined poverty line (eg "$13,000") had been used and applied to both datasets. As it is, the modified dataset produces a slightly higher median and therefore the poverty thresholds are correspondingly higher (~2%). These higher thresholds (in dollar terms) offset to some degree the poverty-reducing effect of the imputed household incomes being higher than the reported incomes. Nevertheless, this preliminary analysis gives some assurance that the use of the standard dataset does not in the main produce misleading results, for the reporting of poverty rates using 50%, 60% and higher thresholds.

Figure 8.4 shows the difference the modifications make to incomes at the top of the bottom decile (P10). The P10 values over the 1982 to 2004 period are all higher using the modified dataset, as would be expected (around 2-4% higher). The trend is unchanged, except that in the 2004 HES, the noise at the bottom was such that the standard dataset shows a decline in real P10 incomes ('the poor became poorer') whereas the modified dataset shows a rise in P10 ('the poor became less poor'). The difference in 2004 is 8%. In contrast the P20 trends are the same whether the modified or standard datasets are used.

Figure 8.4
Comparison of trends using the original and modified datasets for P10 and P20 incomes



Further work

Further work is planned on the issue of noise at the bottom end of the distribution focussing on the implications for reporting on indicators of hardship and inequality. This will use the more comprehensive information available in the 2014-15 HES. The results from this exercise will be noted in a future update of this report, and adjustments made as and if required.

In the meantime:

(a) the standard unmodified dataset will be used except for estimates of 'poverty depth' which use the modified dataset described above.

(b) a special Appendix is provided for better estimates of the means for the bottom decile in the years when expenditure data is available (see Appendix 9).

Appendix 9 [closely linked to Appendix 8]

Decile and quintile means and shares (BHC)

Different parts of the income distribution can show quite different relative movements over time. One way to show the differing changes is to divide the population into ten equal sized groups (deciles) and show the trends in real incomes for the median, the mean or top of each decile.[141]

The main report uses the upper boundaries of deciles one to nine for this purpose. These correspond to the percentiles P10, P20, P30 and so on. Trends for P100 are not given for the top decile as these are simply the highest household income in the surveys. To give an idea of trends for the top decile, some information is given about changes in the top decile median (ie P95).

The upper boundary approach is used in the main report for two reasons:

- it fits well with the use of standard percentile ratios for summarising trends in inequality (eg the 90/10 and 80/20 ratios)
- it avoids the considerable difficulties that arise when decile medians or especially means are used for indicating trends for households reporting very low incomes (ie those in the bottom income decile[142]

Reporting on trends in decile means (or medians) is nevertheless a common practice. This Appendix provides that information in the context of a discussion and a strong health warning regarding the uncritical use of bottom decile means (or medians) to indicate trends in the material wellbeing of low-income households.

In the discussion that follows it is important to remember that this report is not simply about reporting on household incomes per se. Its purpose is to provide information on New Zealanders' access to economic resources and (potential) living standards as indicated by their household incomes. While household income is far from perfect as a measure of material wellbeing it is generally a useful enough indicator. There are however some households for whom it would be very misleading to take their incomes as even a rough and ready indicator of access to economic resources. This is a particularly acute issue for the bottom income decile as can be illustrated by identifying households with expenditure much greater than their reported income. Those reporting expenditure much higher than reported income are found in most parts of the income distribution but the bulk of them are found in the bottom decile. See Appendix 8 for detail. .

One of the groups of decile one households whose incomes are not even a rough and ready indication of access to economic resources is the group reporting zero or negative income for the year. In the sample for each survey there are typically 20 to 30 households who report zero or negative income out of around 250 households in the bottom decile (before grossing up to population estimates). This is not an insignificant group. Not only are these reported zero or negative incomes completely misleading indicators of access to economic resources (even though they may be quite legitimate and accurate responses to the income questions in the survey) they also lower the mean for the bottom decile, and pull it below the decile median.[143]

The pulling down of the mean can be seen in **Figure 9.1.** The graph also shows how the difference between mean and median varies from survey to survey. In the 1986 HES and especially in the 1988 HES there were relatively large numbers of households reporting negative incomes – this brought the mean down quite low relative to the median for those years. In the 1990 HES the numbers with reported negative incomes was much smaller which brought the mean closer to the median. This is reflected in the Figure 9.1.

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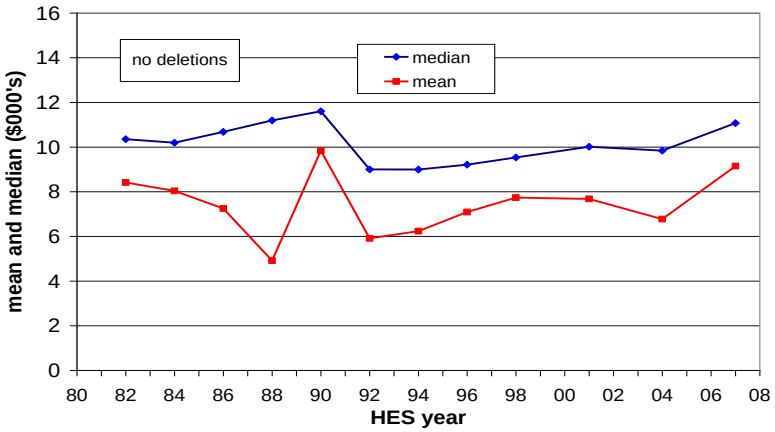
[141] The boundary analysis is sometimes described as 'the upper boundaries of deciles one to nine' and sometimes as 'the lower boundaries of deciles two to ten'. These are the same thing.

[142] See Table B.4 (p28) for an indication of incomes for different household types in decile one.

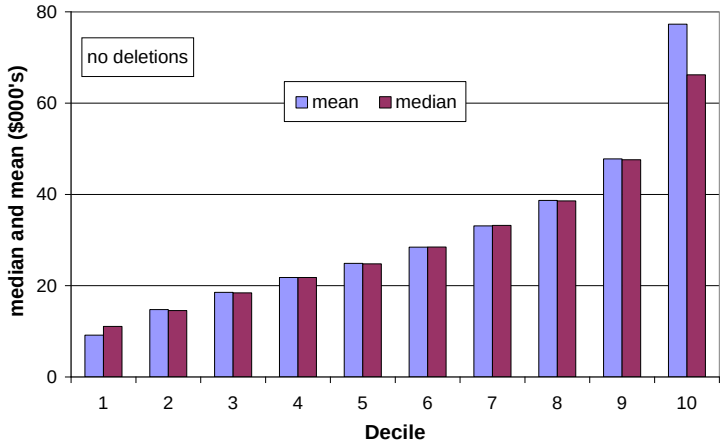
[143] For 2001, 2004 and 2007, the mean incomes of those with reported negative or zero incomes were -$40,600, -$22,600 and -$5,800, while their reported spending was $39,700, $37,800 and $29,500.

