THE 2004 NEW ZEALAND LIVING STANDARDS SURVEY: WHAT DOES IT SIGNAL ABOUT THE IMPORTANCE OF MULTIPLE DISADVANTAGE?

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Abstract

This paper provides the rationale for the Ministry of Social Development's living standards research programme by describing the distinctive features of the Economic Living Standards Index (ELSI), the measure of living standards that provides the basis for the research. The paper draws on data collected in the 2004 national living standards survey to examine living standard variation in the population and factors associated with variation. It demonstrates that while living standard is strongly associated with income, as would be expected, it is also strongly associated with a large number of other factors (assets, accommodation costs, "life shocks", health problems, etc.). The non-income factors account for a substantial part of the living standards variation. These findings are then used to explore whether the notion of multiple disadvantage can make a fruitful contribution to understanding living standards variation, especially in relation to the issue of why some people with low incomes are in severe hardship while others have adequate or good living standards. The results of the analysis suggest than when hardship occurs it is not generally the result of a single factor, but commonly reflects the compounding effects of multiple disadvantages. The paper points to the desirability of exploring ways of expanding the policy framework to better recognise the extent to which various types of disadvantage, and particularly multiple disadvantage, can act independently of income to influence the degree of hardship. It also points to the expected long-term beneficial impact on living standards from social investment policies to improve human capital, home ownership and savings.

INTRODUCTION

The Ministry of Social Development's living standards research programme is directed towards providing a continuing examination of living standards in New Zealand and developing a better understanding of the factors that influence them. The most recent publication from this research programme – *New Zealand Living Standards 2004* (Jensen, Krishnan et al. 2006) – provides an updated descriptive statistical picture of national living standards, following the format of an earlier publication on living standards in 2000 but including information on a wider range of variables. In particular, the new publication includes information on the relationship between living standards and various types of personal and family adversity.

This paper draws on survey data on the relationship between living standards, family economic factors and adversity to examine the extent to which multiple disadvantage has an impact on living standards, especially among families with lower incomes.

HOW LIVING STANDARDS ARE MEASURED IN THIS RESEARCH

Rationale for the Measurement Approach

Before the inception of the living standards programme, the only established statistical measure of material wellbeing in New Zealand was the proportion of the population below a low income threshold. This statistic is included in *The Social Report*, which is published annually by the Ministry of Social Development.[1] The statistic is an example of a class of income-based measures commonly referred to as "poverty rates".

A number of countries (e.g. Australia, the United Kingdom, the United States of America) produce poverty rates. These differ in specifics but have as their common feature that they are calculated from information about family (or household) incomes. Because of this feature, the rates are sometimes referred to as providing a measure of "income poverty". For the poverty rate to be obtained, the income of each family must be related to an amount considered necessary for the family to achieve some minimum socially acceptable level of material wellbeing. As families of different composition will require, on average, different levels of income to reach the designated level of material wellbeing, it is necessary to specify a separate "poverty line" income for each type of family that is distinguished in the measurement process.

There are various ways in which this can be done. The "low incomes" statistics given in *The Social Report* make use of a general procedure called "income equivalisation", which adjusts incomes to take into account the differing requirement of families of different

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1   The relevant section is called "Population with low incomes", pp.62–3 in *The Social Report 2006*.

sizes, and then relates each family's equivalised income to a specified equivalised income threshold.[2]

A poverty rate is commonly expressed as the proportion of the population in families that are below the relevant poverty line.[3] In a similar way, separate poverty rates can also be obtained for sub-populations of interest (e.g. children, older people, people of a particular ethnicity).

Poverty rate measurement has proved valuable for many purposes (including monitoring changes over time and setting social assistance priorities), but also has two major limitations. First, it classifies people into just two groups (above threshold and below threshold) yet for many purposes it is useful to be able to make finer distinctions (e.g. to be able to distinguish between people who have good living standards, in-between living standards, and living standards that place them in hardship, or poverty). Secondly, evidence has been accumulating that a family's ability to meet its needs is affected by more than just income.[4] That is to say, there is evidence that a poverty line – as a means of determining whether a family has achieved an acceptable level of material wellbeing – is a fairly rough and ready measure, with some people not in hardship being placed below the line and other people who are in hardship being placed above the line.

This is an inevitable consequence of the poverty rate not being a measure of material wellbeing itself (i.e. not being a "direct" measure) but rather an "income proxy". One of the consequences of relying purely on an income proxy measure is that it is not possible, within the confines of that framework, to examine the extent to which material wellbeing is affected by factors other than income and thus to provide data helpful in developing and assessing multi-faceted assistance policies (including those reflecting a "wrap-around" approach). A more fully developed understanding of the causes of hardship creates an impetus for adopting a policy approach in which income assistance is just one element along with measures directed at ameliorating other forms of disadvantage that are contributing to a family's difficulties.

The first goal of the Ministry of Social Development's living standards programme was to ascertain whether it was possible, using a particular measurement approach favoured by the researchers, to produce a measure that would overcome those limitations. Specifically, the goal was to meet the requirement for (a) a full-range measure (i.e. one that discriminated across the living standard continuum, from high

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2   *The Social Report 2006* actually uses three thresholds and gives separate statistics based on each one.
3   The poverty rate can also be expressed as the proportion of the population in households that are below the poverty line.
4   See, for example, the analysis of factors affecting living standards presented in *Living Standards of Older New Zealanders: A Technical Account* (Fergusson et al. 2001b).

to low) and (b) a direct (outcome-based) measure. The feasibility of producing such a measure was examined using data collected by means of a large, purpose-designed, national representative survey carried out in 2000. The conclusion reached was that it was indeed possible to produce such a measure that met appropriate statistical conditions.

The theoretical approach was grounded in the body of a multi-item measurement theory that has developed around psychometric and sociometric measurement. Following initial work to select the item set, the primary form of the measure was specified using structural equations modelling. That specification was then used to produce a "general use form", which retained the essential properties of the measure but was simpler and more "user friendly". The latter form was called the Economic Living Standard Index (usually abbreviated to "ELSI"). An extended account of the theoretical basis of the scale and its development is given in *Direct Measurement of Living Standards: The New Zealand ELSI Scale* (Jensen et al. 2002).

The first application of the new scale was in the descriptive analysis reported in *New Zealand Living Standards 2000* (Krishnan et al. 2002). A second large national survey was carried out in 2004.[5] As noted above, the latter survey covered an expanded range of variables, added because they were hypothesised to be predictive of living standards. The 2004 survey is the primary source of data for the present paper.

Overview of the ELSI Measure

Before examining results based on ELSI, it is helpful to review how the measure is specified. It makes use of 40 distinct indicator items, which are of four types. The approach relies on the conclusion, reached from a large body of scaling theory and research, that a sensitive and robust measure can be obtained from individually "noisy" items if they are sufficient in number and meet tests required to establish that they are individually valid and reflect a single, uni-dimensional underlying construct (or latent variable). The scale was developed in a way that was intended to achieve compliance with these conditions and then tested to confirm that the conditions had indeed been met. Issues of the validity of an instrument such as ELSI require continued scrutiny, but the extensive tests that have been made give support for the conclusion that it is valid, reliable, versatile (being able to be used in a wide range of contexts and for a variety of purposes) and robust (permitting, for example, valid comparisons between sub-populations distinguished on the basis of age, parenting status and ethnicity).[6]

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5   A comprehensive account of the survey is given in *New Zealand Living Standards 2004* (Jensen, Krishnan et al. 2006).

6   For a full account of the validity and reliability testing see *Direct Measurement of Living Standards: The New Zealand ELSI Scale* (Jensen et al. 2002).

Briefly, the measurement set constitutes a carefully developed suite of items relating primarily to things people have and do that reflect their living standards in various ways, together with three items that are self assessments of aspects of living standards. The content of the items is indicated by Table 1.

