Treasury Report: A descriptive analysis of income and deprivation in New Zealand

Date:	4 May 2012	Report No:	T2012/866

Action Sought

	Action Sought	Deadline
Minister of Finance (Hon Bill English)	**Agree** to circulate to Ministerial colleagues	4 May 2012

Contact for Telephone Discussion (if required)

Name	Position	Telephone		1st Contact
[withheld - privacy]				✓
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Minister of Finance's Office Actions (if required)

If the Minister of Finance agrees, circulate Ministerial colleagues

Enclosure: Yes.

Dynamics of poverty and deprivation report Final 01May12 (Treasury:2335718v1) Add to worklist

4 May 2012

# Treasury Report: A descriptive analysis of income and deprivation in New Zealand

Executive Summary

You requested further information on the level of income mobility in New Zealand. We commissioned University of Otago researchers Dr Kristie Carter and Dr Fiona Imlach Gunasekara to analysis data in the Survey of Family, Income and Employment (SoFIE). This annual survey was repeated between 2002 to 2009 on a sample of 18,785 New Zealanders. Additional questions in 2005, 2007 and 2009 provided data on deprivation.

Is there much change in relative income?
Below is a graphical presentation that colour codes people by their decile in the first year and follows them across time. The box on the left hand side, with horizontal coloured stripes, is the starting point. If there was no relative income mobility between 2002 and 2009 then the middle box would also have horizontal stripes. Conversely, complete income mobility would produce the vertical stripes in the right hand box. The middle box shows the actual level of income mobility.

Starting point & No mobility
Top 10%

Bottom 10%

New Zealand's mobility after seven years

Complete mobility
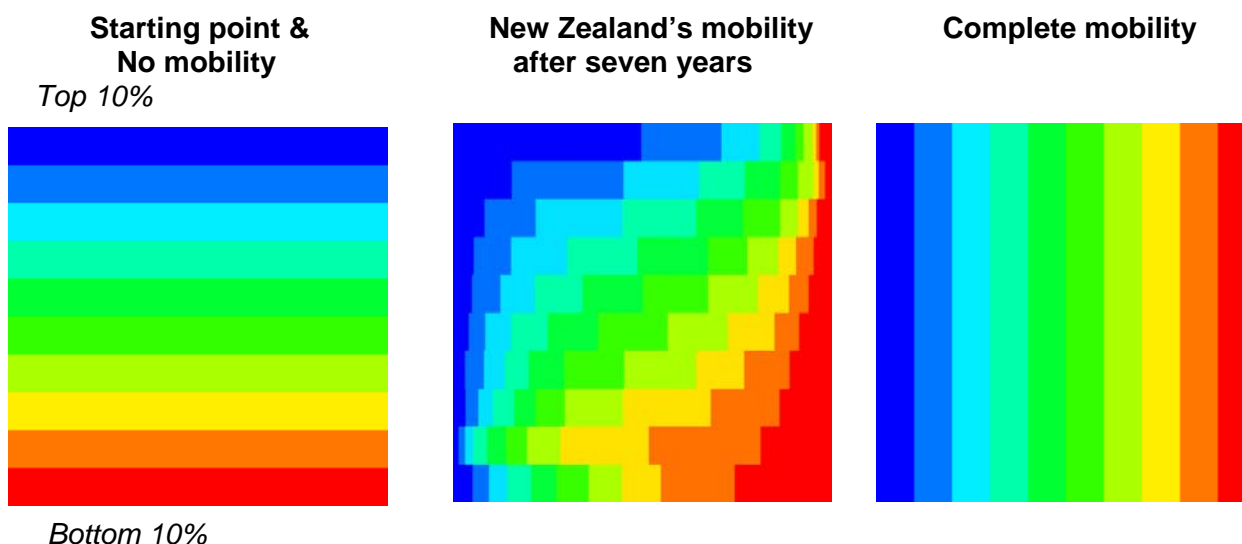
There is substantial mobility over time. The mobility is both up and down, though there is more mobility for the bottom deciles than the top deciles - only 24% of those in the bottom decile in 2002 were also there in 2009, compared to 46% of the top decile. This cannot be explained by retirements or entry from education.

What are the characteristics of the people with persistent deprivation?
The blue bars in the figure below characterise the 6% of the population with persistent deprivation by age, ethnicity, educational and family status. The height of the blue bar shows the proportion of those with persistent deprivation that have that characteristic. The red dashes show the proportion with that characteristic in the population as a whole. Where the red bar is higher than the blue bar, a person with that characteristic is less likely to be in persistent deprivation than the population as a whole.

a   **What characterises people in persistent deprivation?** The height of the blue bars shows that most people in persistent deprivation are aged 25 to 64, New Zealand European, have vocational qualifications and are sole parents.

b   **People with which characteristics are more likely to be in persistent deprivation?**
The difference between the height of the blues bars and the red dashes shows under 18s and youths, Maori, those with low qualifications, and sole parents more likely to be in persistent deprivation. Deprivation is highly prevalent among sole parents.

Characteristics of population with persistent deprivation
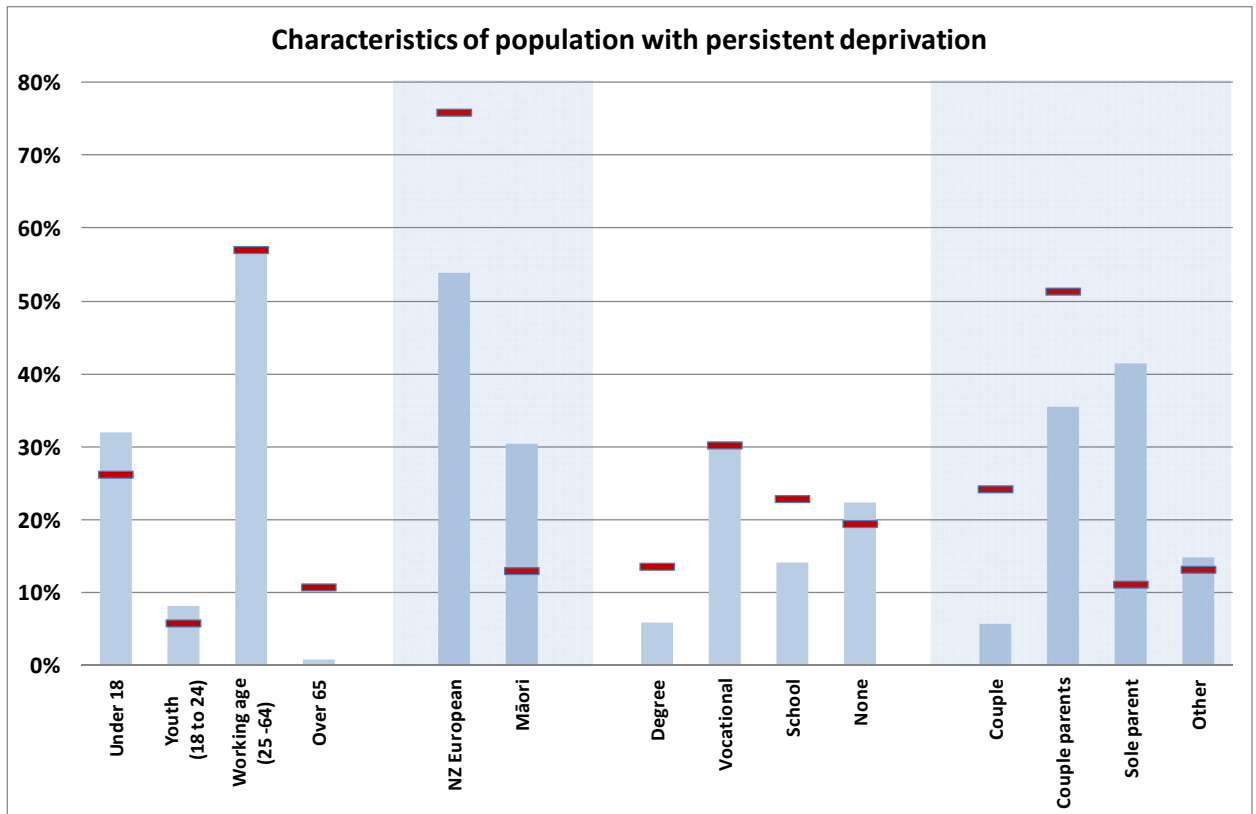
How closely aligned is deprivation with low income?
The scale of the alignment between deprivation and income is sensitive to the definitions of deprivation and low income (a looser definition of deprivation and narrower definition of low income lead to a closer link between the two). As in previous studies, longer periods of low income are linked to higher deprivation, but the link between them is modest. Only a third of those who had seven years of low income had been in deprivation at any point

Impact of low income on deprivation 2003-09

Always in deprivation   Sometimes in deprivation   No deprivation
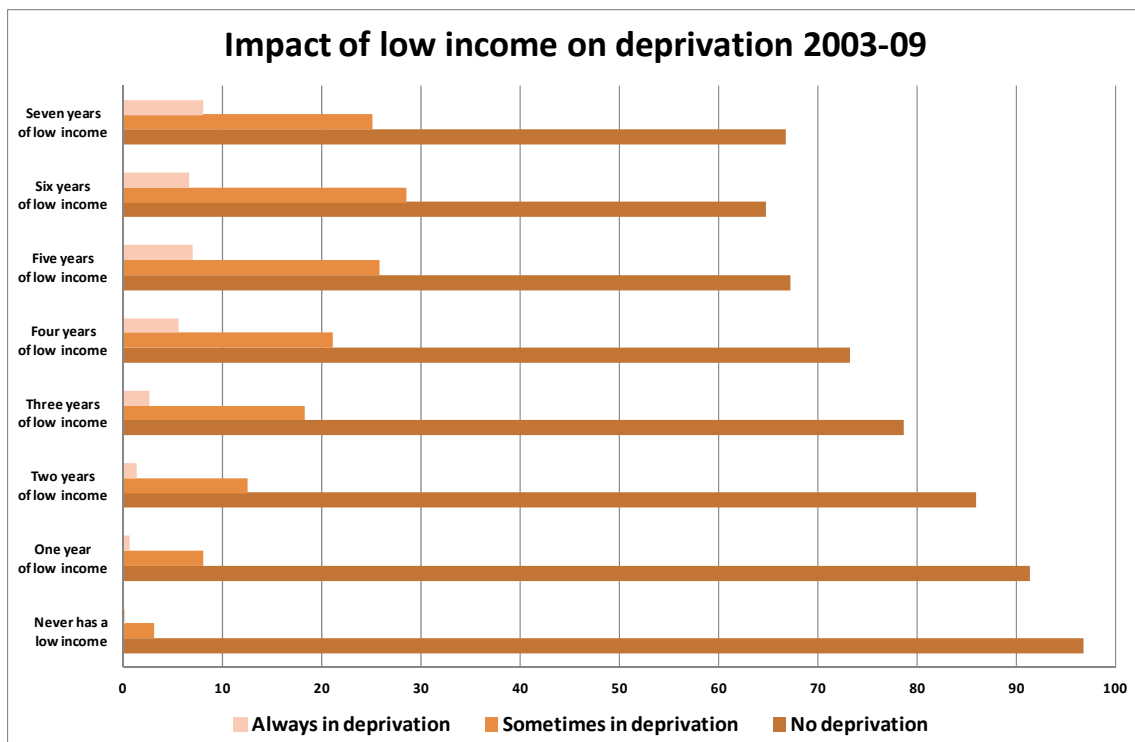
The main implications from this are:

- Policy should emphasise mobility, deprivation and persistent low income.

- Policy should be designed with mobility in mind.

- Targeting policy effectively can be difficult.

- Solo parents are perhaps the group to be most concerned about

Communications

The University of Otago research will be released as a Working Paper.

Recommended Action

We recommend that you:

a   **indicate** if you wish to discuss the contents of this report with the Treasury and the University of Otago researchers;

   Yes/No

b   **refer** this report to Ministerial colleagues;

   Agree/disagree.

c   **note** that the research by the University of Otago will be released as a Working paper (attached).