Figure 9.1
Bottom decile means and medians, 1982 to 2007 (2007 dollars)



This difference between median and mean that is observed in the bottom decile does not occur in deciles 2 to 9. In decile 10 the reverse occurs – the mean is higher then the median because of a few very high incomes at the top of the distribution. These things are all illustrated in the HES 2007 analysis shown in **Figure 9.2**.

Figure 9.2
Decile means and medians: equivalised household incomes, BHC (2007 HES)



To alleviate the bottom decile issues, various approaches have been and are used:

- some use "bottom coding" such as raising all household incomes to at least 1% of the overall mean (eg the Luxembourg Income Study), or re-setting all negatives to zero (as in the data sent to the OECD by statistical agencies, in response to the OECD incomes questionnaire)
- others modify the dataset by deleting various records – examples are:
  - deleting records with negative incomes, or incomes less than or equal to zero
  - deleting records with high expenditures relative to reported income or with negative self-employment income (the NZPMP uses expenditure of 3x income as an indicator of high expenditure)
- this report modifies the dataset by imputing an income that is an average of reported expenditure and reported income for households with high spending relative to their income (see Appendix 8 for more information on this report's use of this approach).

Figure 9.3 shows how each of four approaches impacts on the mean for decile 1, relative to the situation of 'no deletions' (bottom line in graph below). The NZPMP and the modified dataset approach used in this report have a fairly similar impact.

Figure 9.3
Impact on decile one means of selected dataset modifications $2007)

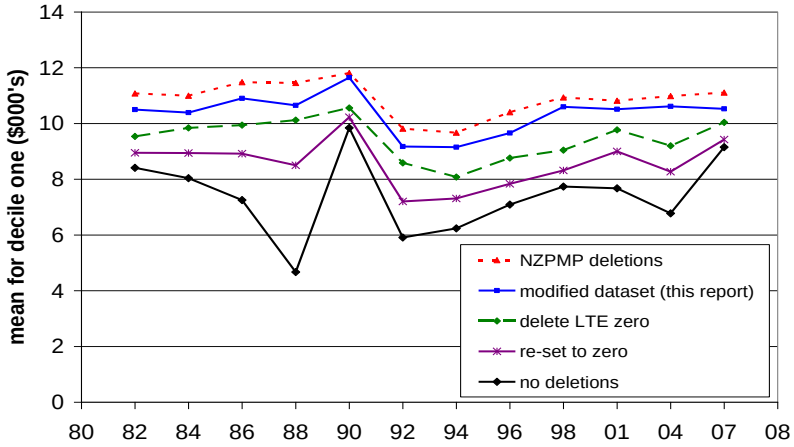
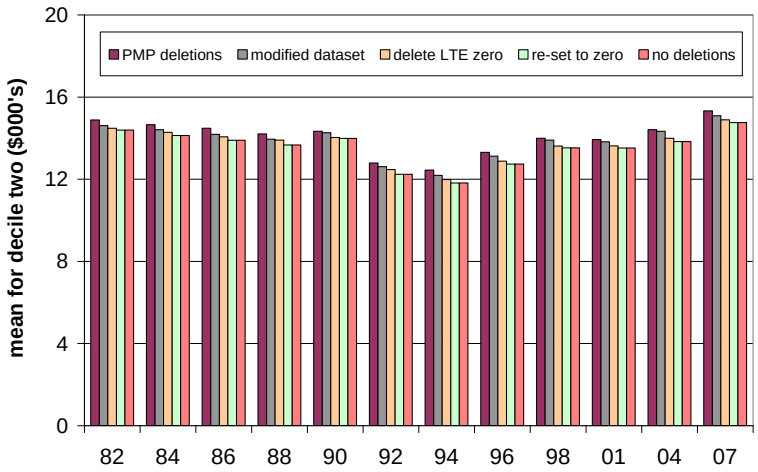


Figure 9.4 shows how in contrast to what happens for decile 1, each of the four approaches has a very limited impact on the mean for decile 2. The same holds for deciles 3 to 10.

Figure 9.4
Impact on decile two means of selected dataset modifications



One of the main uses for information on decile means is to report on trends in their real values over time. **Table 9.1** reports the changes in decile means for selected time periods using the reported income data and the four modifications to the income data used above.

Table 9.1
Percentage change in decile means by different dataset modifications

	Low	2	3	4	5	6	7	8	9	High
2004 to 2007										
No deletions	***35***	7	15	13	8	4	2	2	5	7
Set negatives to zero	***14***	7	15	13	8	4	2	2	5	7
Delete LTE zero	***9***	6	15	13	8	3	2	2	5	7
NZPMP deletions	***1***	6	14	11	7	2	1	2	5	7
Modified dataset (this report)	***-1***	5	13	11	7	2	1	2	5	7
2001 to 2007										
No deletions	***19***	9	19	21	16	11	11	10	10	7
Set negatives to zero	***5***	9	19	21	16	11	11	10	10	7
Delete LTE zero	***3***	9	19	20	15	11	11	10	10	7
NZPMP deletions	***3***	10	19	19	14	11	10	10	10	7
Modified dataset (this report)	***0***	9	19	19	14	10	10	10	11	9
1998 to 2007										
No deletions	***18***	9	21	24	18	16	16	14	16	14
Set negatives to zero	***18***	9	21	24	18	16	16	14	16	14
Delete LTE zero	***11***	9	21	23	18	16	16	14	16	14
NZPMP deletions	***2***	10	20	21	16	15	15	13	16	13
Modified dataset (this report)	***-1***	9	20	21	16	15	14	13	15	13
1982 to 2007										
No deletions	***9***	3	10	12	12	12	14	16	22	49
Set negatives to zero	***5***	3	10	12	12	12	14	16	22	49
Delete LTE zero	***5***	3	10	12	12	12	14	16	22	49
NZPMP deletions	***0***	3	10	12	12	12	14	16	23	49
Modified dataset (this report)	***0***	3	11	13	12	12	14	16	23	47
1988 to 2001										
No deletions	***56***	-6	-7	-5	-1	3	5	9	15	41
Set negatives to zero	***1***	-6	-7	-5	-1	3	5	9	15	41
Delete LTE zero	***-8***	-7	-7	-5	-1	2	5	9	15	41
NZPMP deletions	***-10***	-7	-7	-4	0	3	5	9	15	41
Modified dataset (this report)	***-6***	-6	-6	-4	0	3	6	9	15	39
1988 to 1994										
No deletions	***27***	-18	-18	-18	-17	-14	-11	-8	-4	10
Set negatives to zero	***-18***	-18	-18	-18	-17	-14	-11	-8	-4	10
Delete LTE zero	***-24***	-18	-18	-19	-17	-14	-11	-8	-4	9
NZPMP deletions	***-20***	-17	-19	-18	-16	-13	-11	-7	-3	10
Modified dataset (this report)	***-18***	-17	-19	-18	-17	-13	-11	-7	-3	8

very unstable

stable, not sensitive to different modifications to the dataset

Note: In 1988 there were more than the usual number of households reporting negative incomes and some reported some quite large negative incomes. This accounts for the incongruous 56% and 27% income growths for the bottom decile shown in the bottom two panels of Table 9.1. See also Fig 9.3.