Table 1   Items on the ELSI Scale

Economising Items	Ownership Restrictions (did not own because of cost)	Social Participation Restrictions (did not do because of cost)	Self Assessments of Standard of Living
Less/cheaper meat	Telephone	Give presents to family/ friends on special occasions	Standard of living self-rating
Less fresh fruit/ vegetables	Secure locks	Visit hairdresser once every 3 months	Adequacy of income self-rating
Bought second-hand clothes	Washing machine	Holiday away from home every year	Satisfaction with standard of living self-rating
Worn old clothes	Heating in main rooms	Overseas holidays once every 3 years	
Put off buying new clothes	Good bed	Night out once a fortnight	
Relied on gifts of clothes	Warm bedding	Special meal at home once a week	
Worn-out shoes	Winter coat	Space for family to stay the night	
Put up with cold	Good shoes		
Stayed in bed for warmth	Best clothes		
Postponed doctor's visits	Pay TV		
Gone without glasses	Personal computer		
Not picked up prescription	Internet		
Cut back on visits to family/friends	Contents insurance		
Cut back on shopping	Electricity		
Less time on hobbies			
Not gone to funeral			

Information on the 40 items is combined by means of a standard procedure to give a numerical score for each respondent.[7] For purposes of statistical analysis using standard parametric procedures (i.e. those based on means, variances, correlation coefficients, etc.), the ELSI score can be treated as a continuous, approximately normal variable. However, to facilitate the presentation and examination of distributions, the score range has been divided into seven intervals, which are referred to as "living standard levels". A respondent's ELSI score enables the respondent to be assigned to a particular level (i.e. level 1, level 2, etc. up to level 7).

To permit interpretation of the levels, a calibration analysis has been performed. The analysis gives, for people at each level, a statistical picture of the extent to which they are restricted in their consumption of basics items and the extent to which they have desired "comforts" and "luxuries". These statistical profiles have been used to assign descriptive labels to the living standard levels, to facilitate discussion of results about distributions.[8] The labels are as follows:
• Level 1: severe hardship
• Level 2: significant hardship
• Level 3: some hardship
• Level 4: fairly comfortable living standard
• Level 5: comfortable living standard
• Level 6: good living standard
• Level 7: very good living standard.

The degree of correspondence between ELSI and an income-based measure is shown schematically in Figure 1, based on data from the 2000 survey. The figure is adapted from one presented in a paper to the 55th Session of the International Statistical Institute (Jensen, Spittal et al. 2006). The circle labelled "ELSI hardship" represents people in the population in one of the bottom three living standard levels (the hardship range of the ELSI measure). The circle labelled "Indentified as in income poverty" represents people with equivalised disposable income (EDY[9]) of less than 60% of the median EDY value. The proportions of the population in each category are similar (being a bit less than a quarter in each case). The overlap (i.e. the proportion of people in income poverty who are also in ELSI hardship, and *vice versa*) is approximately 50%. This result is similar to that reported by Perry in his valuable review of the correspondence between income poverty measures and measures based on deprivation indicators (Perry 2002).

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7   The score range is 0–60. The higher the score, the better the living standard.
8   An account of the calibration of the scale is given in the methodology section (Chapter 3) of *New Zealand Living Standards 2004* (Jensen, Krishnan et al. 2006).
9   In the academic economic literature, income – used as a variable in equations – is commonly represented by the symbol Y. In deference to that notational convention, equivalised disposable income is represented as EDY, rather than EDI.

The result poses the question of what it is that enables an appreciable number of people with low incomes to avoid being in hardship, and why an appreciable number of people above the income threshold are in hardship. Results presented subsequently in this paper go some distance towards answering that question.

Figure 1   The Overlap Between ELSI Hardship and Income Poverty
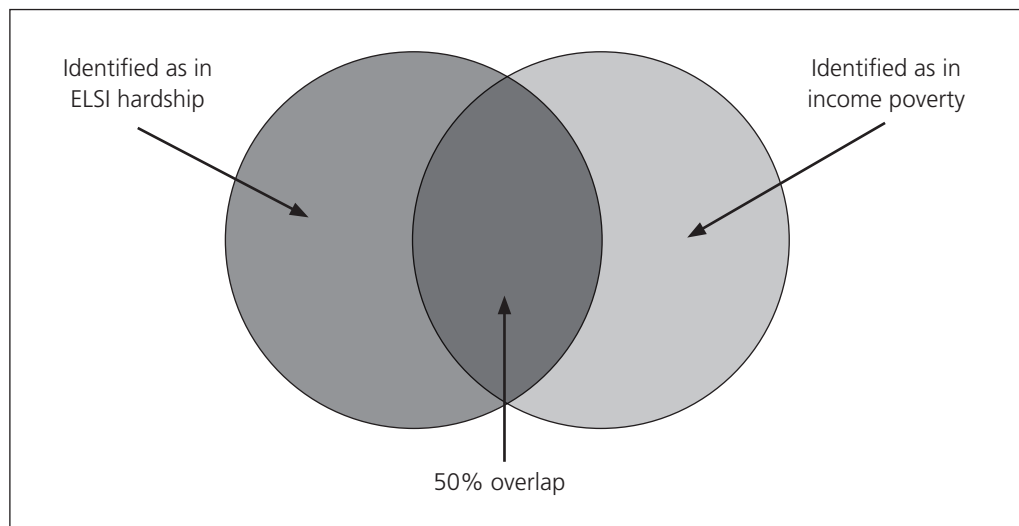
Unit of Analysis Used in this Paper

The sampling unit for the living standard surveys is the economic family unit, or EFU, which in general terms is the nuclear family group to which the survey respondent belongs. The EFU can comprise (i) a single (unpartnered) person with no dependent child/children; (ii) a couple with no dependent child/children; (iii) a single person and her/his dependent child/children (sole-parent family); or (iv) a couple and their dependent child/children (two-parent family).[10]

Some of the questions asked of the survey respondent (e.g. whether they have good shoes, whether they have gone without glasses to keep down costs) relate to the respondent personally, but others relate to the EFU as a whole (e.g. whether there is a washing machine, whether there is heating in the main rooms), while yet others relate

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10 Conceptually, the EFU is distinct from the household. Although many households comprise just one EFU, a significant proportion are made up of multiple EFUs. Thus five single adults who are "flatting" together would be a household of five EFUs. A multi-generational household containing a couple with a dependent child and the child's paternal grandparents would be characterised as having two EFUs. If one of the couple's adult offspring returned to live at home, the household would then be characterised as having three EFUs.

to other specified members of the EFU (e.g. the highest educational qualification of the respondent's spouse, if the respondent has a spouse; health problems of children, if the EFU includes children). In relation to questions about the EFU as a whole, the respondent serves as an informant about the EFU, and also about the spouse and children on the limited range of questions concerning those people.

The primary score produced by the ELSI measurement procedure relates to the respondent, but that score may also be used to characterise the EFU (on the basis that members of the EFU will generally have similar living standards). Results presented for a group (e.g. the population as a whole, people in rented accommodation) may relate to all the distinct people in the group, in which case the results may be described as being reported at the individual level, or at the EFU level.

In *New Zealand Living Standards 2004* some of the ELSI score distributions (for example, those in Chapter 3, entitled "Living Standards of the Total Population") are for individuals, while other distributions (for example, those in Chapter 4, entitled "Living Standards of Families with Dependent Children") are for EFUs. The choice of reporting unit in that report depends on which is most relevant to analysing the issue under consideration.

For the purposes of the present paper, which is directed largely at examining the effect of multiple disadvantage on family living standards, the EFU is the more relevant unit and all results presented below are for EFUs. As a consequence, some of the distributions given here differ from the corresponding distributions in *New Zealand Living Standards 2004* because of a difference in the reporting unit. In general, ELSI distributions for individuals are a little lower than distributions for EFUs. For example, the national distribution for EFUs (Figure 2) has a mean ELSI score of 40.8, while the distribution for individuals (shown in Figure 3.1 in *New Zealand Living Standards 2004*) has a mean of 39.7. This is because larger families (which each contribute more people to the individual distribution than do smaller families) tend to have lower living standards.