   Yes/No

Nic Blakeley
Manager, Education & Skills and Labour Market & Welfare

Hon Bill English
Minister of Finance

# Treasury Report: A descriptive analysis of income and deprivation in New Zealand

Purpose of Report

1. At our meeting with you on 19 January 2012 we discussed the data available on poverty (TR2012/37 refers). You requested further information on the level of short term income mobility in New Zealand; and the impact of government spending on education, health, and welfare on poverty levels

2. This report responds to the first of these requests. In line with your indicated preference, we have limited the analysis to information that could be quickly obtained.

Background

3. Measures of poverty intertwine two overlapping but distinct concepts. The *Level of Inequality* is the proportion of the population with a *relatively* low level of material wellbeing. The *Level of Hardship* is the proportion of the population constrained by their material circumstances from achieving a minimum *'decent'* level of wellbeing. In practice, those with a relatively low income are more likely to be in hardship (see table 6.1, Perry 2011), though the overlap is only about 50%.[1]

4. As discussed in more detail in our previous report (TR2012/37 refers), useful measures covering both of these can created as shown in the figure below. Since 2004 fewer people have been in poverty using a constant value measure but levels of relative poverty remain largely static. This divergence reflects the absolute increase in real incomes for low income households throughout this period. However this has been matched by increases in median incomes, so there has been little relative change.[2]

Figure 1: Changes in income in New Zealand 1982 to 2012

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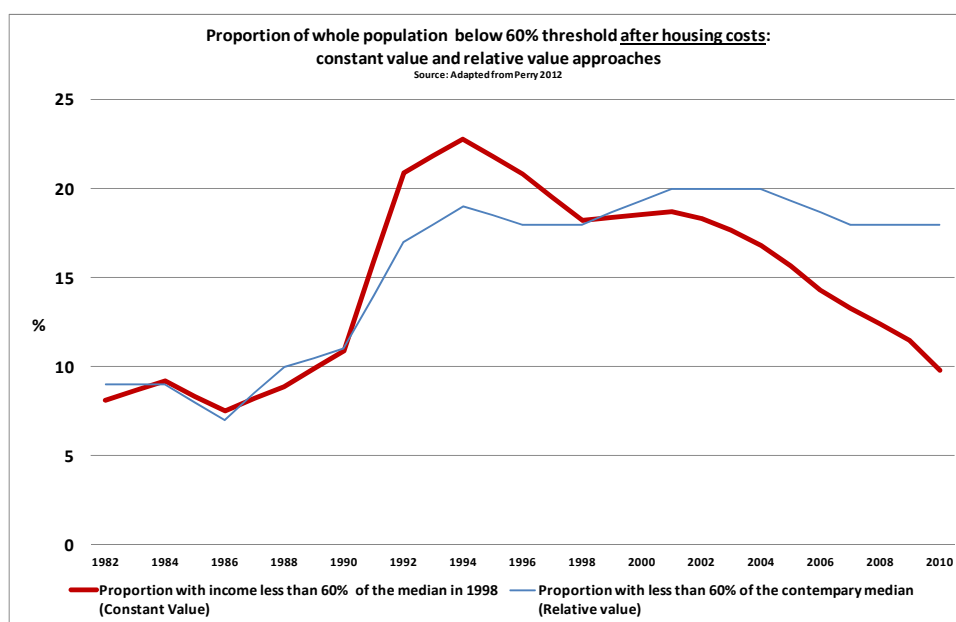
[1] Perry (2002) 'The mismatch between income measures and direct outcome measures of poverty' *Social Policy Journal of New Zealand*, (19), 101-127.

[2] The data reported in 2010 records incomes in the years 2008 to 2010, so most was collected prior to the increase in unemployment from the global economic crisis.

5. The general picture is modified for some sub- populations:

- **Children** - Households with children have tended to be poorer, so more children are in households with a lower equivalised income.
- **Age** - Over 65 year olds are concentrated in the income bracket of National Super, however, the link between low income and deprivation is much lower because they tend to have other assets (notably high home ownership levels).
- **18 to 24 olds** – More are studying and delaying starting their working life, thus more are in households with lower incomes.
- **Type of household** - The proportion of people in poverty by household has changed markedly, with fewer couples with children in poverty largely because of a change in working patterns and the introduction of Working For Families
- **Gender** - Approximately 1% to 3% more women in poverty over the last 20 years because most sole parents are women.

Data and analysis

6. To provide information on income mobility, we commissioned an analysis of the Survey of Family, Income and Employment (SoFIE). The data analysed for this report was derived from a questionnaire repeated annually between 2002 and 2009 to a broadly representative sample of 18 785 New Zealand residents.[3] In 2005, 2007 and 2009 additional questions were asked that provide data on individual levels of deprivation.

7. The analysis of SoFIE presented here is based on a more detailed descriptive analysis provided by Dr Kristie Carter and Dr Fiona Imlach Gunasekara that will be published by the University of Otago.[4] We have attached this for your information.

8. We also involved Bryan Perry from MSD who has special expertise around measuring incomes, poverty and deprivation. He reviewed the research paper and is preparing a paper based on this work and international findings. We have used aspects of that paper in this report.

9. As a descriptive analysis, their report 'paints a picture' of what happens to the income and deprivation of the people in the sample over time, but does not test theories about what causes these outcomes. The majority of this Treasury Report focuses on elements of their work likely to be of most interest to you and your colleagues.

10. In presenting this work we have been asked to stress that coincidence of factors should not be understood to imply a cause. To identify potential causes requires a fuller statistical model and a multivariate analysis that would more definitively identify cause and effect. The time required for such an analysis was not available but is a potential avenue for further work.

11. The first part of this report concentrates on the new information the SoFIE data has provided. The second part briefly covers Treasury's advice on the policy issues raised by the data. For the remainder of this analysis:[5]

   a   **Low income** – Refers to income that is less than 60% of median pre-tax equivalised household income in that year.[6]

   b   **Persistent low income** – Refers to low income in five or more of the seven years it was measured.

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[3] For more detail on the sample, and the limitations inherent in the data see Appendix 1 and enclosed paper pp1 to 6
[4] Included as an enclosure with this report.
[5] The academic background is discussed in the enclosed University of Otago report
[6] Equivalisation adjusts for the number of people in a household

c   **Intermittent low income** – Refers to low income in two to four of the seven years it was measured.

d   **Deprivation** – Refers to a person reporting to have three or more of eight indicators of lacking basic needs measured using NZiDep.

e   **Relative income** – Describes a person or group's income position and is usually measured by dividing the population into deciles (or quintiles).

f   **Income decile** – To calculate this the population is divided into ten groups based on relative income, thus the 'top' decile is the 10% of people with the highest equivalised income; the second decile is the 10% of people with the next highest equivalised income; and so on to the bottom decile who are 10% of people with the lowest equivalised income. (**Income quintile** is the same concept but divides the population into five groups).

g   **Real income** – Used to analyse changes in income over time by adjusting for inflation. A change in real income is an estimate of a change in purchasing power but does not describe income position.

Dynamics of income and deprivation

Is there much change in relative income?

12.   Figure 1 above showed that the proportion of the population with a relatively low income remained largely constant between 2002 and 2009. The SoFIE data allows us investigate whether it is the same people with a relatively low income, or different people in spells of relatively low income.

13.   To show this we have used a graphical presentation developed in the UK, which colour codes people by their decile in the first year and then follows them across time. The box on the left hand side of figure 2, with horizontal coloured stripes is the starting point. If there was no relative income mobility between 2002 and 2007 then the middle box would also have horizontal stripes. Conversely, complete income mobility would produce the vertical stripes in the right hand box. The middle box shows the actual level of income mobility, showing where people's relative income was after seven years. (The graphs for the intervening years are in the Appendix 2).

Figure 2: Income mobility in New Zealand between 2002 and 2009

| **Starting point &** **No mobility**	**New Zealand's mobility** **after seven years**	**Complete mobility**

Top 10%
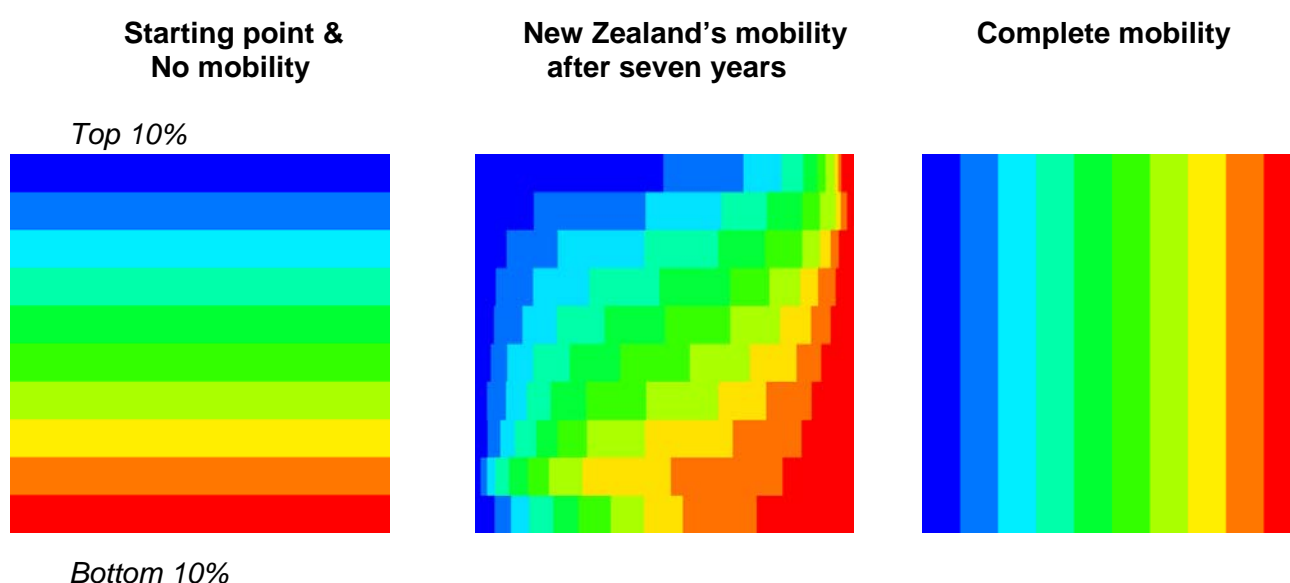
Bottom 10%

14.   Figure 2 shows there is substantial mobility over time. The mobility is both up and down, though mobility is greater for those in the lower deciles than the top deciles. Only 24% of those in the bottom decile in 2002 were also there in 2009, compared to 46% of the top

decile. The mobility does not seem to be related to retirements or entry from education as the pattern was essentially the same for the 25 to 55 age-group. (See Appendix 3 for more data on broad age-groups and ethnic groups.)

15. The graph below shows the overall proportion of the population year by year who had changed more than one decile (e.g. for decile 5 movement to deciles 1 to 3 or deciles 7 to 10). Between the first and second year more than one in four had changed by at least two deciles of income and by the seventh year 47% had changed by two deciles. The converse of this is that 26% of the population were in the same decile in 2002 and 2009.