The upshot of all this is that:

- it is misleading to use bottom decile means based on unadjusted income data as an indication of changes in access to economic resources for these households
- this is one of the reasons behind the use in the report of the top of decile one as an indicator of trends for those with very low incomes (P10)
- when comparing changes in mean incomes for deciles 2 to 10, the impact of any of the approaches used to alleviate decile one issues is barely noticeable
- changes in means for deciles 2 to 10 and changes at the top of deciles 1 to 9 (main report) show similar patterns
- this report recommends the use of the 'modified dataset' approach for tracking changes in the mean for the bottom decile (when the information is being used as an indicator of the access to economic resources for the bottom decile) .

Table 9.2 gives the decile means when negative incomes are re-set to zero (as is the default protocol in the main report), and for the bottom two deciles for the 'modified dataset' used in the main report for poverty depth analysis and discussed further in Appendix 8.

Table 9.2
Decile means of equivalised household incomes (BHC), ($2012)

HES year	Modified dataset		Negatives set to zero									
	1	2	1	2	3	4	5	6	7	8	9	10
1982	12,100	16,800	*10,300*	16,600	19,300	22,300	25,600	29,300	33,300	38,400	45,000	59,700
1986	12,500	16,300	*10,300*	16,000	19,000	21,400	24,300	27,200	30,600	35,100	42,100	57,700
1988	12,800	16,900	*10,300*	16,500	19,200	21,900	25,000	28,600	32,600	37,200	43,400	58,800
1990	11,600	15,100	*11,800*	16,100	18,500	21,100	24,300	28,100	32,100	38,000	46,200	70,800
1992	10,600	14,500	*8,300*	14,100	16,000	18,500	21,900	25,400	29,700	35,000	43,000	64,200
1994	10,500	14,000	*8,400*	13,600	15,700	17,800	20,800	24,800	29,000	34,400	41,800	64,500
1996	11,100	15,100	*9,000*	14,700	16,700	19,000	22,200	26,200	30,300	36,400	44,300	73,000
1998	12,000	16,000	*9,600*	15,600	17,600	20,300	24,200	28,200	32,900	39,100	47,400	78,100
2001	11,900	15,900	*10,400*	15,600	17,900	20,800	24,700	29,400	34,400	40,500	49,800	82,900
2004	11,900	16,500	*9,500*	15,900	18,500	22,200	26,400	31,600	37,300	43,600	52,200	83,100
2007	12,500	17,600	*11,100*	17,200	21,500	25,400	29,100	33,400	38,800	45,400	55,900	87,300
2009	-	-	*12,300*	18,500	22,600	26,700	30,800	35,300	40,800	47,400	58,200	99,500
2010	13,400	18,600	*11,700*	18,200	22,600	27,100	31,000	35,500	40,900	47,400	57,500	96,200
2011	-	-	*11,200*	17,800	21,600	25,700	29,900	34,600	40,700	48,100	58,300	107,200
2012	-	-	*12,300*	18,800	22,800	27,300	30,800	35,100	41,300	49,200	60,100	97,100
2013	14,000	19,300	*13,100*	18,900	23,000	27,200	31,200	36,600	43,700	50,900	61,100	105,100
2014	-	-	-	19,000	23,200	27,700	32,400	38,400	44,500	52,800	64,400	108,400
2015	-	-	*12,900*	19,800	24,100	28,700	33,200	38,200	44,700	52,200	63,800	120,500
2016	14,900	20,800	*13,300*	20,500	25,200	29,700	34,100	39,200	45,100	53,800	67,100	116,600

this report advises against the use of this column for reporting on trends for low-income HHs

Notes: (1) The decile one means calculated with negatives set to zero (shaded column) are very unreliable indicators of the access to economic resources for the bottom decile – those from the 'modified dataset' (LH column) are better indicators.

(2) In the 'modified dataset' households with reported expenditure of more than three times their reported income are assigned an imputed income equal to the average of their reported income and expenditure (see Appendix 8 for more detail).

(3) The full 'modified dataset' approach is not able to be implemented for the HES (Income) years as these surveys do not collect full expenditure information.

Income shares

Table 9.3 reports decile shares for 1982 to 2016. The same issues apply to decile one shares as they do to decile one means. In particular they impact on the D10 to D1 share ratio, a ratio used by the OECD and Eurostat and others as an inequality indicator (sometimes referred to as the "S90:S10" share ratio). The Revised Jensen scale (1988) is used.

Table 9.4 gives quintile shares recalculated from the dataset rather than from simply adding the decile shares, to avoid the rounding errors that can occur with the latter.

Table 9.3
Decile shares (%) of equivalised household incomes (BHC)