THE POPULATION DISTRIBUTION OF LIVING STANDARDS

The population distribution for 2004 was generally favourable. Figure 2 indicates that more than three-quarters of EFUs had living standards in the range from fairly comfortable to very good, with 8% in the top category (very good living standards). The disquieting aspect of the figure is that 21% were in the hardship range of the scale (levels 1–3) and 6% were in severe hardship[11] (level 1).

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11 This 6% of EFUs accounts for 8% of individuals.

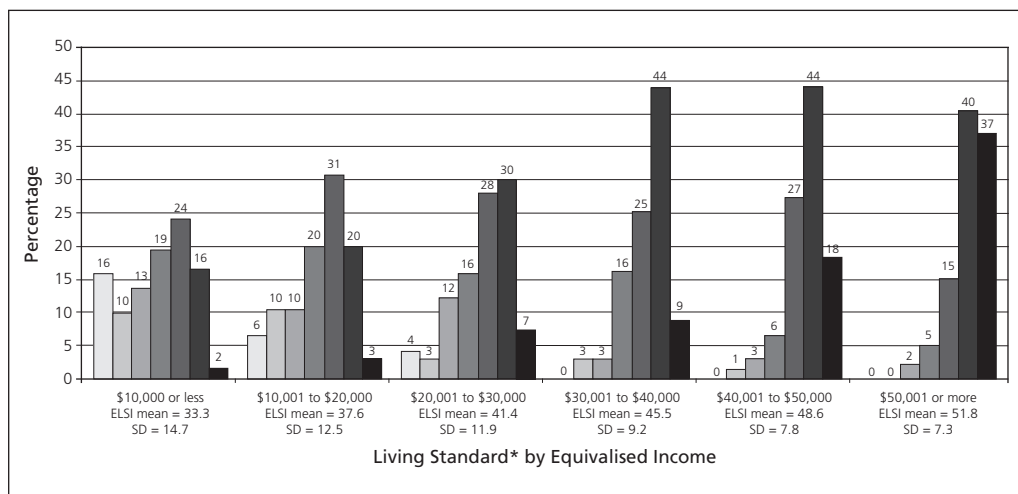Figure 2   Living Standards Distribution of Total Economic Family Units, 2004
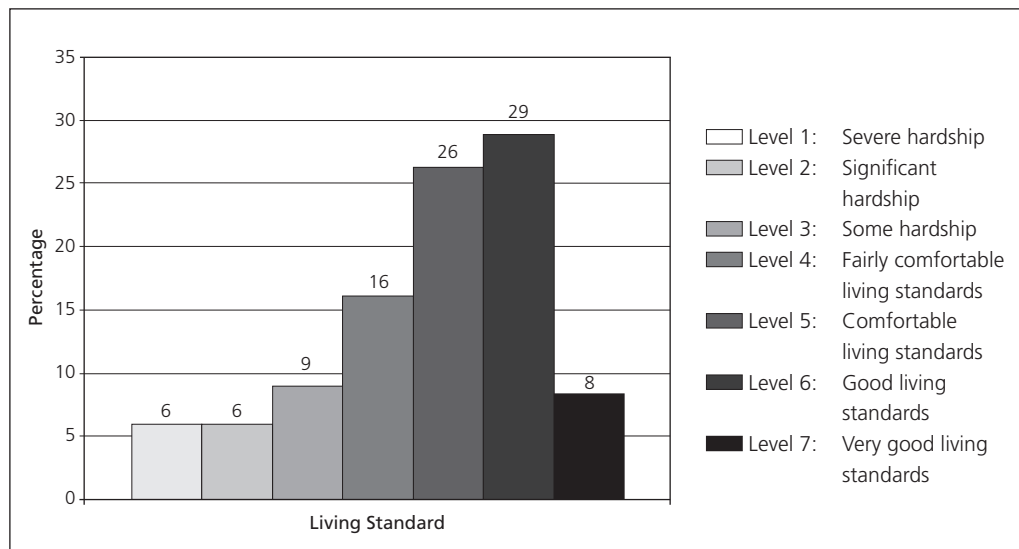
Note: ELSI Mean = 40.8; SD = 13.1

RELATIONSHIP BETWEEN LIVING STANDARD AND INCOME

Income is commonly perceived to be the fundamental determinant of living standard. The state income support system has been developed in the recognition that, without the system, a lack of market earnings would often result in extreme hardship. The core benefits are income tested (as are almost all other income support provisions) and designed to provide a safety net by ensuring that all New Zealanders – irrespective of their capacity to obtain a market income – have an income that is at least at a designated floor level. Accordingly, it is appropriate to begin a consideration of factors affecting living standards by examining the relationship between living standards and income. For reasons explained earlier, income has been expressed as equivalised disposable income, with separate living standard distributions presented for groups defined by different ranges of that variable.[12] The distributions are shown in Figure 3.

12 The income equivalisation procedure is described in *New Zealand Living Standards 2004* (Jensen, Krishnan et al. 2006)

Figure 3   Living Standards, by Equivalised Income, 2004

* Living standard ranges from severe hardship (left-hand bar) to very good living standards (right-hand bar). See Figure 2 for a full explanation.

As would be expected, more favourable distributions are found for the higher equivalised income groups. This is reflected in the mean ELSI scores, which rise progressively from a value of 33 ELSI points for the bottom income group to 52 ELSI points for the top income group.[13]

One of the striking features about the distributions is the way in which their shape changes across the income groups. For EFUs with an equivalised income of $50,001 or more, hardship is negligible in prevalence, while almost four-fifths of the group have good or very good living standards. However, the converse is not found for EFUs with low incomes ($10,000 or less). For the latter group, the spread in living standards is very broad, with 39% being in hardship but an appreciable proportion (18%) still having living standards that are good or very good. Thus the pattern shows an asymmetry: a sufficiently high income provides a complete buffer against the risk of hardship (irrespective of other characteristics), but a low income does not indicate the inevitability of hardship. This asymmetry is reflected in large differences between the standard deviations of the ELSI distributions. The top income group, with a relatively small amount of living standard variation, has a standard deviation that is only half that of the bottom income group (7.3 compared to 14.7).

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13 The question arises as to how differences in mean scores should be viewed. What size of difference can be considered large, and what size is too small to be of any practical importance. The methodology section (chapter 3) of *New Zealand Living Standards 2004* offers the following guidelines. For a difference of less than 2, the difference is very small or negligible; 2 up to 5, the difference is small or moderate; 5 up to 10, the difference is appreciable/considerable/substantial; 10 up to 15, the difference is large; and 15 or more, the difference is very large.

The distribution raises the question of how it is possible for low income to be compatible with a wide range of living standards. What is it that causes some low-income EFUs to be in severe hardship while many others have comfortable and good living standards? The subsequent analysis casts some light on this issue.

THE RELATIONSHIP BETWEEN LIVING STANDARDS AND ECONOMIC FACTORS OTHER THAN INCOME

The following figures show living standard distributions for groups specified on the basis of various factors other than income. The figures have the same format as that used to present the relationship between living standards and income.

ASSETS

To examine the relationship between living standards and assets, the EFU's financial assets (i.e. money in bank accounts, value of shares and other financial investments, etc.) have been treated separately from ownership of the family home. Figure 4 gives living standard distributions for groups specified by the level of financial assets. The results show a strong positive association between living standards and the level of assets.