Figure 3: Net movement of more than 2 deciles

Proportion who have moved at least two deciles from their initial income decile
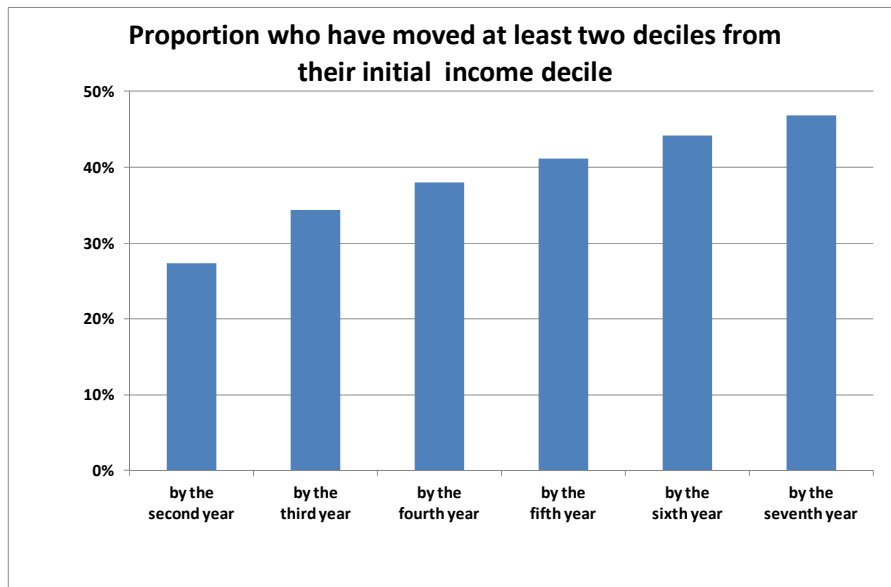
Calculated from University of Otago data

How does New Zealand income mobility compare with similar countries?

16. The graphs below show there is little difference in income mobility in countries similar to New Zealand. Appendix 4 has more detail for Australia and the UK.

*Figure 4: International comparison of income mobility*

% in the same decile after 4 years

% moving up at least 1 decile after 4 years
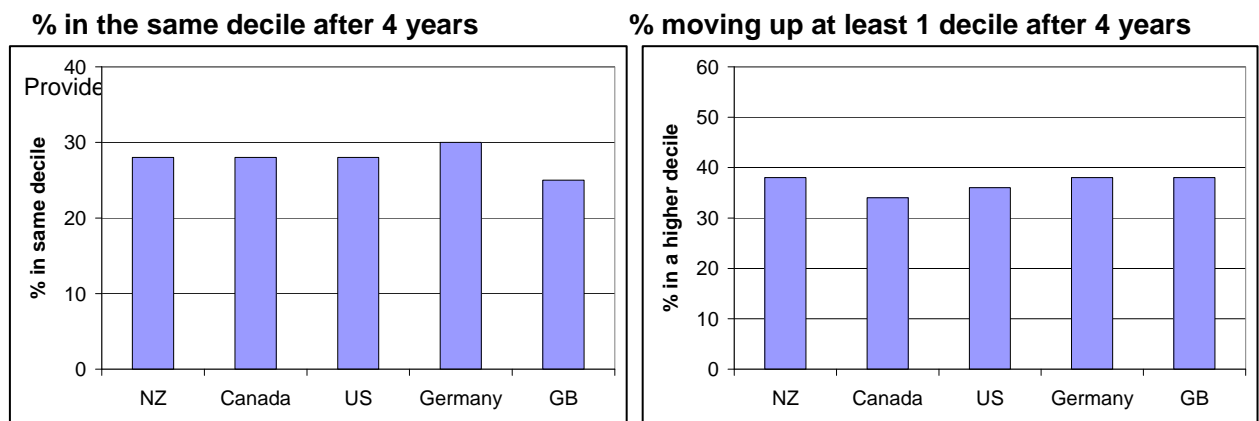
How does real income change?

17. The analysis above was of changes to relative income: whether income is going up or down relative to the income of others. We also analysed how real, inflation adjusted, income changed. Figure 5 below shows a clear pattern that those at the bottom are more
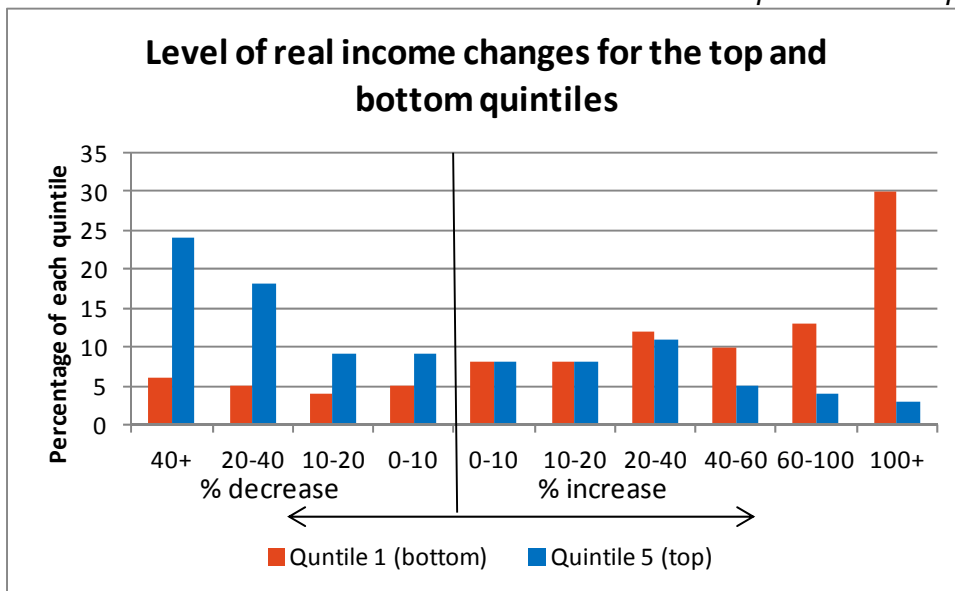
likely to experience real increases in their income and those at the top more likely to experience real decreases.[7] Some of this may be explained by 'regression to the mean', but the pattern is consistent across the middle of the income distribution suggesting the pattern is not simply a statistical artefact.

Figure 5: Proportion of each income decile with inceasing and decreasing real income
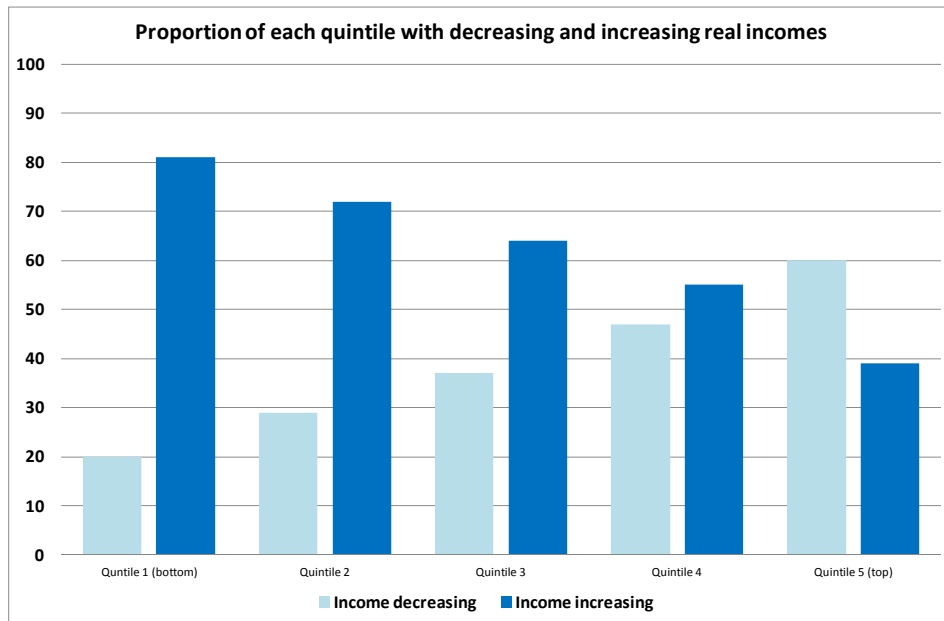
18. An alternative perspective on measures of inequality is provided by comparing the size of income changes. For simplicity the graph below shows only the two extreme quintiles, though the pattern is consistent across the whole of the distribution.

Figure 6: Level of increase and decrease in real income for top and bottom quintiles

19. Over the whole population 38% experienced reductions in their real income, with 12% seeing a decline of more than 40%. The bottom quintiles were much less likely to experience reductions in real income (20 and 29% for quintiles 1 and 2 respectively) and less likely to experience reductions of more than 40% (about 6%).

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7   To deal with under-reporting of income on trends at the highest and lowest incomes, this analysis compared average income in the first two years with average income in the last two years of data.

20. In interpreting these results, it is worth noting:

- The period 2002 to 2009 was primarily one of economic growth. Thus we would expect overall incomes to rise.
- Longitudinal analysis will include individual life cycle changes that include both increases and decreases in income. For example, 'young adults' may have lower incomes, but a 20 year old full time student in 2002 would be 27 and probably in full time work by 2009.

How common is it to have periods with a low income?

21. The level of income mobility suggests a large proportion of the population experiences low income levels at some point in time. On the definition used in this paper, around 25% of the population has a low income in any single year, but Figure 7 shows that over the seven years covered here 50% of the population experienced low income at least once.

Figure 7: The proportion of the population experiencing low income at least once
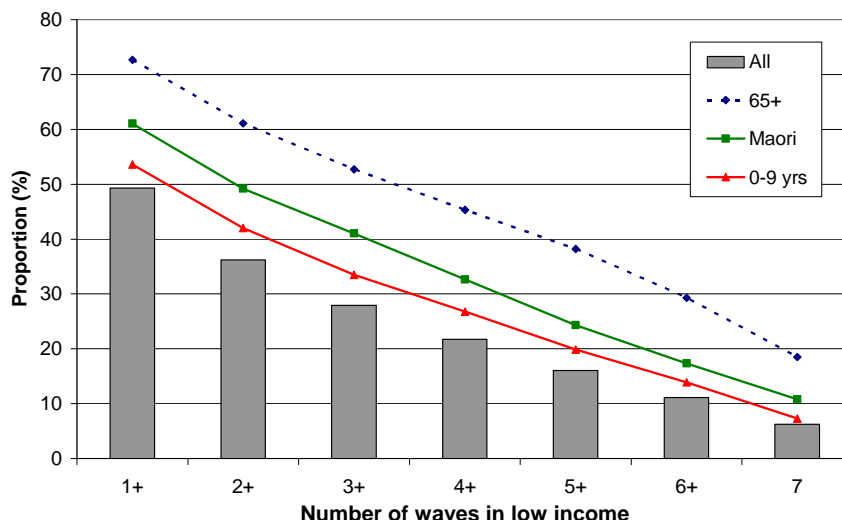

22. Conversely, 43% of those who experienced low income, experienced it for only one or two of the seven years covered by the survey. As the graphs in figure 2 show, a substantial proportion of those who had some experience of low income soon moved to relatively high incomes. Figure 10 suggests that such short periods of low income are highly unlikely to be linked to deprivation.

What are the characteristics of the people with persistent low income?

23. Figure 8 below focuses on the 16% of the population with persistent low income (those who had a low income in five or more of the seven years surveyed). The graph below describes the age, ethnicity, educational and family status of this population. The blue bars are groups by these characteristics. The height of the blue bar shows what proportion of the population with that characteristic have a persistent low income The red dashes show where the bar would reach if people with that characteristic matched the average for the whole population.

24. Where the red bar is higher than the blue bar, a person with that characteristic is less likely to have a persistently low income than the population as a whole. For instance, 42% of those with persistent low income are aged 25 to 64 even though that age group make up 57% of the population as a whole. Conversely, sole parents make up 11% of the population, but close to 24% of the people with a persistent low income are sole parents.