	Modified dataset		Negatives set to zero									
	1	2	1	2	3	4	5	6	7	8	9	10
1982	4.0	5.5	3.4	5.5	6.4	7.4	8.5	9.8	11.1	12.8	15.0	19.9
1984	4.0	5.5	3.5	5.5	6.4	7.4	8.4	9.6	11.0	12.8	15.0	20.2
1986	4.3	5.7	3.6	5.6	6.7	7.5	8.6	9.6	10.8	12.4	14.9	20.3
1988	4.3	5.6	3.5	5.6	6.6	7.5	8.5	9.8	11.1	12.7	14.8	20.1
1990	4.3	5.2	3.8	5.2	6.0	6.9	7.9	9.2	10.4	12.4	15.0	23.1
1992	3.7	5.1	3.0	5.1	5.8	6.7	7.9	9.2	10.8	12.7	15.6	23.3
1994	3.8	5.1	3.1	5.0	5.8	6.6	7.7	9.1	10.7	12.7	15.5	23.8
1996	3.7	5.1	3.1	5.0	5.7	6.5	7.6	9.0	10.4	12.5	15.2	25.0
1998	3.8	4.9	3.1	5.0	5.6	6.5	7.7	9.0	10.5	12.5	15.1	25.0
2001	3.6	4.8	3.2	4.8	5.5	6.4	7.6	9.0	10.5	12.4	15.3	25.4
2004	3.5	4.7	2.8	4.7	5.4	6.5	7.7	9.3	10.9	12.8	15.4	24.5
2007	3.3	4.7	3.0	4.7	5.9	6.9	7.9	9.0	10.5	12.3	15.2	24.6
2009	-	-	3.2	4.7	5.8	6.8	7.8	8.9	10.2	12.2	14.9	25.9
2010	3.4	4.7	3.0	4.7	5.8	7.0	8.0	9.1	10.5	12.1	14.7	24.6
2011	-	-	2.9	4.5	5.5	6.5	7.6	8.8	10.3	12.2	14.8	27.0
2012	-	-	3.1	4.7	5.8	6.9	7.8	8.9	10.5	12.5	15.2	24.6
2013	3.4	4.6	3.2	4.6	5.6	6.6	7.6	8.9	10.7	12.4	14.9	25.6
2014	-	-	-	4.5	5.5	6.5	7.7	9.0	10.5	12.5	15.2	25.7
2015	-	-	2.9	4.5	5.5	6.5	7.6	8.7	10.2	11.9	14.6	27.5
2016	3.3	4.6	3.0	4.6	5.7	6.7	7.7	8.8	10.1	12.1	15.1	26.2

Table 9.4
Quintile shares (%) of equivalised household incomes (BHC)

	Modified dataset	Negatives set to zero				
	Q1	Q1	Q2	Q3	Q4	Q5
1982	9.4	9.0	13.9	18.3	23.9	34.9
1986	10.0	9.3	14.2	18.2	23.2	35.2
1988	9.9	9.1	14.0	18.3	23.8	34.8
1990	9.5	9.1	12.9	17.1	22.8	38.1
1992	8.9	8.1	12.5	17.1	23.4	38.9
1994	8.9	8.1	12.4	16.8	23.4	39.3
1996	8.8	8.1	12.2	16.6	22.9	40.2
1998	8.7	8.0	12.1	16.7	23.0	40.1
2001	8.4	7.9	11.8	16.6	22.9	40.7
2004	8.2	7.5	11.9	17.0	23.7	39.8
2007	8.0	7.7	12.8	16.9	22.8	39.7
2009	-	7.9	12.6	16.7	22.3	40.5
2010	8.2	7.7	12.8	17.1	22.7	39.7
2011	-	7.4	12.0	16.3	22.5	41.8
2012	-	7.9	12.7	16.7	22.9	39.8
2013	8.0	7.8	12.2	16.5	23.0	40.5
2014	-	*(7.4)*	12.0	16.7	23.0	40.9
2015	-	7.5	12.0	16.3	22.1	42.1
2016	7.9	7.6	12.3	16.5	22.2	41.3

Appendix 10

Household incomes in 'ordinary' dollars (ie not equivalised)

This report almost always uses household income adjusted for size and composition (equivalised income). This enables more sensible comparisons between different types of household, especially when using household income as an indicator of material wellbeing.

Table 10.1 reports median household income in 'ordinary' unequivalised dollars. The medians are adjusted for inflation using the CPI ($2016). See **Appendix 7** for the deflators used.

Table 10.1
Median disposable household income ($2016), not adjusted for household size and composition

HES year	median HH income ($)	mean HH income ($)
2001	56,100	66,500
2004	58,700	69,800
2007	64,800	77,200
2008	66,000	77,200
2009	67,100	79,300
2010	67,000	78,100
2011	66,000	80,000
2012	68,600	79,600
2013	69,400	82,500
2014	71,600	85,500
2015	73,800	89,100
2016	76,200	90,600

Table 10.2 reports household disposable income in 'ordinary' unequivalised dollars at the top of each decile (P10 to P90) and at P95 (2016 HES). P50, top of decile 5, is the median.

Table 10.2
Disposable household income at top of deciles and at P95,
income not adjusted for household size and composition (HES 2016)

1	30,900
2	43,400
3	55,400
4	65,200
5	76,200
6	88,300
7	102,100
8	122,400
9	160,400
9.5	200,000

Appendix 11

Supplementary poverty tables using three equivalence scales and three thresholds

In the main text the figures are rounded to the nearest whole number to avoid unwarranted impressions of precision. They are usually given here to one decimal place to assist with charts or rankings. The Jensen and modified OECD equivalence scales generally give similar figures for "All" and "0-17" for "ALL" and "0-17" (see also Table 3.1 in Appendix 3).

Table 11.1
Income poverty rates using three relative thresholds (% of median) and three equivalence scales, by age groups, BHC

		50%			60%			70%		
Age gp	**Year**	**sq rt**	**Jensen**	**m OECD**	**sq rt**	**Jensen**	**m OECD**	**sq rt**	**Jensen**	**m OECD**
0-17	1995	10.8	9.4	9.4	22.1	19.5	19.4	36.3	32.9	34.0
	1998	11.3	9.4	9.7	22.9	20.4	18.9	37.9	36.5	36.5
	2001	14.6	11.8	11.2	27.1	24.3	22.7	38.7	35.6	36.2
	2004	15.1	14.4	13.8	27.5	25.6	24.6	37.6	36.6	35.8
	2007	14.7	12.5	12.0	20.7	19.9	18.6	28.8	27.2	27.0
	2010	16.4	13.9	13.0	24.8	23.5	22.8	32.7	32.2	31.3
	2013	13.1	11.1	11.5	22.8	20.4	19.8	31.6	29.8	29.5
	2016	11.6	11.3	9.8	19.9	17.8	17.2	30.4	28.2	28.7
18-64	1995	6.7	6.6	6.7	11.8	10.9	11.1	19.9	18.8	19.2
	1998	7.4	6.6	6.8	13.3	12.7	11.8	20.9	21.1	21.4
	2001	9.1	7.8	8.0	15.9	14.3	14.4	22.9	21.9	21.9
	2004	10.6	10.0	9.7	17.2	16.3	16.3	23.3	23.2	23.1
	2007	10.5	9.7	9.5	14.9	14.6	14.3	19.7	19.0	19.0
	2010	10.2	9.3	9.2	15.3	14.8	14.7	19.7	19.7	19.3
	2013	9.8	9.2	9.6	15.0	14.3	15.1	21.0	20.7	20.5
	2016	9.5	9.8	9.1	14.7	14.1	13.9	20.5	20.2	20.4
65+	1995	0.4	0.3	0.4	2.6	1.8	1.8	36.0	33.3	29.7
	1998	2.8	2.4	1.7	29.2	24.8	14.5	48.1	45.9	45.4
	2001	1.6	1.6	1.6	29.5	20.1	17.8	51.6	47.7	47.1
	2004	8.8	2.8	2.7	43.9	37.1	34.0	58.3	56.2	54.7
	2007	18.1	8.0	7.9	42.2	37.9	37.3	54.8	53.2	51.3
	2010	12.7	5.1	4.4	37.2	33.7	33.6	49.8	47.7	46.9
	2013	9.9	4.2	4.5	32.0	28.9	28.4	42.8	40.2	39.8
	2016	14.9	4.1	2.9	40.4	36.4	34.1	48.1	47.3	46.5
ALL	1995	7.2	6.7	6.7	13.7	12.3	12.4	26.2	24.3	24.5
	1998	8.0	6.9	7.1	17.7	16.2	14.1	28.6	28.1	28.2
	2001	9.8	8.2	8.1	20.5	17.6	17.1	30.5	28.6	28.7
	2004	11.6	10.4	10.0	22.9	21.2	20.5	31.1	30.5	30.1
	2007	12.5	10.3	9.9	19.6	18.8	18.1	26.3	25.2	24.9
	2010	12.1	10.0	9.6	20.4	19.4	19.1	26.7	26.3	25.7
	2013	10.7	9.0	9.4	19.2	17.7	18.0	26.5	25.6	25.3
	2016	10.8	9.3	8.4	19.6	18.2	17.6	26.8	26.0	26.1