Figure 4   Living Standards, by Asset Value, 2004
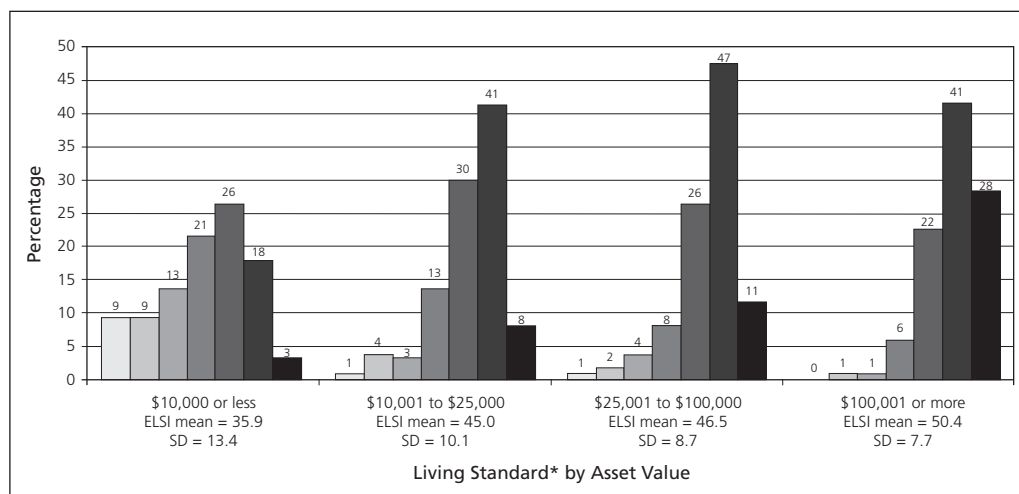
* Living standard ranges from severe hardship (left-hand bar) to very good living standards (right-hand bar). See Figure 2 for a full explanation.

The result above shows a strong *statistical* association between assets and living standards. The caveat is often made about such a result that "correlation is not causation", meaning in this context that the differences in living standards observed between the groups may not be a consequence of the assets *per se*, but of other things, such as income that are associated (i.e. correlated) with assets. This matter is not the focus of this part of the paper, but it is worth commenting on it briefly to put the result into perspective. The issue has been examined by means of a multivariate regression analysis, which is the most commonly used tool for seeking to identify the contributions of a variety of potentially explanatory factors to account for the variation of a variable of primary interest (in this case, living standard).

The regression model used in the analysis had as the explanatory variables (i.e. "independent variables") income, assets and all the variables examined in subsequent sections of this paper (that is to say, educational qualifications, home ownership, accommodation costs, responsibility for dependent children, marriage break-up, aggregate "life shocks", and health problems). The results showed that assets had a significant "independent effect" when account was taken of the influence on living standards of income and also the other explanatory variables included in the model. This was true also for each of the other explanatory variables. Not surprisingly, the variable with the strongest independent contribution to explaining living standards variation was income (expressed for the purposes of the regression analysis as the log of the EFU's equivalised disposable income).[14] Results from the analysis are given in the Appendix to this paper.[15]

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14 In interpreting these results, it is important to keep in mind that income is current income (which, in this context, is measured as income over the previous year). A person's current income can be expected to have a weaker relationship with assets (and related variables such as home ownership) than the person's earnings history. One of the explanations for some people with a low current income having good living standards may be that they have personal histories of substantial earnings, resulting in significant current assets, home ownership, an accumulation of good-quality consumer durables, low debts, and so on. Thus for people in their middle years or older, it might be expected that earnings history would be more strongly predictive of current living standard than would current income. This is almost certainly the main reason why New Zealand Superannuitants, who have below average incomes, have favourable living standards (see Chapter 5 of *New Zealand Living Standards 2004* (Jensen, Krishnan et al. 2006) and also Figure 18 of this paper). In a similar way, it might be expected that living standards would be better predicted by "permanent income" (i.e. what a person expects to be their average income over their lifetime) than by current income. For older people, there will be a strong association between earnings history and permanent income.

15 The next stage of living standards work to be carried out in the Ministry of Social Development is a full analysis directed towards developing a systematic explanatory model, which will seek to explain living standards variation on the basis of the wide range of variables included in the survey, including variables not used in the present paper. The result of that work will be published in a report in 2007.

Housing Tenure

Figure 5 shows that there are substantial differences between the living standards distributions of the three tenure groups distinguished (i.e. those in rented accommodation, those with their own homes but paying mortgages, and those with their own homes without mortgages.) Those with mortgage-free homes (which includes the majority of New Zealand Superannuitants) had a very favourable distribution. The mean living standards score was appreciably above the national mean (by a margin of 6 ELSI points) and only 7% of the EFUs were in the hardship range. By contrast, renters had a very widely spread distribution: almost a fifth had good living standards but more than a third were in hardship. The mean living standards score was 6 ELSI points below the national mean. For those owning a home with a mortgage, the distribution was between the other two distributions and the mean was close to the national mean.

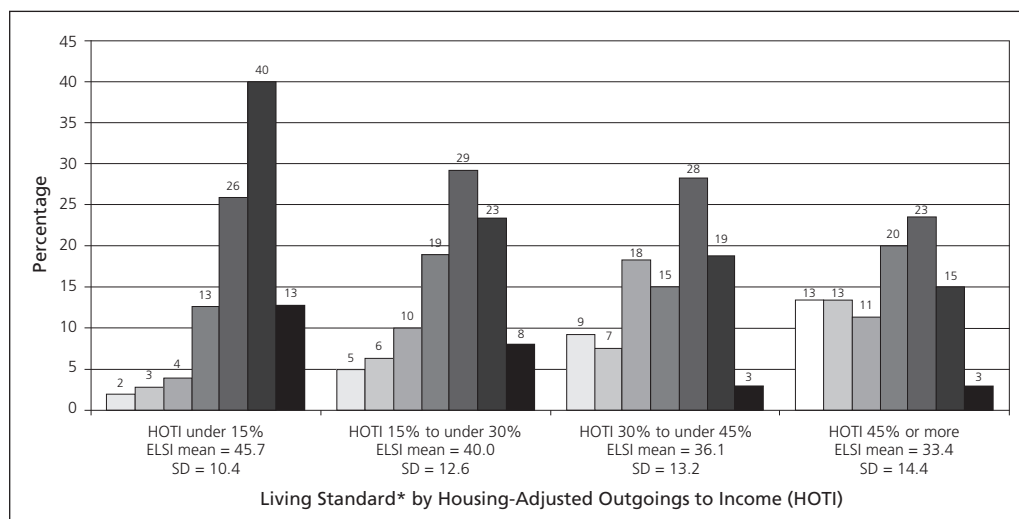### Figure 5   Living Standards, by Housing Tenure, 2004
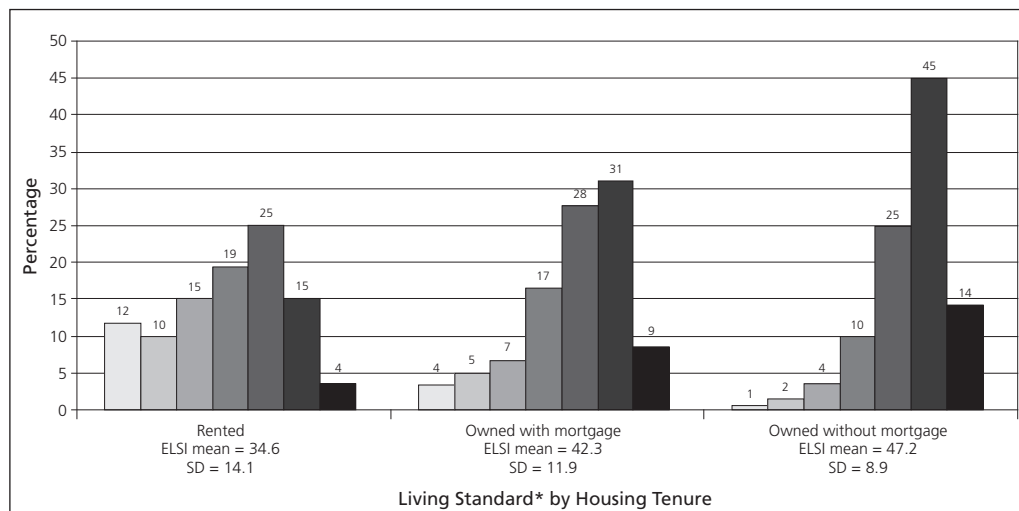
* Living standard ranges from severe hardship (left-hand bar) to very good living standards (right-hand bar). See Figure 2 for a full explanation.