Figure 8: Characteristics of the population with persistent low income
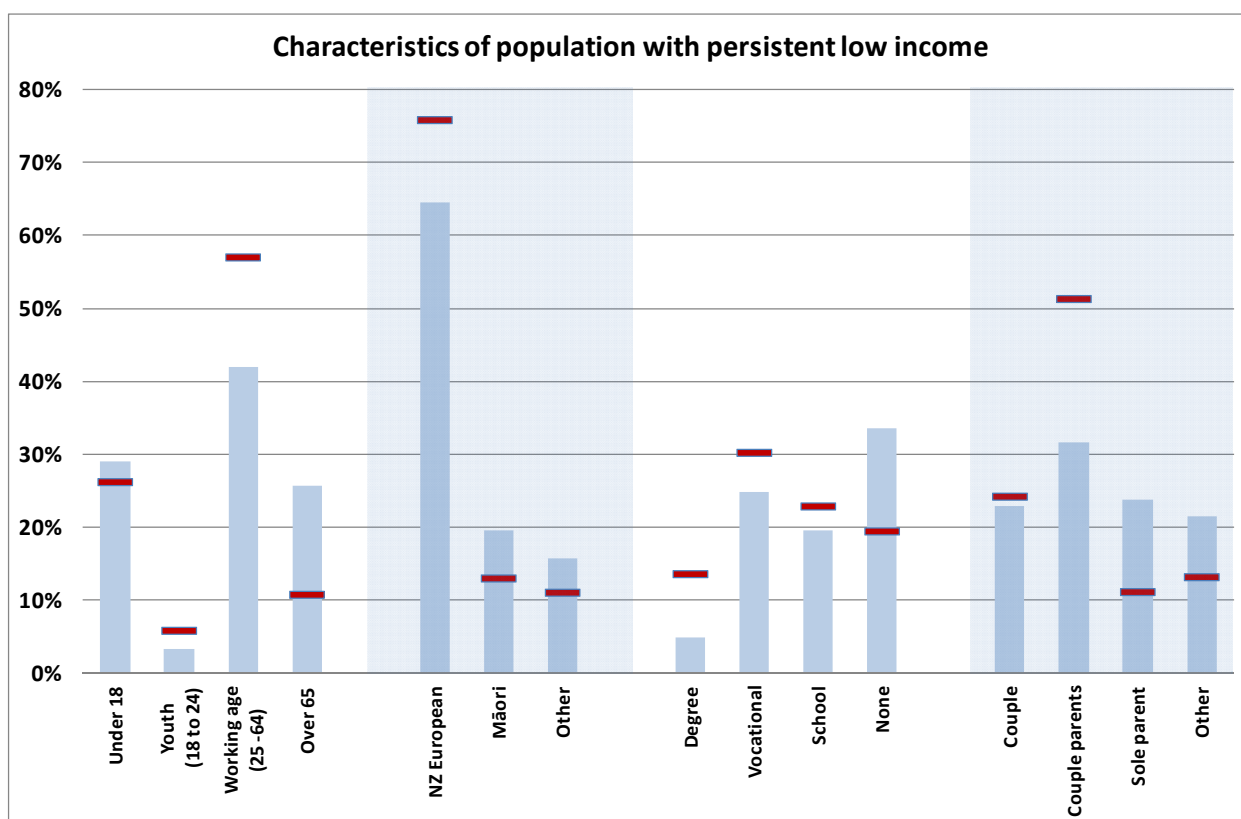
25. This graph can be interpreted as follows:

    a   **What characterises people with persistent low income?** The height of the blue bars shows most people with a persistent low income are aged 25 to 64, New Zealand European, have no qualifications and couple parents.

    b   **People with which characteristics are more likely to have a persistent low income?** The difference between the height of the blues bars and the red dashes shows over 65s, Maori and others who are not New Zealand European, those with low qualifications, and sole parents and those not living in a couple are more likely to have persistent low income.

26. The different answers to the questions in 28a and 28b result from there being different numbers of people with each characteristic. Thus there are more New Zealand Europeans than Maori with persistent low income because there are more New Zealand Europeans, even though Maori are more likely to have a low income. Equivalent graphs for those with less experience of low income are in Appendix 5.

What characteristics are associated with moving to and from a low income?

27. Of particular policy interest are the characteristics of those who change their income status, that is, those whose start with a low income and then move on to having a long term higher income, and those who start with a higher income but then have prolonged periods of low income. The time limits to the project made it impossible to examine specific events, like poorer health or divorce, but we can follow what happened over the following six years to individuals based on their income in 2002.

28. Of those who started with a low income in 2002 and then subsequently avoided a low income, figure 9 below can be interpreted as follows:[8]

   a **What characterises people who started with a low income and then avoided low incomes?** - The height of the blue bars shows most people who moved away from low income are aged 25 to 64, New Zealand European, had a post school qualification and were couple parents.

   b **People with which characteristics started with a low income and then avoided low incomes?** The difference between the height of the blues bars and the red dashes shows youths and those aged 25 to 64, New Zealand European, those with any qualification, and couples with children were more likely to move on from having a low income.

Figure 9: Characteristics of those who moved out of low income

Those **starting with low income** who subsequently did not have a low income
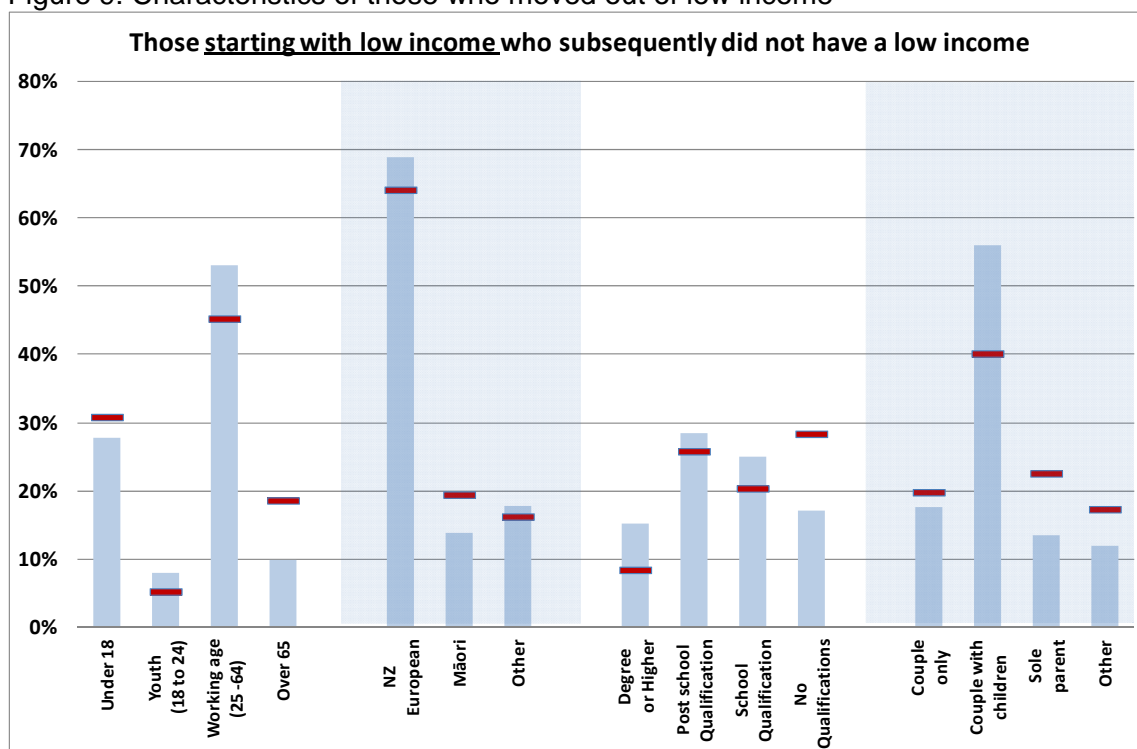
29. Of those who did not have a low income in 2002 but subsequently had a low income, figure 10 below can be interpreted as follows:

   a **What characterises people who did not have a low income and who subsequently had low incomes?** - The height of the blue bars shows most people who moved into having a low income were aged 25 to 64, New Zealand European, had a post school qualification and were couple parents.

   b **People with which characteristics did not have a low income and then had low incomes?** The difference between the height of the blues bars and the red dashes shows those under 18 and over 65, those who were not New Zealand European, those with no qualification, and those not living in a couple were more likely to move into low incomes.

30. Additional information on those moving to and from low income is provided in Appendix 6.

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[8]   The red dashes in figures 9 and 10 are for the incidence of low income in the relevant populations, those who did start with low income and those who did not, not the population as a whole as used above.

Figure 10: Characteristics of those moved into low income

Those who did not have a low income who subsequently had a low income
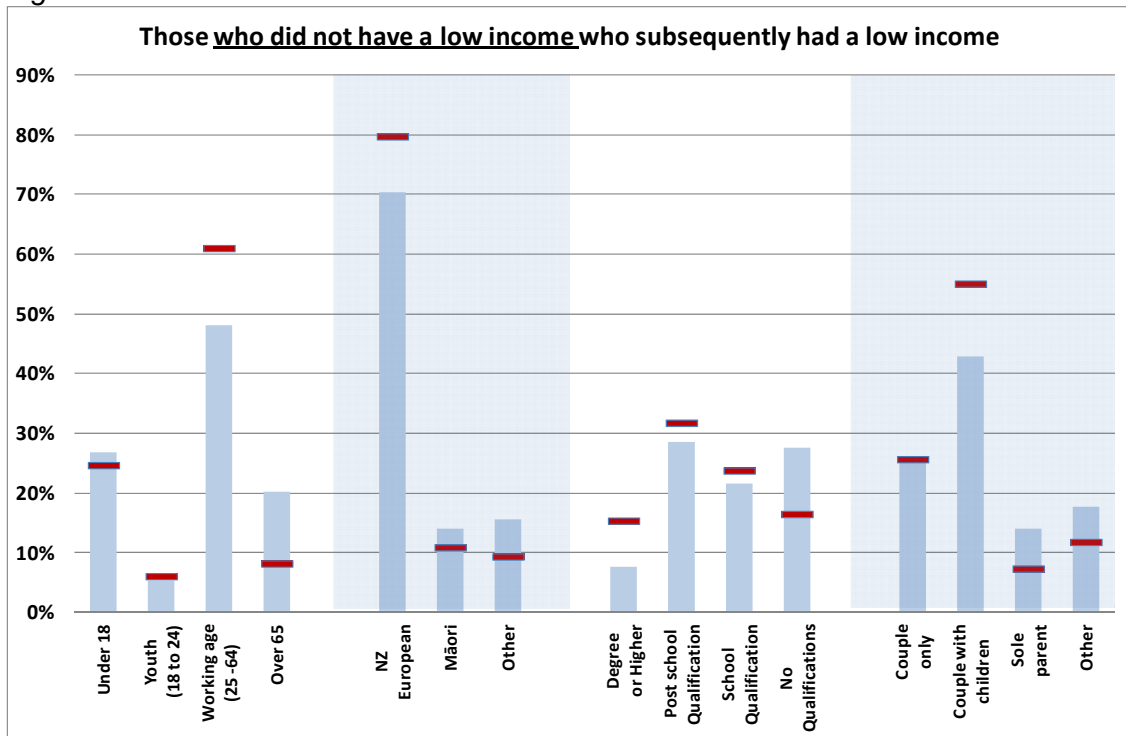
**Is deprivation persistent?**

31. Measures of deprivation indicate whether or not people achieve a basic level of consumption. For all population groups, those suffering deprivation were in the minority, with just over 12% of the population experiencing some deprivation over the survey period. Of those in deprivation in the first survey (in 2005), 44% were in deprivation when this was again measured (in 2007 and 2009).

What are the characteristics of the people in deprivation?

32. Figure 11 below describes the age, ethnicity, educational and family status of the 6% of the population with deprivation in two or more of the three deprivation interviews. The height of the blue bar shows what proportion of the population with that characteristic have a persistent low income The red dashes show where the bar would reach if people with that characteristic matched the average for the whole population.

33. Where the red bar is higher than the blue bar means a person with that characteristic is less likely to be persistently in deprivation than the population as a whole. This graph can be interpreted as follows:

   a   **What characterises people in persistent deprivation?** The height of the blue bars shows most people in persistent deprivation are aged 25 to 64, New Zealand European, have vocational qualifications and are sole parents.

   b   **People with which characteristics are more likely to be in persistent deprivation?** The difference between the height of the blues bars and the red dashes shows under 18s and youths, Maori, those with low qualifications, and sole parents to be most likely to be in persistent deprivation.