sq rt Square root scale (elasticity of 0.5), used by OECD
Jensen Revised Jensen Scale (1998), used in New Zealand
m OECD Modified OECD scale, used in EU and many countries (but not usually in OECD analysis)

Table 11.2
Poverty depth for households with children (0-17 yrs):
gap between poverty line and the median of those in poor households with children (% of median), using two relative thresholds (% of median) and two equivalence scales, BHC

	50%		60%	
Year	**Jensen**	**mod OECD**	**Jensen**	**mod OECD**
2004	17	18	18	18
2007	14	18	22	24
2010	17	17	21	19
2013	13	10	17	19
2015	19	18	20	20

Jensen Revised Jensen Scale (1998), used in New Zealand
mod OECD Modified OECD scale, used in EU and many countries (but not usually in OECD analysis)

Notes for Table 5:

(1) This table was originally prepared for UNICEF to use in its Report Card #10 in 2012 (Figure 7). The revised figure for 2010 (17% rather than 16%) puts New Zealand more in the middle of the table with Netherlands and the UK . Report Card #13 (2016) uses a different approach to assess inequality in bottom half of the income distribution and New Zealand is again around the middle of the league table (see League Table 1 on p4).

(2) Poverty depth figures tend to move around from survey to survey, reflecting the changes from survey to survey in the number of households (with children) with unusually low incomes. Differences should be treated with caution until it is clear that a new pattern is established, averaging over two or three surveys. For example, there is no policy shift or other obvious reason as to why most measures show a fall from 2010 to 2013. It illustrates the data issues involved in trying to measure poverty depth, especially for a population sub-group.

(3) The figures in Table 10.5 are for households with children rather than for children per se – the impact on the figures using this slightly different conceptualisation is likely to be very small in itself, and is certainly negligible compared with the uncertainties arising from the data issues noted above.

Appendix 12

Table 12.1 Children in low-income households by household and family type: 50% AHC REL

A. Proportions of children below the threshold, by household and family type

	07	09	10	11	12	13	14	15	16
By household type									
Children in SP HHs	-	49	55	56	56	56	58	49	58
Children in 2P HHs	-	13	12	11	12	12	13	13	11
Children in other fam HHs	-	13	14	15	12	12	17	19	19
By family type (n1)									
Children in SP families	-	41	46	47	46	47	52	43	49
- in SP families on own	-	52	59	63	61	61	62	55	63
- within wider HHs	-	19	21	20	18	14	30	18	28
Children in 2P families	-	12	12	11	12	12	12	13	11
By # of children in HH									
1 or 2 children	-	16	17	17	17	18	18	16	16
3 or more children	-	26	23	26	24	21	25	25	20
By main source of household income in the 12 months prior to interview									
Market	-	10	8	7	9	10	-	10	11
Income-tested benefit	-	80	73	73	75	73	-	84	86
By work status of adults at time of interview (all HHs with children)									
- Self-employed	-	13	10	12	16	13	13	13	10
- One or more FT	-	18	8	6	7	9	8	9	9
- None FT	-	60	54	63	62	59	-	63	72
- Workless	-	60	59	67	73	68	-	73	79
By work status of adults at time of interview (two parent HHs)									
- Both full-time	-	5	4	6	6	2	2	4	3
- One FT, one PT	-	4	13	3	6	5	10	9	6
- One FT, one workless	-	15	11	7	9	17	12	15	10
All children, all HHs	-	20	20	20	20	19	21	20	17

B. Composition of children below the threshold, by household and family type

	07	09	10	11	12	13	14	15	16
Children by household type									
Children in SP HHs	-	48	48	53	49	49	47	39	42
Children in 2P HHs	-	43	44	39	42	42	44	46	45
Children in other fam HHs	-	8	8	8	8	8	8	13	12
Children by family type (n1)									
Children in SP families	-	52	53	60	55	53	54	46	50
- in SP families on own	-	45	45	51	48	48	44	40	*39*
- within wider HHs	-	8	8	9	7	5	10	7	*11*
Children in 2P families	-	48	47	40	45	47	46	54	50
By main source of household income in the 12 months prior to interview									
Market	-	43	34	28	39	45	-	41	56
Income-tested benefit	-	57	66	72	61	55	-	59	44
By work status of adults (all HHs with children									
Self-employed	-	8	6	7	7	7	-	7	11
One or more FT	-	29	27	20	24	32	-	32	36
None FT	-	64	68	73	69	61	-	61	53
- *PT only*	-	*16*	*16*	*14*	*14*	*10*	-	*12*	*12*
- *Workless*	-	*48*	*52*	*59*	*55*	*51*	-	*49*	*41*
All children	100	100	100	100	100	100		100	100

Notes: 1 Family here is 'economic family unit' (see Section A for definition).