Housing Costs Relative to Income

One of the ways in which home ownership influences living standard is by constraining housing costs. This is most evident for those home owners who are mortgage-free. A useful way to examine the effect of accommodation cost is to express that cost (called here "housing outgoings") relative to income. For renters, the figure used is rent. For owners, the cost comprises rates and mortgage payments (when relevant). In Figure 6 the ratio of housing outgoings to income (HOTI) has

been expressed as a percentage. The results for the groups show a very strong gradient with respect to living standards. For the group whose housing costs absorbed less than 15% of income, the majority had good (or very good) living standards and less than 10% were in hardship; the mean living standards score was 5 ELSI points above the national mean.

Figure 6   Living Standards, by Housing Outgoings to Income (HOTI), 2004

* Living standard ranges from severe hardship (left-hand bar) to very good living standards (right-hand bar). See Figure 2 for a full explanation.

Educational Qualifications[16]

Those with educational qualifications at diploma level have appreciably higher average living standards than those with no qualifications, while those with degree-level qualifications have higher average living standards still.

The living standard differences shown in Figure 7 between the education groups do not adequately indicate the importance of education in contributing to higher living standards. This is because the average level of education has been rising over time, with the consequence that it is considerably higher for younger age groups than for older age groups, while this has occurred in the context of an overall tendency for living standards to be higher for older age groups[17] (presumably reflecting, in part, gains in income that arise from work experience and becoming well established in a

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16 For EFUs containing only one adult, education is specified as that person's highest qualification. For EFUs containing a couple, education is specified as the highest qualification that the partners have between them.

17 See Figure 3.2 of *New Zealand Living Standards 2004* (Jensen, Krishnan et al. 2006).

chosen occupation). As a consequence, the contribution of education to higher living standards will be underestimated when account is not taken of the confounding effect of age.

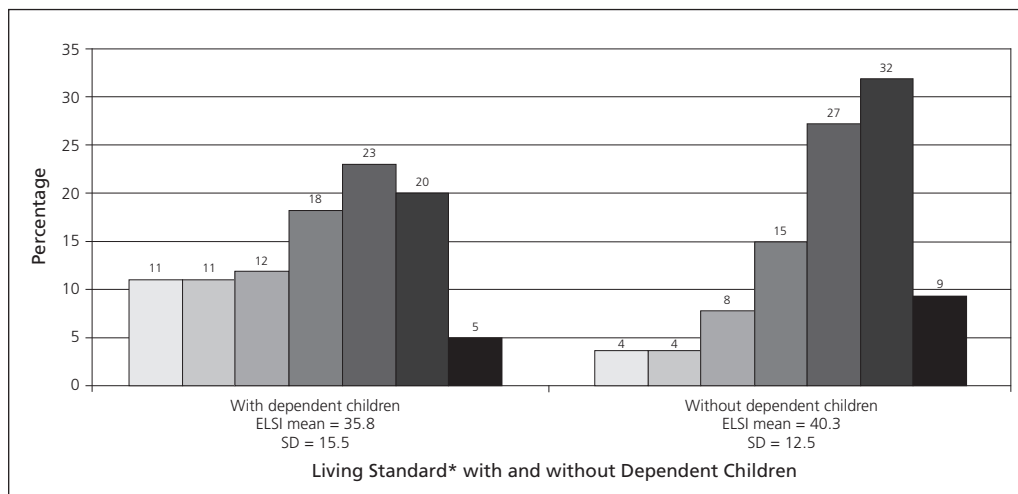Figure 7   Living Standards, by Highest Qualifications of EFU, 2004
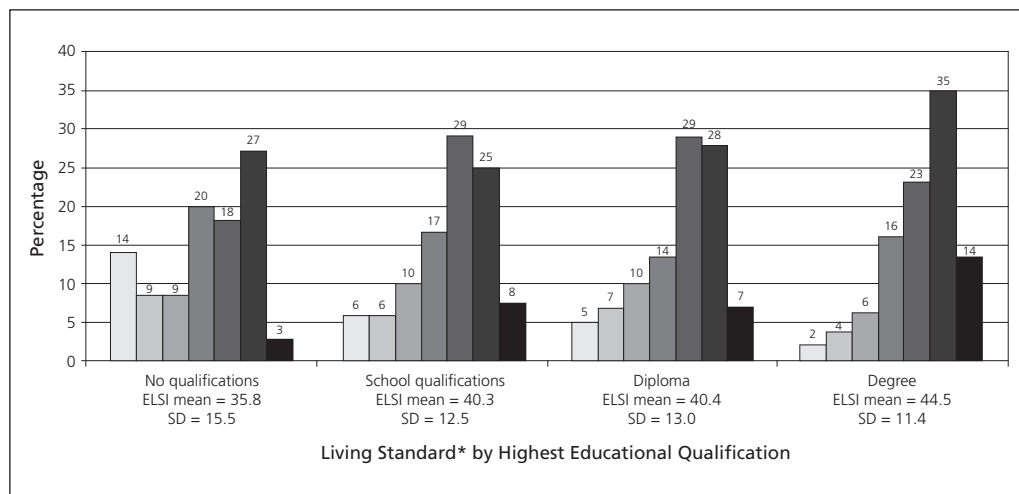
* Living standard ranges from severe hardship (left-hand bar) to very good living standards (right-hand bar). See Figure 2 for a full explanation.

Presence of Children

Figure 8 gives the distribution of EFUs with at least one dependent child, contrasted with the distribution of EFUs that do not have a dependent child. The former distribution is substantially less favourable than the latter. The difference could be taken to suggest that having responsibility for a child exacts a "living standard penalty" and the regression analysis referred to previously confirms that inference (see the Appendix). In other words, having children results in a lower living standard, all other things being equal. This will come as no surprise to those who have made that particular life transition.

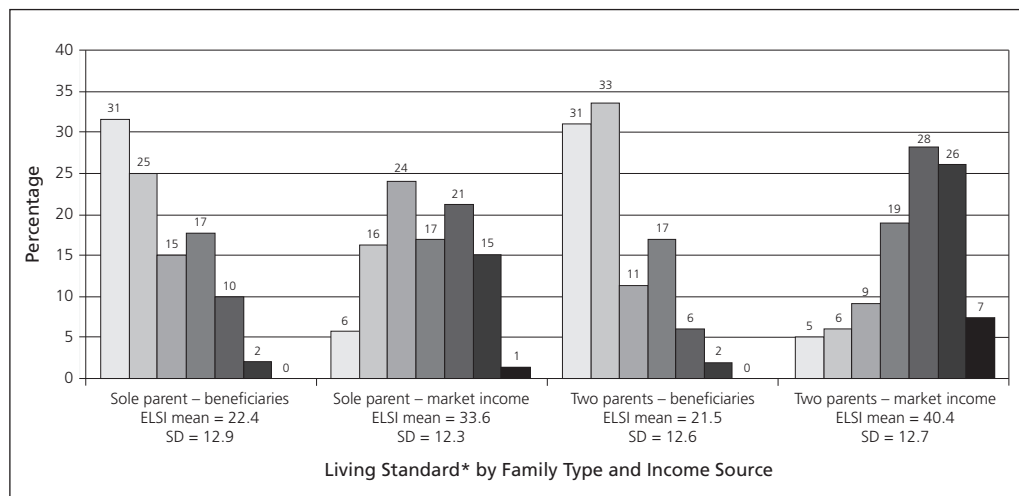Figure 8   Living Standards, by Presence of Children, 2004

* Living standard ranges from severe hardship (left-hand bar) to very good living standards (right-hand bar). See Figure 2
  for a full explanation.