34. By comparison with figure 8, a number of results stand out. First very few people over 65 are in deprivation, suggesting their lower income is offset by having greater accumulated wealth. Secondly, it is striking that deprivation is so prevalent among sole parents that

even though sole parents are a small proportion of the population, they still make up the majority of people in deprivation by family type. (See Appendix 7 for further analysis.)
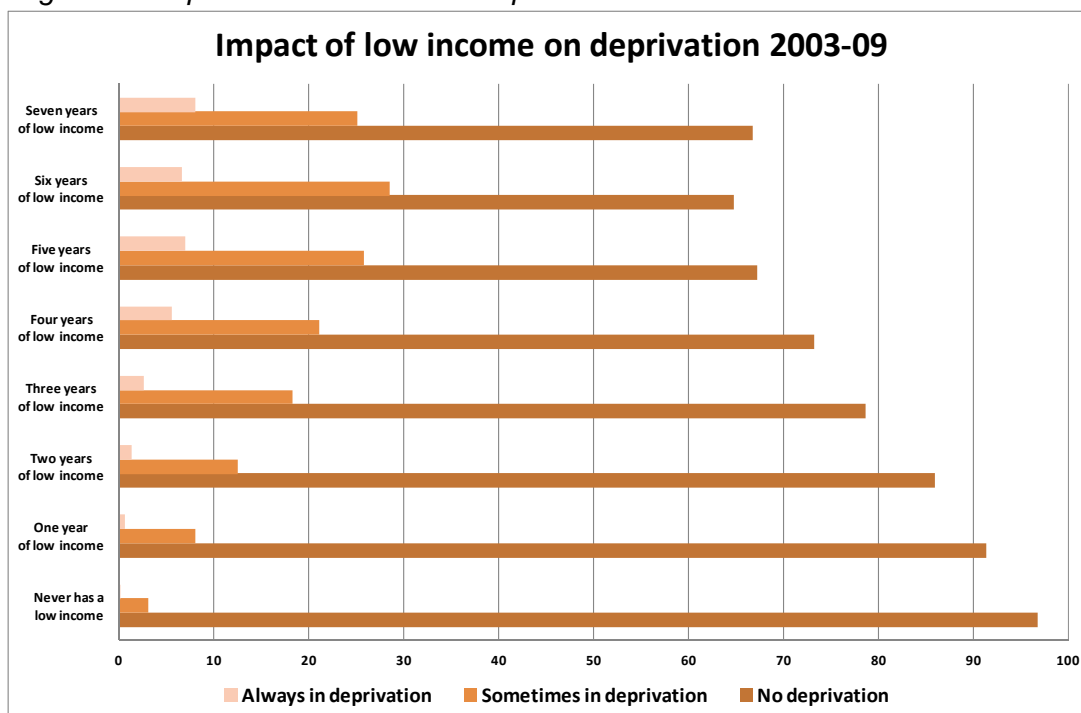
Figure 11: Characteristics of the population in persistent deprivation

Characteristics of population with persistent deprivation
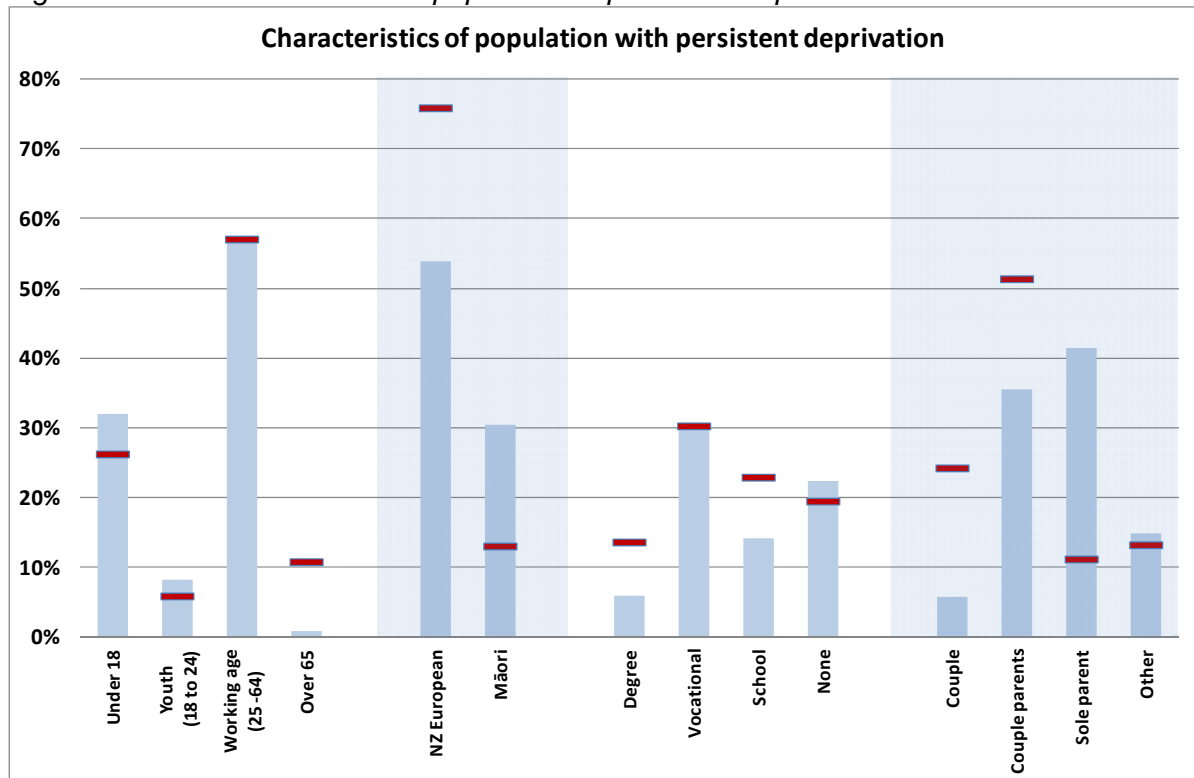
How closely aligned is deprivation with low income?

35.   Alignment between deprivation and income is sensitive to the definitions of deprivation and low income (a looser definition of deprivation and narrower definition of low income lead to a closer link between the two). As in previous studies, this work found longer periods of low income are linked to higher deprivation, but the link between them is modest. Thus only a third of those who had seven years of low income had been in deprivation at any point. (See Appendix 7 for further analysis.)

Figure 12: Impact of low income on deprivation

Impact of low income on deprivation 2003-09

Legend:
- Always in deprivation
- Sometimes in deprivation
- No deprivation

Categories (top to bottom):
- Seven years of low income
- Six years of low income
- Five years of low income
- Four years of low income
- Three years of low income
- Two years of low income
- One year of low income
- Never has a low income

Key lessons and next steps

Policy should emphasise mobility, deprivation and persistent low income.

36. Much of the debate about poverty moves quickly to income inequality as the key measure. In contrast, our advice tends to emphasise a focus on material hardship and the mobility for an individual to make the most of his or her life chances. These findings show that looking just at static income inequality can miss a much richer story of what is going on in income dynamics.

37. Demographic characteristics like age, household type, number and age of children and education level are not static, but part of a life cycle. The results in figures 5 and 6 showing greater proportional increases in income for those at low incomes, suggest the number of individuals with a longer term income that is significantly different from their cross-sectionally measured income will be large.

38. The wide range of mobility experiences for different people and different groups warns against simplistic generalisations about medium-term income trajectories. Conversely it is worth further investigating policies that minimise people falling into, or back into poverty.

Policy should be designed with mobility in mind

39. The extent of income mobility may be surprising to many. Consequently, policy should be careful not to lean against this mobility through work disincentives. The trade-off with incentives is generally income levels, but this analysis suggests reasons to be cautious about how large that trade-off is in practice: that lower income is often temporary and is not usually associated with deprivation.

Targeting policy effectively can be difficult

40. The data raises the question of how well targeted are polices intended to support people with persistent low income? The wide difference between incidence and prevalence of low

income and poverty implies that policies targeted by single characteristics are likely to both exclude many people who are intended to be included and include many that are not.

Sole parents are perhaps the group to be most concerned about.

41. The distinction between low income and deprivation is highly salient to policy advice – despite low income, incidence of deprivation among over 65s is very low. In contrast, incidence and overall prevalence of deprivation is strongest among sole parents, and mobility tends to be lowest. Given the potential inter-generational effects, this group should be a high priority for policy.

Next steps

42. You may wish to consider the following next steps:

   a   Discuss the contents of this report with your colleagues.

   b   The level of mobility already found in New Zealand raises the issue of whether the key focus of government is less upon supporting those in current low income and more on building resilience to resist becoming "stuck". This would be consistent with the investment approach taken to the recent welfare reforms, but would be have implications for a wider group in society. Resilience is equally important for those in the middle and top of the distribution who may experience periods of low income;

   d   Consider the impact of the analysis on the focus for policy intervention, particularly the findings that a multi-year look at income is desirable, and that single variable targeting risks missing significant groups;

   e   Commission more detailed further work on the data that would provide the government with a stronger evidence base for understanding the key intervention points. This could include:

      i)   Work to better understand the triggers that lead to people falling into persistent low income and deprivation.
      ii   Resilience factors that protect some people and /or help lift them out of low income and deprivation.
      iii   Understand the causal links between low income, deprivation and individual characteristics.
      iv   A better understanding of government spending and its impact on low income and deprivation.

Appendix 1: Limitations on this analysis

1. As a longitudinal study that followed a randomly selected group of the same people for a number of years, the SoFIE dataset is the best source of information on short term income dynamics. However there are some key limitations to using it, and these need to be recognised when interpreting the results.

2. The most important limitations are:

    Limitations inherent in the underlying data

    a   The data used was the balanced dataset of people who participated in all seven waves of the series. This was about 18,000 people.

    b   As with all longitudinal studies, low income earners, Maori and Pacific people, and those who were not working were more likely to drop out of the survey as it progressed. The sample has not been reweighted to account for this.

    c   While SoFIE collected information on all income sources, there is evidence that some income sources were under-reported (e.g. the Working for Families Tax credit).