Table 12.2 Children in low-income households by household and family type: 60% AHC REL

A. Proportions of children below the threshold, by household and family type

	07	09	10	11	12	13	14	15	16
By household type									
Children in SP HHs	-	59	65	70	67	65	73	64	68
Children in 2P HHs	-	18	22	17	18	16	20	20	18
Children in other fam HHs	-	19	27	17	24	9	19	26	20
By family type (n1)									
Children in SP families	-	49	59	59	59	55	64	56	
- in SP families on own	-	61	71	74	72	70	76	71	
- within wider HHs	-	24	35	32	35	21	38	28	
Children in 2P families	-	19	21	16	17	16	19	20	
By # of children in HH									
1 or 2 children	-	21	26	22	25	26	26	22	
3 or more children	-	34	34	37	34	28	37	36	
By main source of household income in the 12 months prior to interview									
Market	-	16	17	13	16	15	-	17	18
Income-tested benefit	-	86	88	84	88	83	-	91	94
By work status of adults at time of interview (all HHs with children)									
- Self-employed	-	18	23	23	22	15	21	19	19
- One or more FT	-	14	16	11	12	13	15	16	16
- None FT	-	70	69	75	78	70	-	75	82
- Workless	-	75	73	80	84	78	-	82	85
By work status of adults at time of interview (two parent HHs)									
- Both full-time	-	10	8	9	8	3	4	7	
- One FT, one PT	-	6	17	6	10	11	14	13	
- One FT, one workless	-	22	27	14	17	24	28	28	
All children, all HHs	-	26	30	27	27	24	29	28	

B. Composition of children below the threshold, by household and family type

	07	09	10	11	12	13	14	15	16
Children by household type									
Children in SP HHs	-	44	37	50	43	45	43	36	35
Children in 2P HHs	-	46	53	43	45	46	50	49	55
Children in other fam HHs	-	10	10	7	11	9	6	13	9
Children by family type (n1)									
Children in SP families	-	47	44	56	51	49	48	44	
- in SP families on own	-	*40*	*35*	*45*	*41*	*43*	*39*	*36*	
- within wider HHs	-	*8*	*9*	*11*	*10*	*6*	*9*	*7*	
Children in 2P families	-	53	56	44	49	51	52	56	
By main source of household income in the 12 months prior to interview									
Market	-	54	48	38	48	51	-	54	66
Income-tested benefit	-	46	52	62	52	49	-	46	34
By work status of adults (all HHs with children									
Self-employed	-	8	9	9	7	7	-	7	14
One or more FT	-	36	33	26	30	36	-	41	44
None FT	-	56	58	65	63	57	-	52	42
- *PT only*	-	*15*	*16*	*13*	*17*	*11*	-	*13*	*11*
- *Workless*	-	*41*	*42*	*52*	*46*	*46*	-	*39*	*31*
All children	100	100	100	100	100	100		100	100

Notes: 1 Family here is 'economic family unit' (see Section A for definition).

Appendix 13

Low-income (poverty) figures compared for two anchored line thresholds - 60% of the 1998 median, and 50% of the 2007 median

See Table F.3
Percentage of whole population below selected 'anchored' thresholds (BHC)

HES year	60% 1998 median	50% 2007 median
1982	12	11
1984	13	12
1986	14	13
1988	12	11
1990	14	12
1992	24	22
1994	26	25
1996	20	19
1998	16	15
2001	15	14
2004	12	12
2007	10	10
2009	7	7
2010	9	8
2011	10	9
2012	7	7
2013	8	7
2014	7	7
2015	6	6

See Table F.4
Percentage of whole population below selected 'anchored' thresholds (AHC)

HES year	60% 1998 median	50% 2007 median
1982	8	8
1984	9	9
1986	8	7
1988	9	9
1990	11	10
1992	21	20
1994	23	22
1996	21	20
1998	18	18
2001	19	18
2004	17	17
2007	13	13
2009	12	12
2010	12	12
2011	14	14
2012	13	12
2013	13	12
2014	13	12
2015	12	11

See Table F.6
Percentage of children below selected 'anchored' thresholds (BHC)

HES year	60% 1998 median	50% 2007 median
1982	18	17
1984	21	19
1986	20	20
1988	16	15
1990	17	16
1992	33	32
1994	36	35
1996	28	27
1998	20	20
2001	22	22
2004	19	17
2007	13	13
2009	10	9
2010	12	11
2011	13	12
2012	11	10
2013	10	9
2014	-	-
2015	8	8

Note: The discrepancy between the 2004 60% of 1998 median figure (19%) and the 50% of 2007 median figure (17%) at first sight looks odd. When the 2008 threshold is lowered to 59% the figures match up (17%). The 2008 60% threshold must sit just above a clump of highly weighted records such that a small change makes a large difference in the measured poverty rate.

See Table F.7
Percentage of children below selected 'anchored' thresholds (AHC)

HES year	60% 1998 median	50% 2007 median
1982	12	11
1984	15	14
1986	11	11
1988	12	11
1990	16	15
1992	33	32
1994	35	34
1996	32	31
1998	28	27
2001	28	28
2004	23	23
2007	17	16
2009	18	18
2010	17	17
2011	20	19
2012	19	19
2013	17	17
2014	18	17
2015	16	15

The charts below illustrate how very close are the trend lines for the two anchored line poverty measures. See the notes below Tables F.3 and F.6 in the main part of the report for more details.

Figure 13.1
Proportion of population below selected AHC low-income thresholds: 60% CV-98 and 50% CV-07 'anchored' or 'constant value (CV)' thresholds