EFUs with Children by Number of Adults and Income Source

Because there is particularly strong policy interest in the living standards of children, an extensive analysis has been made of whether there are certain factors, or combinations of factors, that have a particularly strong association with living standards among EFUs with children. What emerged most strikingly from the analysis was an interplay between the source of income (i.e. whether the main source of income was from market earnings or an income-tested benefit) and the number of adults (i.e. whether the EFU was a two-parent family or a sole-parent family). The relationship between these factors and living standards is shown in Figure 9, which divides families with children into subgroups defined by the four combinations of the two binary characteristics.

Both groups of beneficiaries with children (i.e. the sole-parent beneficiaries and the two-parent beneficiaries) have extremely unfavourable distributions. The distributions are very similar to one another, with both showing almost a third of the families as being in severe hardship and both having similar mean living standard scores (22.4 and 21.5 ELSI points). These means are very low, being more than 18 ELSI points below the national mean. In stark contrast, the two-parent families with market incomes have a favourable distribution that is very similar to that of the overall national distribution of EFUs (with a mean almost identical to the national mean), while the sole-parent families with market incomes have a distribution that is intermediate between the two patterns described.

Figure 9   Living Standards, by Family Type and Income Source, 2004

* Living standard ranges from severe hardship (left-hand bar) to very good living standards (right-hand bar). See Figure 2
  for a full explanation.

Combining Information on the Non-Income Economic Variables

To get a sense of how living standards relate to the non-income economic factors when considered in combination, they have been aggregated into a single score. The reason for this, in the present context, is to explore the notion of multiple disadvantage as a fruitful tool for explaining living standard differences, especially among people with lower incomes. For that reason, the economic variables have been expressed negatively, having been used to specify a set of disadvantages that are referred to as economic impediments. The economic impediments are:

• lacking assets[18]
• not owning the family home[19]
• having high accommodation costs (relative to income)[20]
• lacking educational qualifications[21]
• caring for dependent child(ren).[22]

18 This is specified as: 0 = has assets of more than $100,000; 1 = has assets of between $10,001 and $100,000;
    2 = has assets of less than or equal to $10,000.
19 This is specified as: 0 = owns family home; 1 = does not own family home.
20 This is specified as: 0 = HOTI is less than 0.15; 1 = HOTI is at least 0.15 but less than 0.45; 2 = HOTI is 0.45
    or greater. Note: HOTI is as specified earlier, in the section headed "Housing Costs Relative to Income".
21 This is specified as: 0 = education is at degree level or higher; 1 = school qualification or occupational
    certificate or diploma; 2 = no qualification.
22 This is specified as: 0 = not caring for dependent child(ren); 1 = caring for dependent child(ren).

Information on the impediments has been combined[23] to give a score, and living standard distributions produced for EFUs in different parts of the score range. The result is shown in Figure 10.

As might be expected, there is a strong negative relationship between living standards and the combined economic impediments score. For families with none of the impediments, hardship is negligible and more than 80% have good (or very good) living standards. The mean ELSI score is very high (53.4). This provides an extreme contrast to the result for EFUs with a combined impediments score of seven or more, of which two-thirds are in hardship. Only 4% have good or very good living standards, and the mean ELSI score has the low value of 23.3.

Figure 10   Living Standards, by Combined Economic Impediments Score, 2004
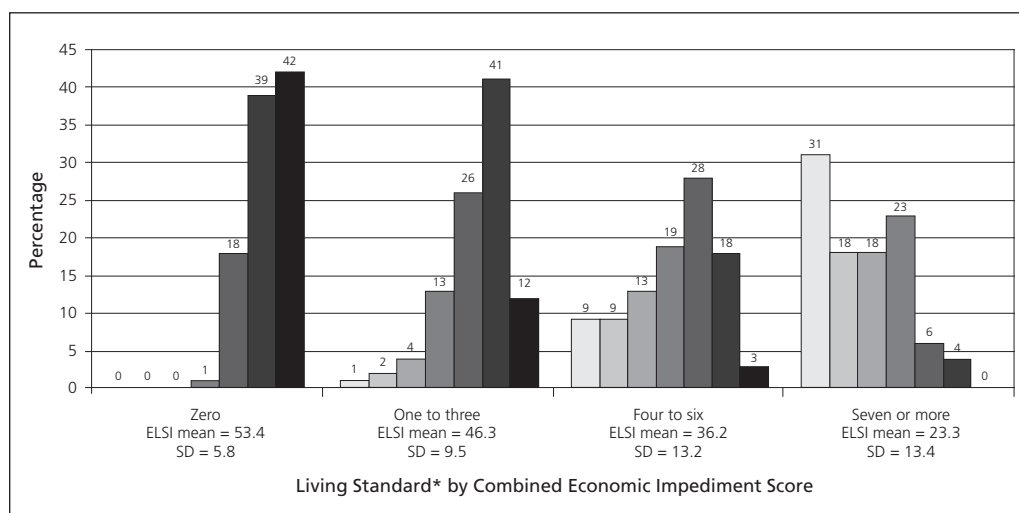
* Living standard ranges from severe hardship (left-hand bar) to very good living standards (right-hand bar). See Figure 2 for a full explanation.

THE RELATIONSHIP BETWEEN LIVING STANDARDS AND VARIOUS TYPES OF ADVERSITY

The 2004 living standards survey (unlike the earlier one in 2000) included questions on various types of adversity that may have been experienced by respondents over the course of their adult lives. This was done because it was hypothesised that certain types of adverse past life events – such as marriage break-ups, extended periods of unemployment, or the mortgagee sale of a home – could have a persisting impact

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23 The combined economic impediment score is simply the sum of the values for the separate impediments. The score has a range of 0–8.

that resulted in a depressed current living standard. Adversities such as health problems that limit full participation in life (i.e. restricted ability to work or provide for one's own personal care) were similarly thought likely to result in a depressed living standard. This section examines the relationship between living standards and some of those factors.

MARRIAGE BREAK-UP

The data show that, overall, those who have had a marriage break-up[24] tend to have a lower living standard than those who have not.[25] There is a clear negative living standards gradient with the number of break-ups, with the most unfavourable distribution being for the group with multiple break-ups.

Life Shocks (Since 18 Years of Age)

Marriage break-up is an example of a type of adverse life event that can be described as a "life shock". Information was collected on a large number of life shocks. An initial exploratory analysis led to the selection of 17 of these (including marriage break-up), with a count then being made of the number of occurrences of events of those types.[26]

The relationship between this count and living standard is shown in Figure 12, which shows that larger numbers of life shocks are associated with lower living standards. However, the relationship does not appear to be a uniform one. It is noteworthy that while those with one to seven shocks have a less favourable living standards distribution than those with no shocks, the difference is relatively small. This is reflected in there being a drop of only three ELSI points in the mean living standards scores. By contrast, those with eight or more shocks have an unfavourable distribution,

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24 Marriage in the present context of the *New Zealand Living Standards 2004* study refers to "social marriage"; i.e. to a relationship that is either *de facto* or *de jure* marriage. For an EFU containing a couple, the analysis uses information about marriage break-ups of only the survey respondent; thus, for example, if the respondent's spouse had had a break-up although the respondent had not, the EFU would be put in the category of "no break-up". Because the information about break-ups is incomplete, the relationship between breaks-ups and living standards can be expected to be underestimated by the results.

25 The "never" group is made up of (a) currently single people who have never been married and (b) currently married people who have not previously been in a marriage that ended in a break-up.