    d   The SoFIE data covers one particular time period (2002 to 2009). It is worth noting, however, that overseas experience with longer studies of this nature (such as the 16 year UK study) has generally found that mobility is remarkably constant through the economic cycle.
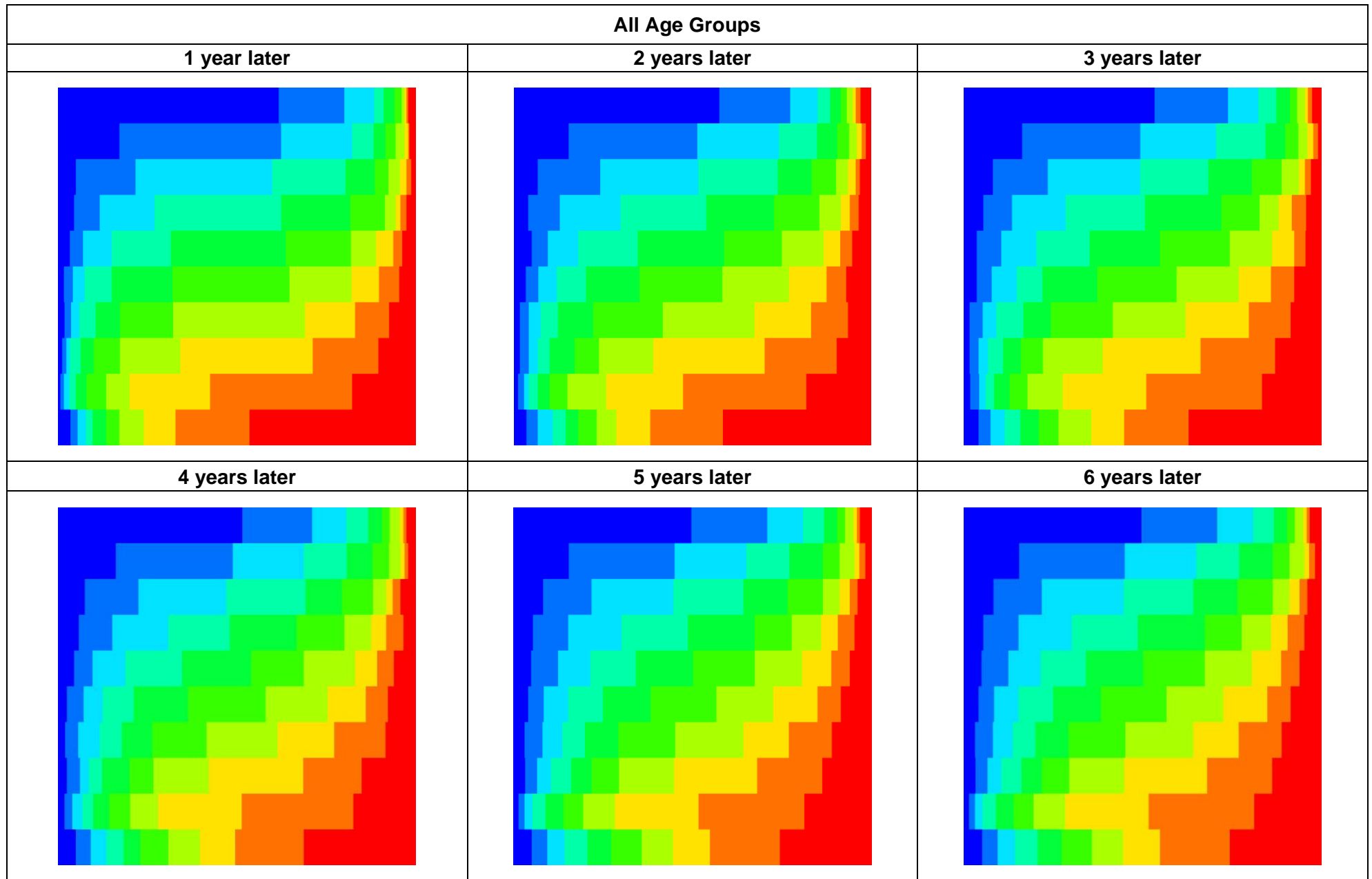
    Limitations caused by the measures we chose

    e   The income used for this analysis is the gross equivalized household income before tax but after benefits have been paid (including tax credits). Equivalizing is adjusting the household income for the number and age of the people in the household and is the normal approach for taking into account the demands on the household income. However most studies use the after tax (or after tax and housing costs) rather than the before tax income.
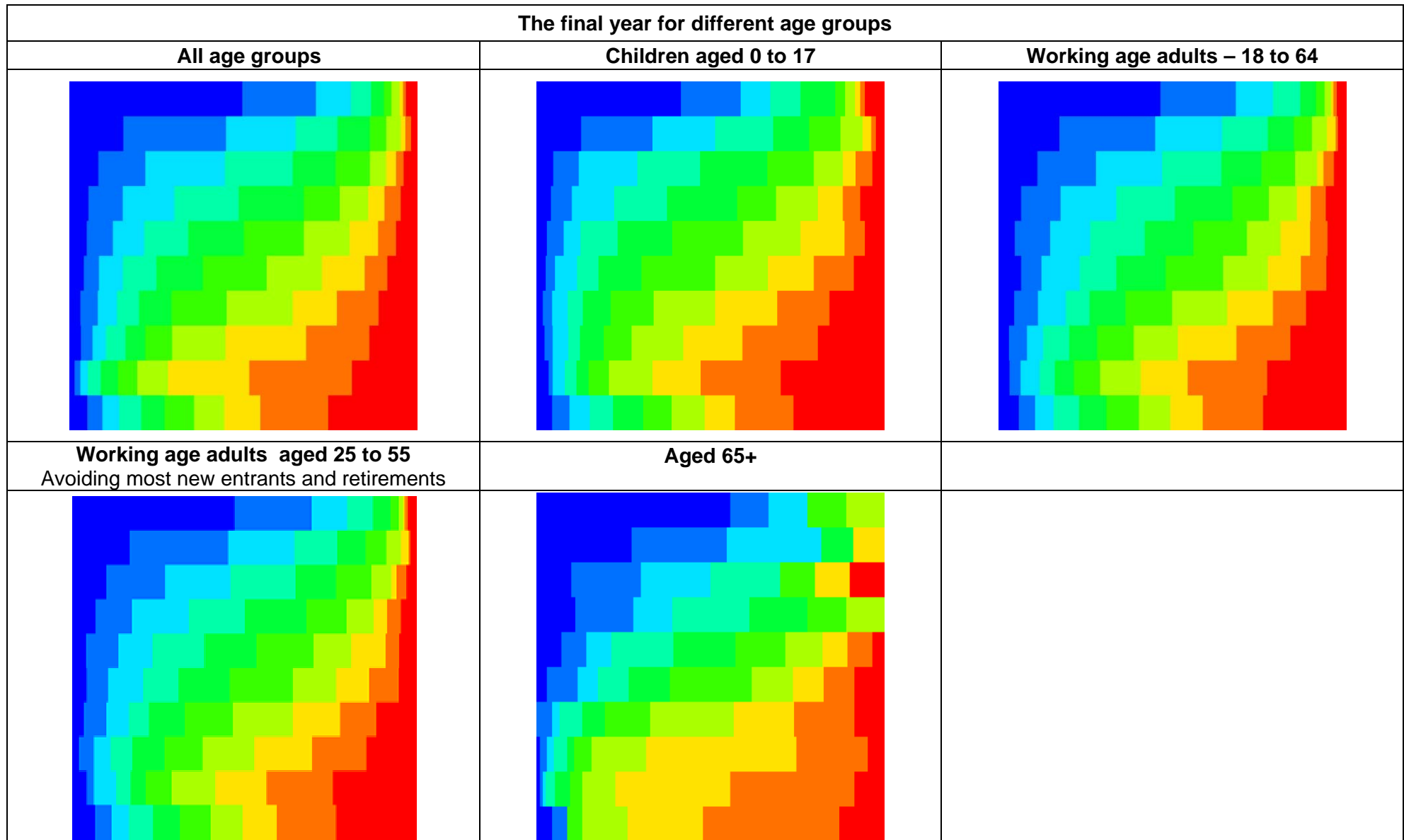
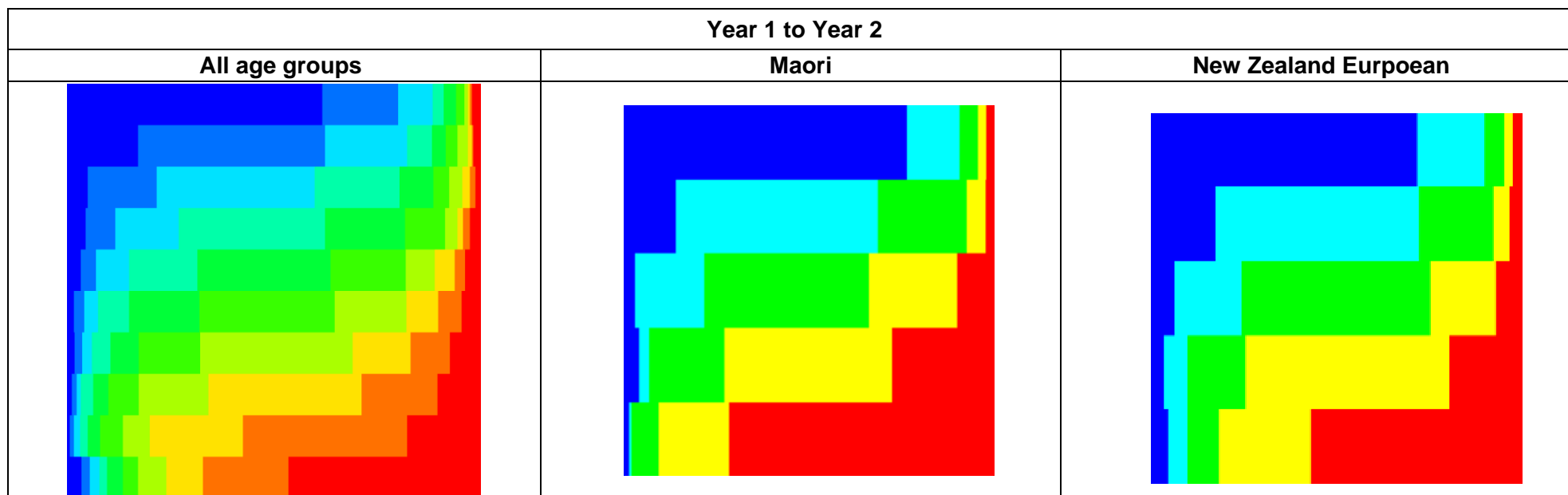   *Limitations caused by the way we did the analysis*

    f   We have only used cross-tabulations of the population. While this reveals patterns which may suggest causes, before a definitive statement that "X leads to Y" can be made a multivariate analysis is needed as this takes into account the impact of all the factors and how they may be interrelated. Doing a multivariate analysis would involve significant extra work, but it also would provide more definitive analysis of cause and effect.

3. In the absence of a full multivariate analysis, great caution should be taken before a coincidence of factors is assumed to be causal. Doing a multivariate analysis would involve significant extra work, but it also would provide more definitive analysis of cause and effect.

Appendix 2: Details of income mobility for each year of the SoFIE data

All Age Groups		
1 year later	**2 years later**	**3 years later**
4 years later	**5 years later**	**6 years later**

Appendix 3: Details of income mobility for different age and ethnic groups

The final year for different age groups		
All age groups	**Children aged 0 to 17**	**Working age adults – 18 to 64**
Working age adults aged 25 to 55 Avoiding most new entrants and retirements	**Aged 65+**	

Year 1 to Year 2		
All age groups	**Maori**	**New Zealand Eurpoean**

1. Maori are more likely to have incomes below the low income threshold. However, income mobility patterns are similar to the overall population. For instance, 58% of both Maori and New Zealand European are in the same quintile in year 2 as in year 1, though there is a slightly greater tendency for Maori to persist in the bottom income quintile.