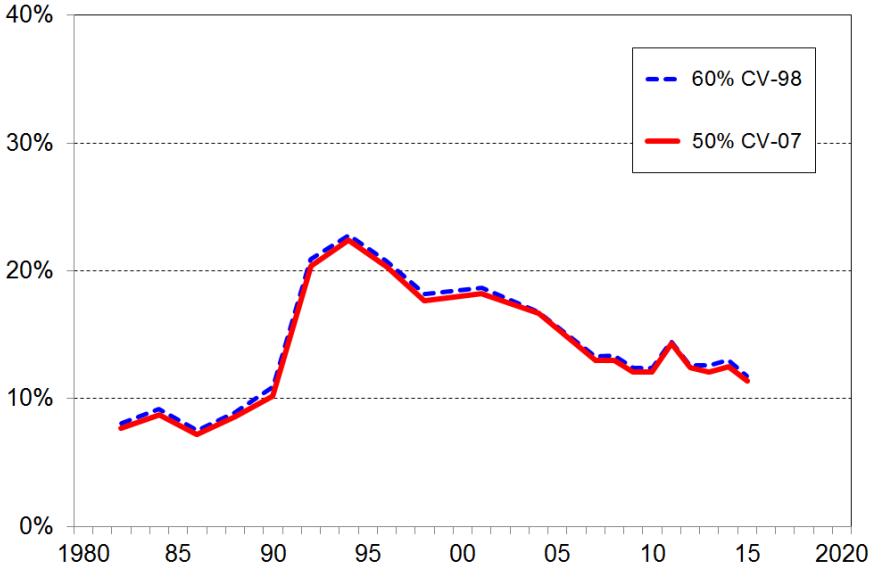
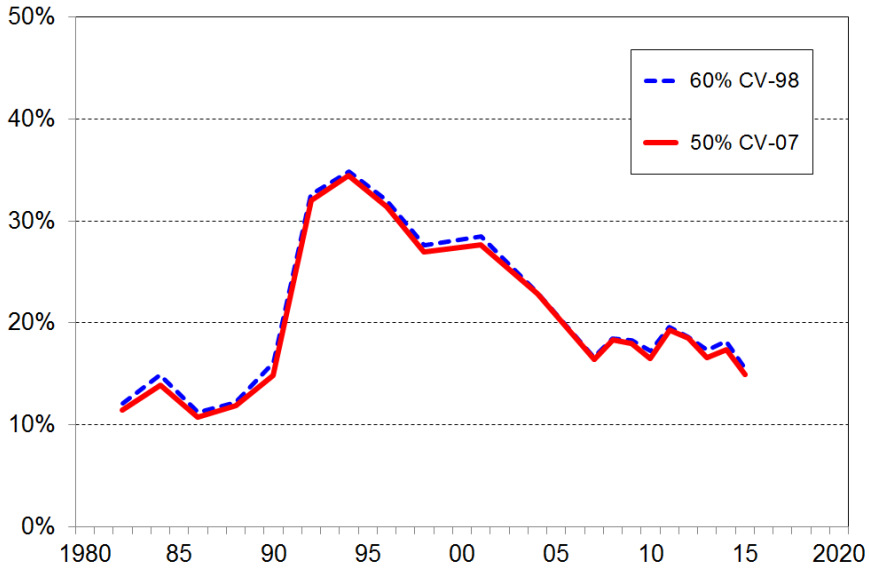


Figure 13.2
Proportion of children below selected AHC low-income thresholds: 60% CV-98 and 50% CV-07 'anchored' or 'constant value (CV)' thresholds



Appendix 14

Low-income (poverty) figures for 2007 and later, without the two-year rolling average smoothing reported in the body of the report

In the body of the report, rolling two-year averages are given for the low-income figures from 2008 on. The rationale for this is that it smoothes the year-on-year fluctuations that arise from both unavoidable sampling uncertainties and other factors and better shows the trends for the different lines. The report will continue to publish the unsmoothed figures in this Appendix, for the population as a whole, and for children.

Table 14.1 (see Table F.3)
Percentage of whole population below selected thresholds (BHC) – no smoothing

	Constant value or "anchored"		Relative to contemporary median		Population (million)
HES year	**50% 2007 median**	**60% 2007 median**	**50% contemp median**	**60% contemp median**	
2007	10	19	10	19	4.13
2009	7	15	9	19	4.21
2010	8	16	10	19	4.26
2011	9	17	10	19	4.31
2012	7	15	8	18	4.34
2013	7	14	9	18	4.37
2014	7	14	10	20	4.42
2015	6	11	10	18	4.46
2016	5	10	9	18	4.55

Table 14.2 (see Table F.4)
Percentage of whole population below selected thresholds (AHC) – no smoothing

Threshold type	Constant value or "anchored"		Relative to contemporary median			Population (million)
HES year	**50% 2007 median**	**60% 2007 median**	**40% contemp median**	**50% contemp median**	**60% contemp median**	
2007	13	18	9	13	18	4.13
2009	12	17	9	14	19	4.21
2010	12	18	9	14	20	4.26
2011	14	19	10	15	20	4.31
2012	12	17	10	14	19	4.34
2013	12	16	10	14	18	4.37
2014	13	17	-	15	20	4.42
2015	11	16	10	14	20	4.46
2016	11	14	10	14	20	4.55

Table 14.3 (see Table F.6) – no smoothing
Percentage of children below selected thresholds (BHC)

	Constant value or "anchored"		Relative to contemporary median		Population (000s)
HES year	**50% 2007 median**	**60% 2007 median**	**50% contemp median**	**60% contemp median**	
2007	13	20	13	20	1065
2009	9	16	12	21	1070
2010	11	20	14	23	1065
2011	12	20	13	22	1067
2012	10	18	12	21	1047
2013	9	16	11	20	1064
2014	-	17	14	24	1058
2015	8	15	13	21	1063
2016	6	12	12	18	1078

Table 14.4 (see Table F.7)
Percentage of children below selected thresholds (AHC) – no smoothing

Threshold type	**Constant value or "anchored"**		**Relative to contemporary median**			**Population (000s)**
HES year	**50% 2007 median**	**60% 2007 median**	**40% contemp median**	**50% contemp median**	**60% contemp median**	
2007	16	22	11	16	22	1065
2009	18	24	13	20	26	1070
2010	17	26	11	20	30	1065
2011	19	25	12	20	27	1067
2012	19	24	13	20	27	1047
2013	17	22	13	19	24	1064
2014	17	23	-	21	29	1058
2015	15	21	12	20	28	1063
2016	12	18	12	17	25	1078

Appendix 15

Where the new money goes across the household income distribution from the Family Incomes package announced in Budget 2017