26 The types of shocks were: marriage break-up; becoming a sole parent; mortgagee sale of home; unexpected and substantial drop in income; eviction from home/flat; bankruptcy; substantial financial loss; being made redundant; major damage to home; three months or more of unemployment; imprisonment; receiving a non-custodial sentence; illness lasting three months or more; major injury or health problem; unplanned pregnancy or birth of a child; house burgled; victim of violence. For a married respondent, the information on life shocks relates only to shocks experienced by the respondent; it does not include shocks experienced by the spouse. Each shock is scored as follows: 0 = had not occurred; 1 = had occurred once; 2 = had occurred more than once. The aggregate count used to construct Figure 12 is the sum of the respondent's scores for the 17 shocks. The count has a range of 0–34.

with a mean living standards score that is more than 10 ELSI points below the mean for the one-to-seven group. This pattern of differences may reflect a "threshold effect", with most life shocks not having a substantial impact when they occur in isolation, but having a large effect when the cumulative burden reaches a certain level (sometimes called a "tipping point").[27]

Figure 12   Living Standards, by Life Shocks, 2004
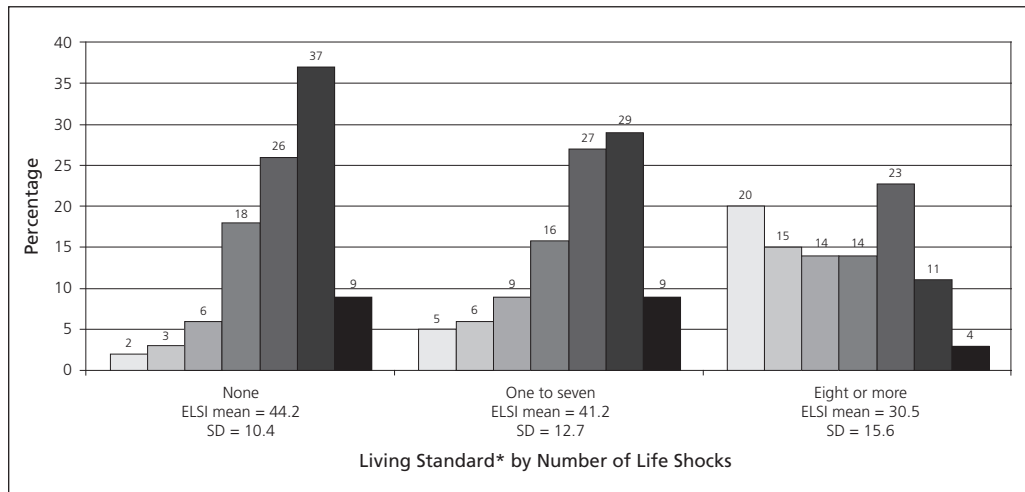
* Living standard ranges from severe hardship (left-hand bar) to very good living standards (right-hand bar). See Figure 2 for a full explanation.
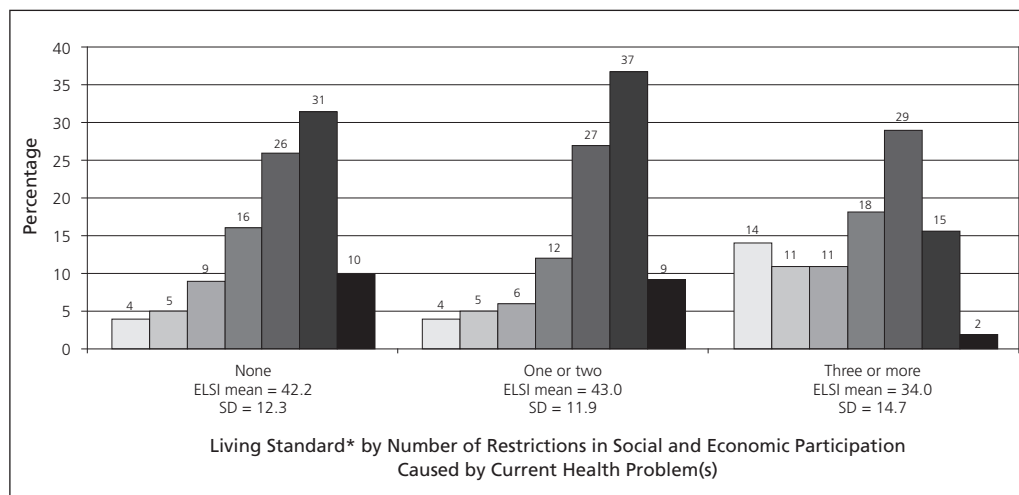
Current Health Problem(s)

A range of information was collected on the respondents' current health. For present purposes, the primary interest is not in describing health in medical terms but rather in gauging the extent to which respondents had health problems that reduced their capabilities in ways that may have lowered their living standards. People with health problems were asked about the impact on their lives in five areas of social and economic participation: employment, education or training, daily living (personal care, ability to do housework, etc.), social activities and finances. The information was then used to obtain a count of the number of areas in which people were restricted. The variable thus created can be viewed as giving an indication of how pervasively the health problem affects the person's life.

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27 Strictly speaking, this may be an instance of point of inflection in a non-linear relationship with an increasing gradient. If so, it would not entirely meet the conditions of the "threshold model" formulated by Granovetter and used by some other theorists. Granovetter's model relates to the phenomenon whereby an incremental increase in a variable triggers a shift from no effect to a large-scale effect, sometimes a state change (Granovetter 1972). More recently, this notion has been popularised by Gladwell (2000), who characterises it in a somewhat looser way and describes it as the tipping point phenomenon.

The relationship between this variable and living standards is shown in Figure 13. The pattern revealed is similar to that for life shocks. The living standards distribution for those who are restricted in one or two areas is similar to the distribution for those not restricted in any areas,[28] while for those restricted in three or more areas the distribution is substantially less favourable. As before, the result suggests that a "threshold effect" may be operating.

Figure 13   Living Standards, by Restrictions on Social and Economic Participation Caused by Current Health Problem(s), 2004
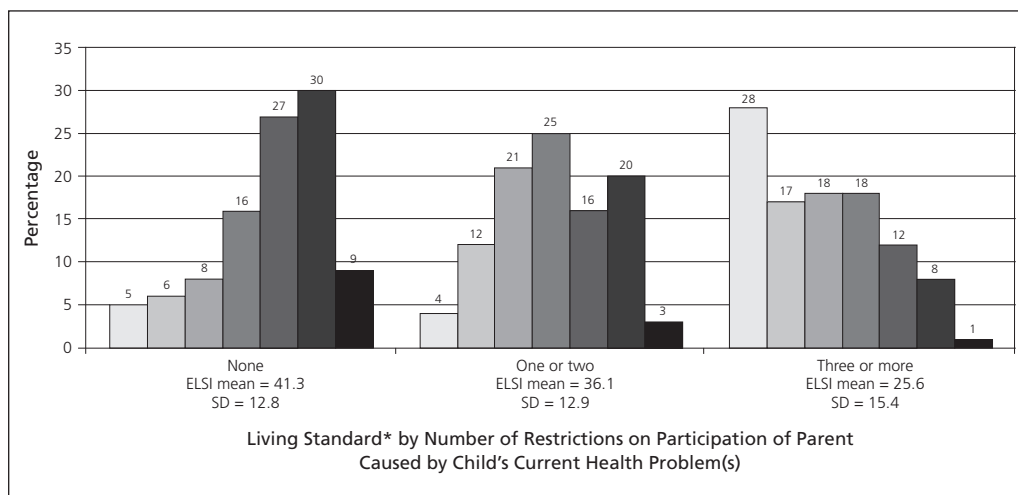

* Living standard ranges from severe hardship (left-hand bar) to very good living standards (right-hand bar). See Figure 2 for a full explanation.

Current Health Problem(s) of a Child (or Children)

Respondents with children were not only asked about their own health but also about that of their children, making it possible to specify a variable (similar to the one described above) about the effect on parents' social and economic participation caused by any health problem(s) of their children. Results relating to that variable are shown in Figure 14. The results show essentially the same pattern as that remarked upon in relation to the previous two figures.

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28 Being in the "none" category could reflect either (a) that the respondent did not have a health condition considered to be a problem or (b) that the respondent had a health problem (or problems) but was not restricted however in any of the specified ways as a consequence.