2. Maori have a higher proportion of the characteristics which are associated with lower incomes and greater persistence with low incomes, particularly a younger age-group, solo parent families, and lower educational attainment. It would take a multivariate analysis to properly measure the impact of each of these factors on Maori income levels.[9]

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[9] Sample issue made it impossible to provide an equivalent analysis for Pacific Island and Asian populations

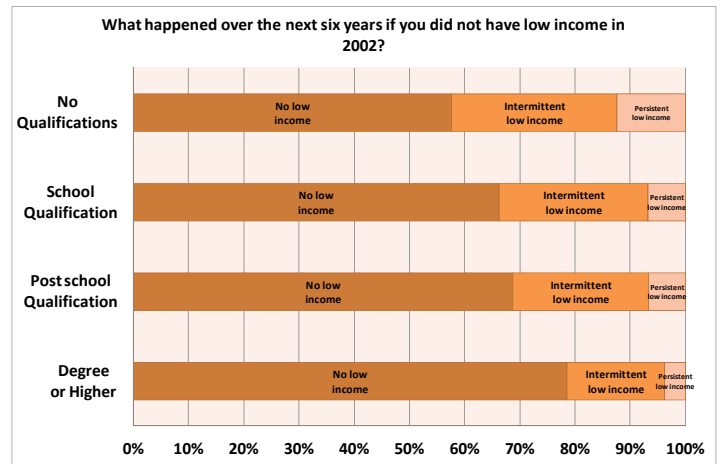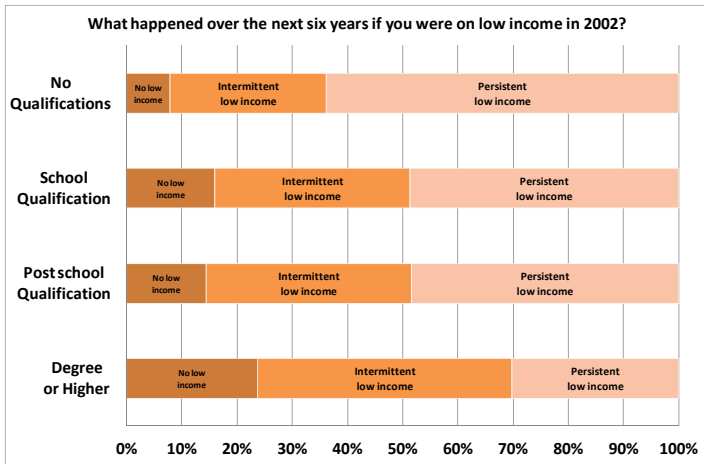## Appendix 4: Detailed comparisons with Australia and the United Kingdom
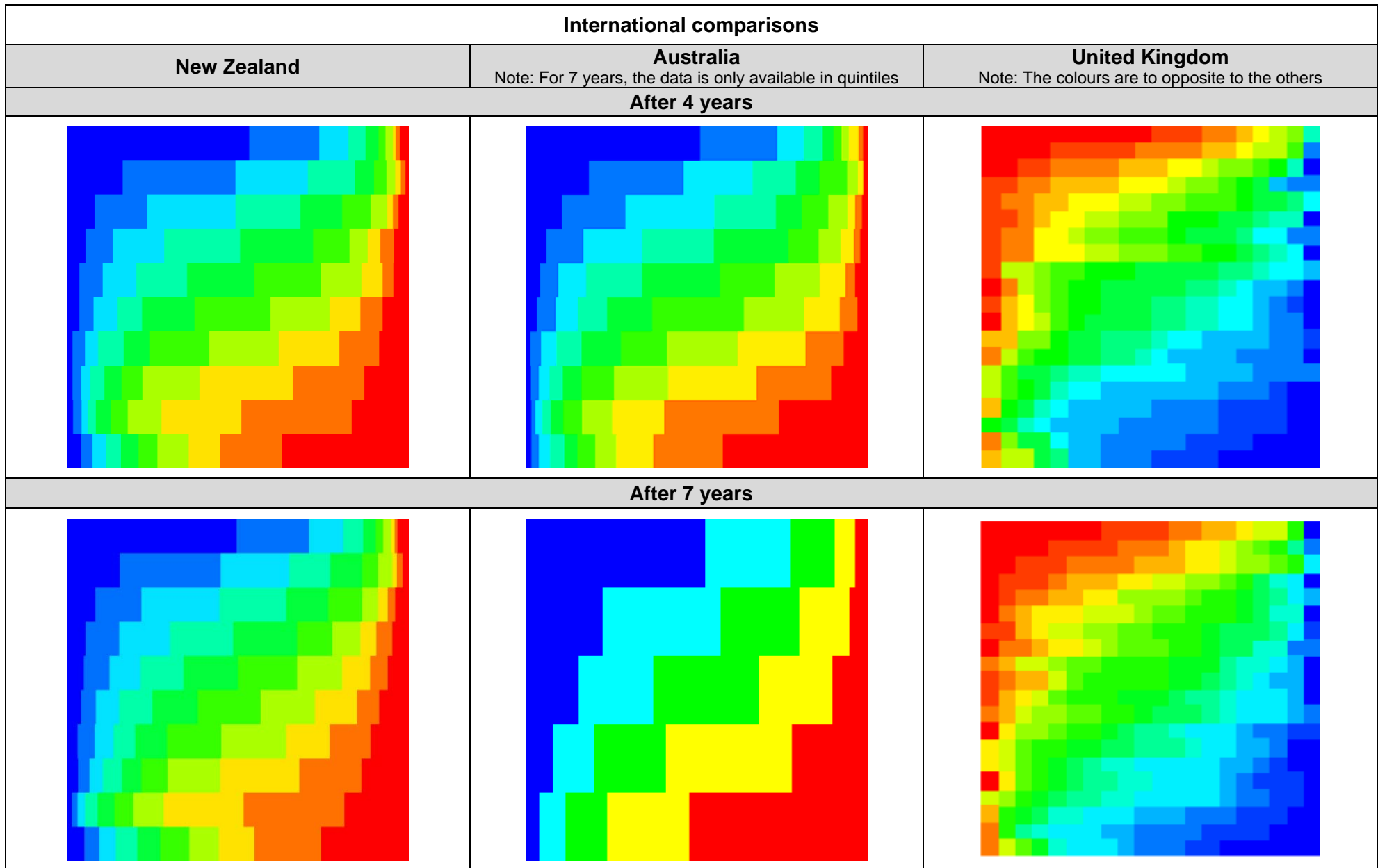
International comparisons		
New Zealand	**Australia** Note: For 7 years, the data is only available in quintiles	**United Kingdom** Note: The colours are to opposite to the others
After 4 years		
After 7 years		

Characteristics of population with intermittent low income

Characteristics of population without low incomes
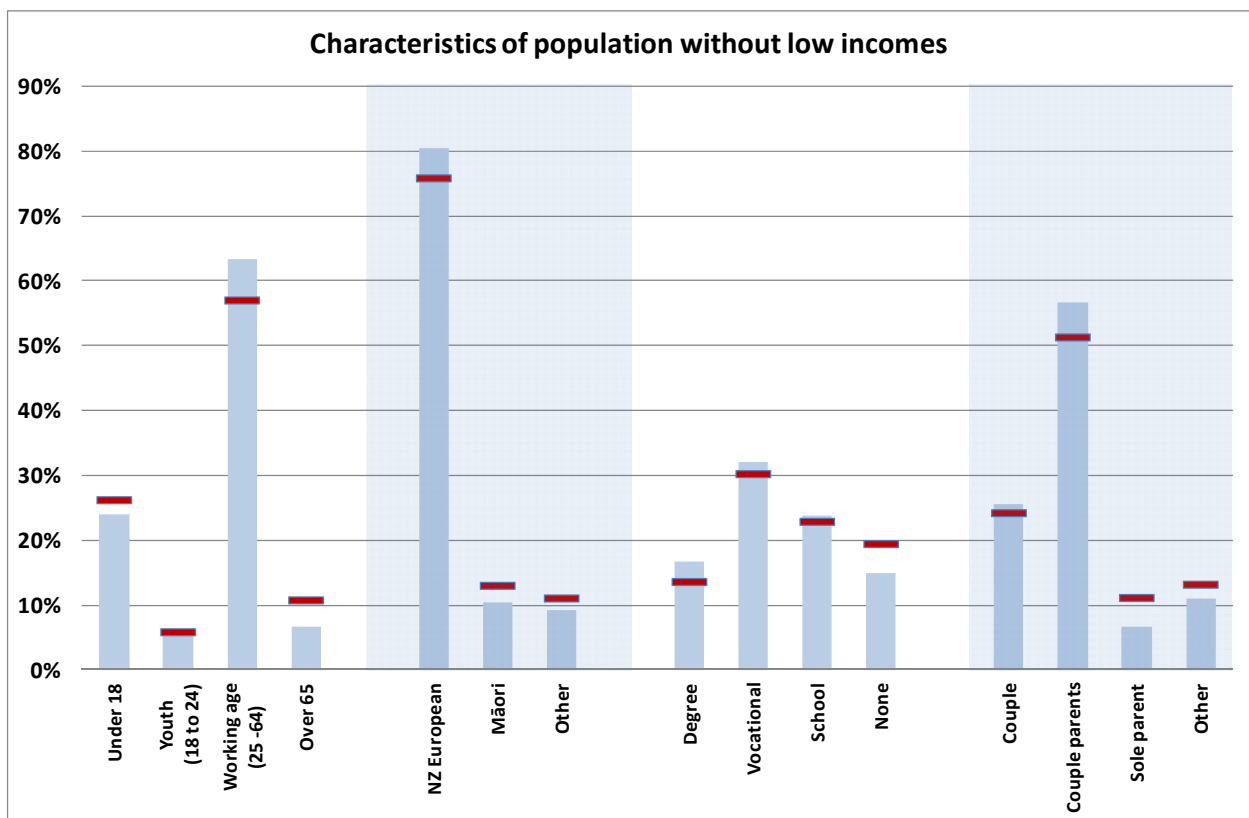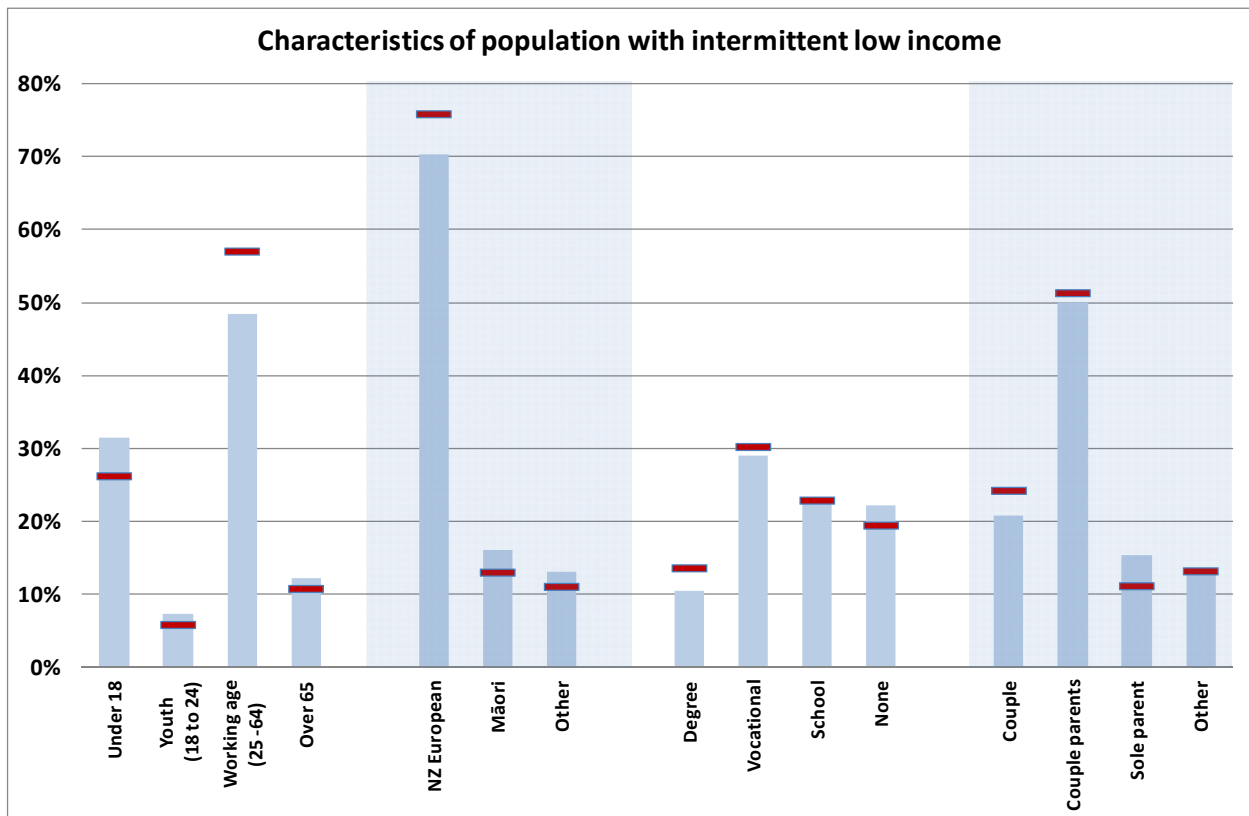
Appendix 6: Characteristics associated with moving to and from a low income
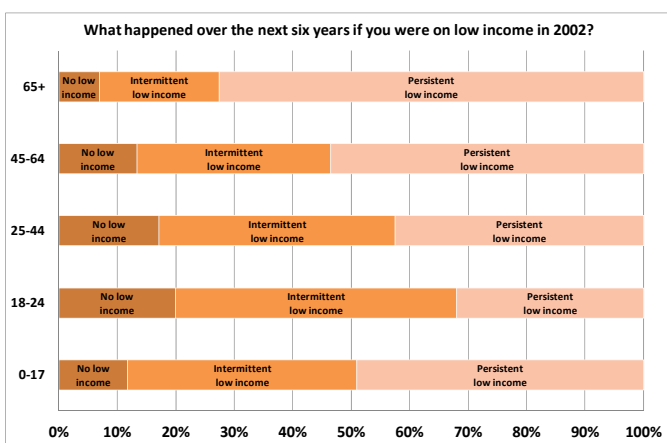
Education level