Figure 15.1
Households with children

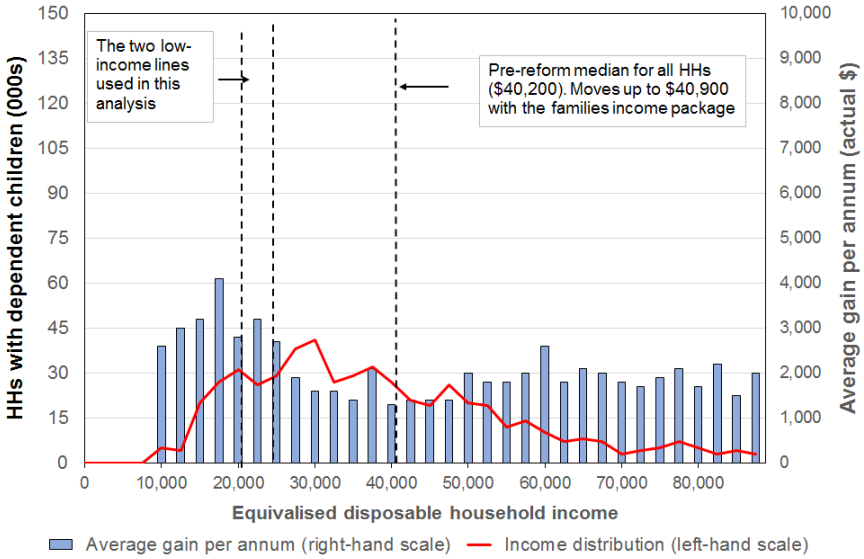
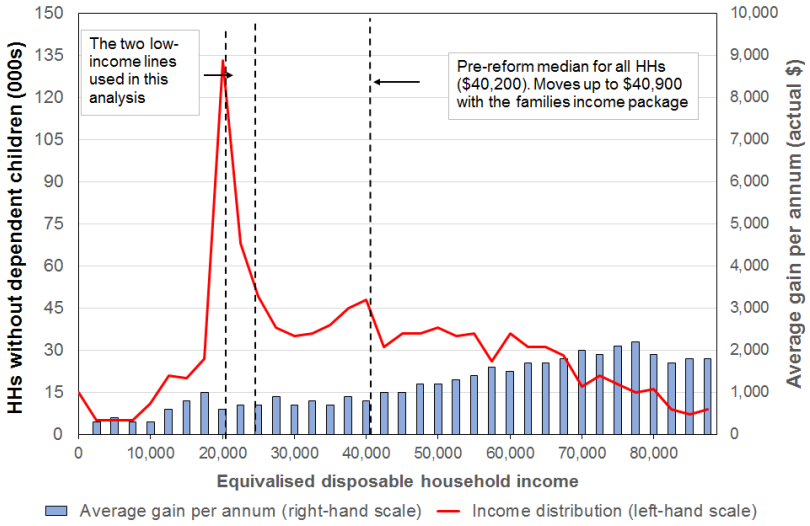


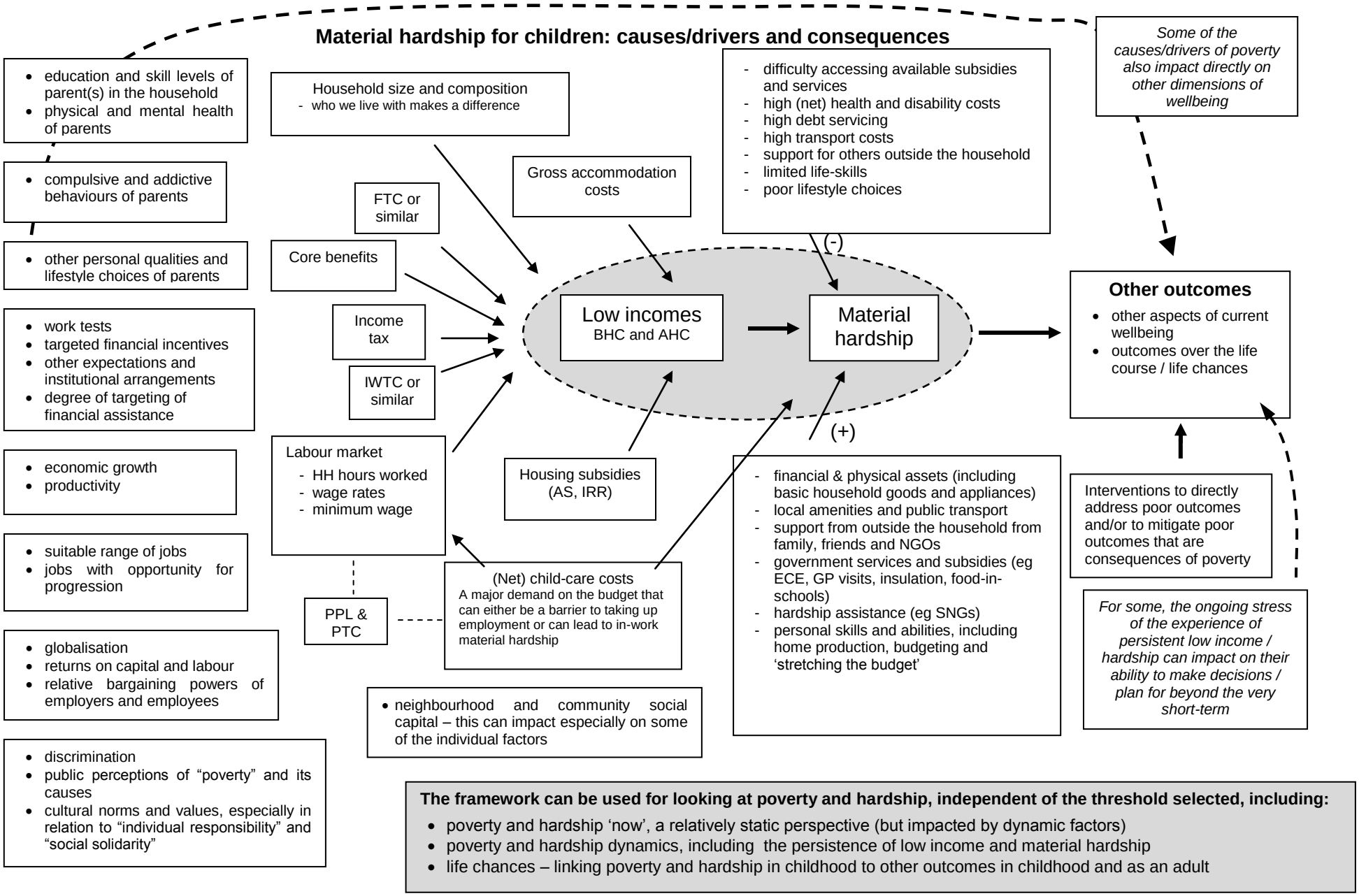
Figure 15.2
Households without children



Source: Treasury micro-simulation modelling (Taxwell) using HES data as the base.

- The vertical bars show the net (non-equivalised) dollar gains on average pa for each $2500 'bin' in the different parts of the household equivalised disposable income distribution. The vertical scales are the same in each chart to allow straightforward comparisons.
- Note the pensioner spike in the lower chart (left-hand axis), reflecting the large number of those aged 65+ with incomes from NZS and little more.
- The two low-income lines referred to are the 50% and 60% of median BHC thresholds.

Appendix 16



The framework can be used for looking at poverty and hardship, independent of the threshold selected, including:

- poverty and hardship 'now', a relatively static perspective (but impacted by dynamic factors)
- poverty and hardship dynamics, including the persistence of low income and material hardship
- life chances – linking poverty and hardship in childhood to other outcomes in childhood and as an adult