What happened over the next six years if you were on low income in 2002?
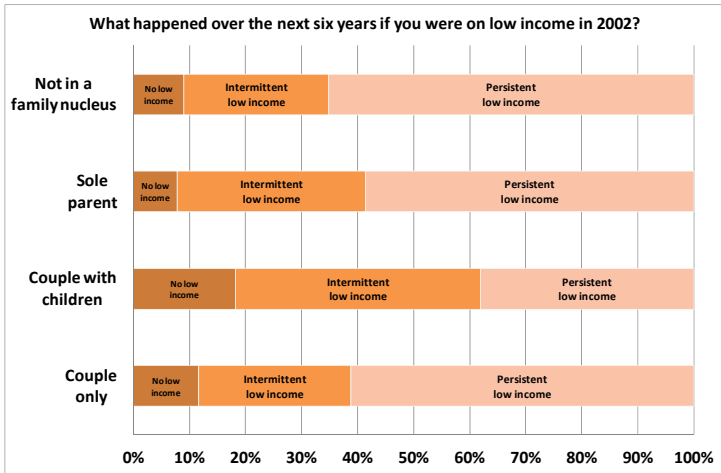
What happened over the next six years if you did not have low income in 2002?

Ethnicity

What happened over the next six years if you were on low income in 2002?

What happened over the next six years if you did not have low income in 2002?

Age

What happened over the next six years if you were on low income in 2002?

What happened over the next six years if you did not have low income in 2002?

Family status

What happened over the next six years if you were on low income in 2002?

Family status	No low income	Intermittent low income	Persistent low income

- Not in a family nucleus
- Sole parent
- Couple with children
- Couple only

What happened over the next six years if you did not have low income in 2002?

Family status	No low income	Intermittent low income	Persistent low income

- Not in a family nucleus
- Sole parent
- Couple with children
- Couple only

## Appendix 7: Characteristics associated with persistence of deprivation

1. The graphs below show how persistence in deprivation varied by characteristics. Whatever the identified demographic characteristics, the typical position was not to have suffered deprivation during the period covered by the survey, but how typical this was did vary:
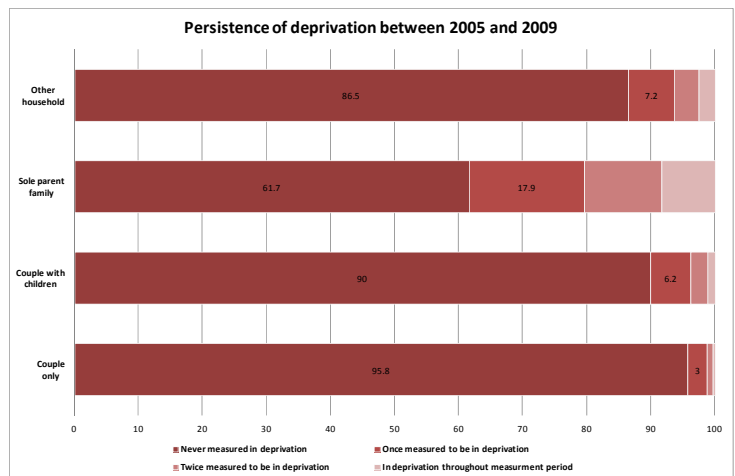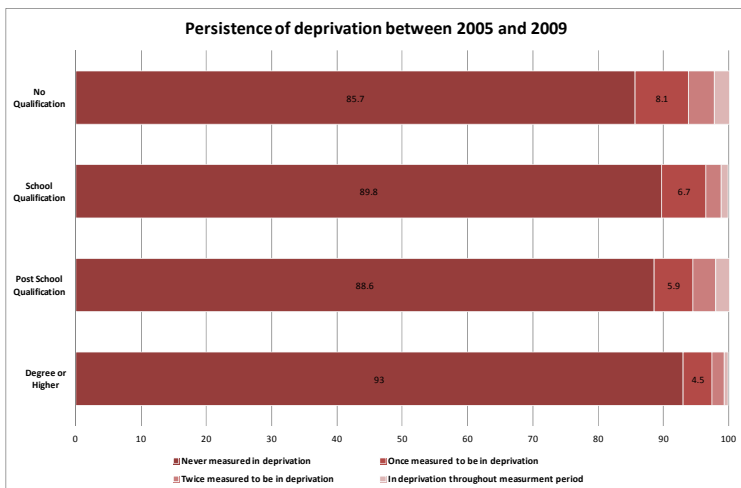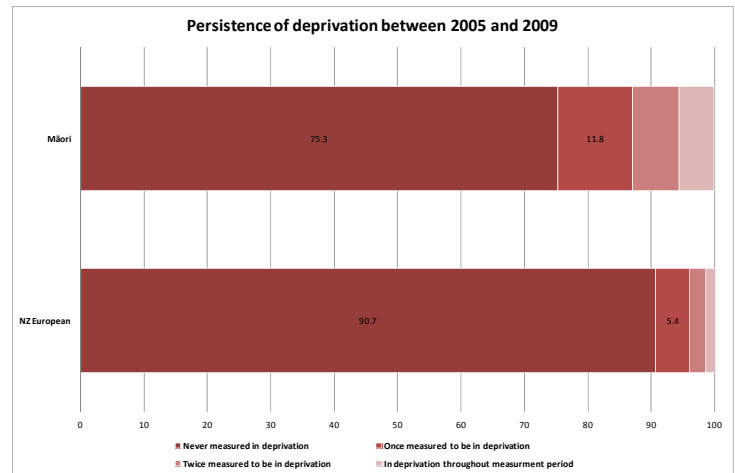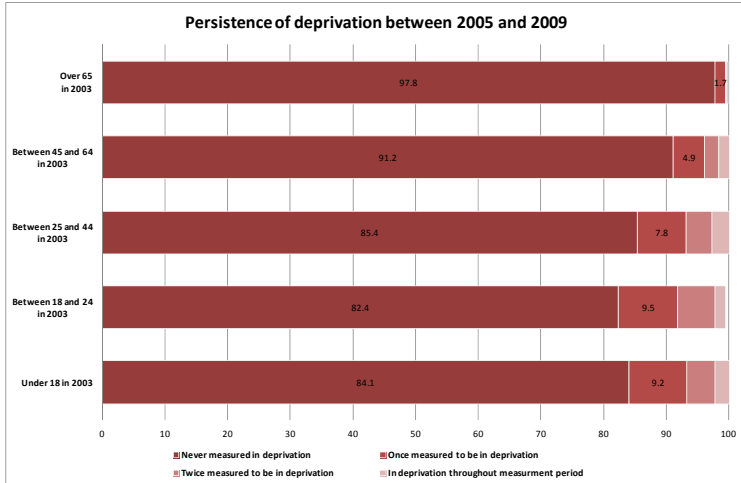

2. The group with greatest level of deprivation were sole parents, which along with a younger age profile is also likely to be important in explaining the higher level of deprivation among Maori. However, it should be emphasised that for both sole parents and Maori, deprivation is *a*typical, just more likely. This is important because targeting policy to minimise deprivation based on these characteristic would lead to most of the resource being used on people who were not in deprivation.

Appendix 8: Link between low income and deprivation

1. The SoFIE data provides greater clarity on the impact of low income persistence as a factor in deprivation. Deprivation increases with persistent low incomes, but this impact is stronger for those who are in early adulthood (presumably because they have fewer assets to assist). Children have a lower increase in deprivation with years of low income. This probably because while they are primarily born into households with adults under the age of 44, by the time they are older they are more likely to be in households that are starting to show greater resilience in the fact of protracted low income. The greatest resilience is shown by those aged over 65 (who are most likely to have assets to cushion the impact of low income), a fact that is also clear in the previous cross-section data.
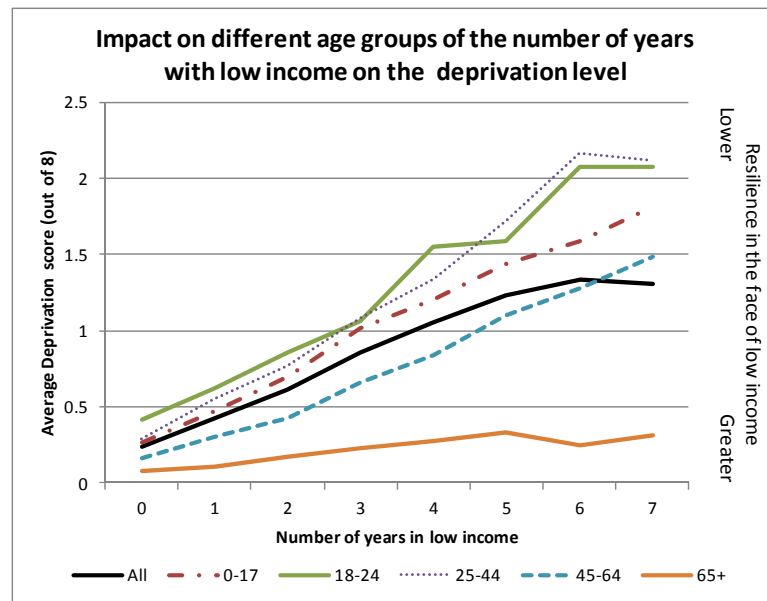
2. There is a significant difference in the impact of persistent low income for Maori and New Zealand European. This will in part be explained by the younger age structure of the Maori population, but we are not able to say if this is the only reason.
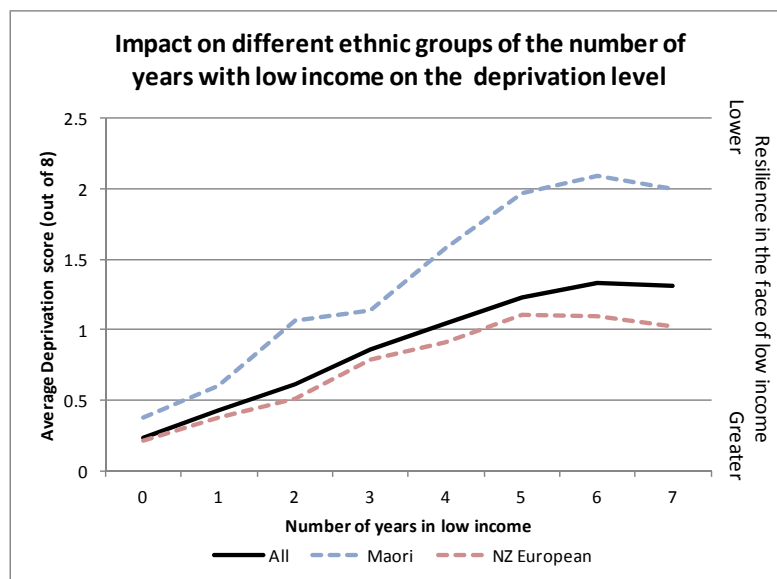
3. Overall, persistent low income does not automatically lead to deprivation. By the definition used here, two-thirds of those who had low incomes in all seven years were not in deprivation in any one of the three times it was measured.