Figure 14 Living Standards, by Restrictions on Social and Economic Participation
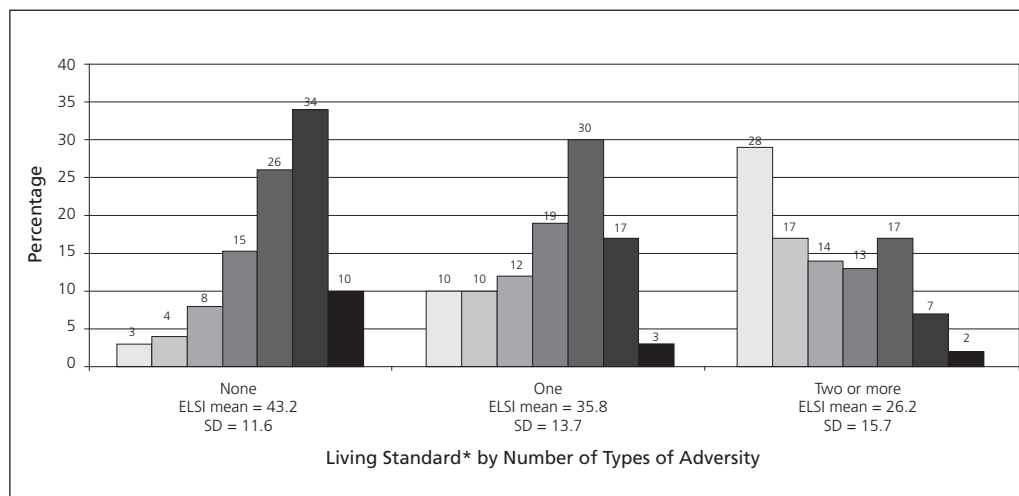Caused by Child's Current Health Problem(s), 2004

* Living standard ranges from severe hardship (left-hand bar) to very good living standards (right-hand bar). See Figure 2
  for a full explanation.

Combining Information on the Various Types of Adversities

As for the economic variables, information on adversities has been combined into a single score. This was done by specifying a threshold score for each of the adversity variables apart from marriage break-ups (which are part of the life shocks variable) and then counting for each EFU the number of adversity types with above-threshold scores. For life shocks, the threshold was eight or more; for restrictions caused by health problem(s), the threshold was three or more, as was the threshold for restrictions caused by a child's health problem. The adversity variables were combined in this way to reflect a threshold effect that appears to be operating in these variables' relationship with living standards.

As would be expected from the preceding figures, there is a strong negative relationship between combined adversities and living standards.

Figure 15 Living Standards, by Combined Adversities

* Living standard ranges from severe hardship (left-hand bar) to very good living standards (right-hand bar). See Figure 2 for a full explanation.

MULTIPLE DISADVANTAGES

Contemporary scholarship on issues of poverty and social exclusion makes extensive use of the notion of "multiple disadvantage", which is commonly conceptualised in an inclusive way, encompassing deficits in material resources (income, assets), human capital (illiteracy, lack of job skills), physical and mental wellbeing (illness, addiction, etc.), and institutional and interpersonal connections.[29] Multiple disadvantage has proved to be a powerful tool in the analysis of social issues. A large body of literature has accumulated that suggests that multiple disadvantage is an underlying factor in many of the social and health problems at which government ameliorative policies are directed. Recognition of the importance of multiple disadvantage can serve as a caution against excessive optimism about the prospect of finding explanations of societal problems such as criminal offending, homelessness, educational failure, etc. in terms of very specific (single factor) causation.

In the context of the present research, a simple measure of the level of non-income disadvantage of an EFU can be obtained by adding the scores for economic impediments and adversities, as specified above. The relationship between this aggregate (referred to as total disadvantages) and living standard is shown in Figure 16.

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29 An example chosen more or less at random is *Multiple Disadvantage in Employment: A Quantitative Analysis* (Berthoud 2003)

The living standards gradient across the total disadvantages variable is extremely strong. For EFUs with none of the disadvantages, the living standard distribution is highly favourable. No one is in hardship and 82% of the group have good or very good living standards. The mean living standards score is 53.7 ELSI points. At the other end of the score range of the total disadvantages variable, the picture is the mirror image of that just described. For those with nine or more disadvantages, the proportion in hardship is 88% and no one has a good or very good living standard. The mean living standard score is 15.1 ELSI points. The other two distributions in Figure 16, with means of 45.2 and 33.5, are intermediate between the ones described.

These results indicate that although the measure of disadvantage developed here is crude, it is nonetheless analytically powerful.

Figure 16   Living Standards, by Total Disadvantages, 2004
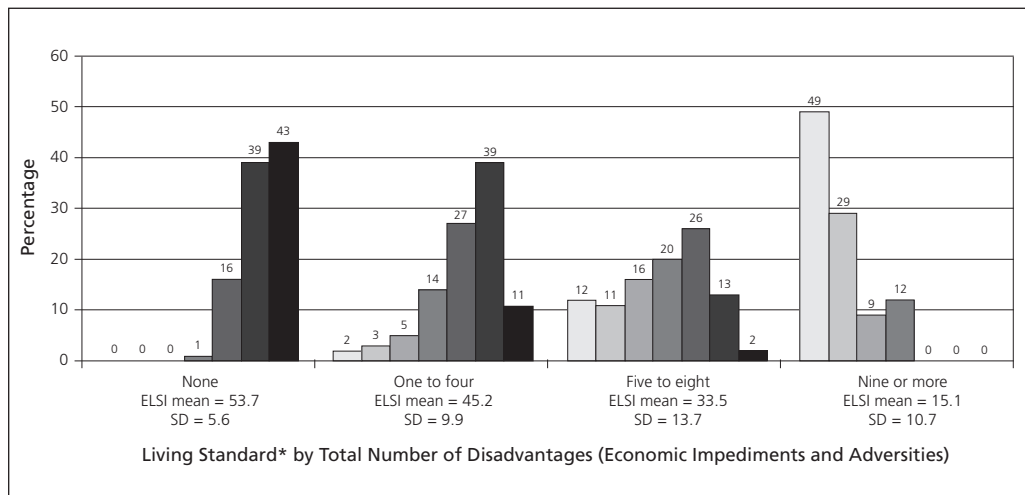
* Living standard ranges from severe hardship (left-hand bar) to very good living standards (right-hand bar). See Figure 2 for a full explanation.

It was noted earlier that income is a primary source of living standards variation. Because people with multiple disadvantages tend to have lower incomes, it cannot be assumed that all of the observed statistical association between multiple disadvantages and low living standards is caused by the disadvantages. The question arises, therefore, as to how much of that association arises from the effect of differences of income.

The statistical correlation between ELSI and the total disadvantages variable ($r_{disadvantagesELSI}$) is –0.58. It is possible to control statistically for the effect of income by using regression to estimate the partial correlation between those

variables (with income[30] "held constant"). It would be expected that the partial correction ($r_{disadvantagesELSI.income}$) would be somewhat lower than the unadjusted correlation, with the difference being a measure of how much of the observed association can be attributed to income. This indeed is what is found, with the partial correlation being –0.52.

This result indicates that the major part of the association between living standards and disadvantages remains after controlling for income. The underlying level of association, given by the partial correlation, can be regarded as being substantial.

Before concluding this section on living standards and disadvantages, there is one further matter that deserves comment. Inspection of Figure 16 conveys the impression that a negative impact of disadvantages is disproportionately great when the number of disadvantages is large. To put this another way, the figure suggests that an accumulation of disadvantages may lead to a compounding of their effects, with the combined impact being greater than might have been expected from the sum of their effects considered separately.

This idea has been examined by fitting a regression model that incorporates the disadvantages variable, and then augmenting it by incorporating a binary "dummy" variable, relating to whether the EFU had a large number of disadvantages (nine or more). If the effects of disadvantages were fully captured by the simple sum of the number of disadvantages, it would be expected that the new variable would add no additional information and consequently would not have a statistically significant coefficient in the regression model. As it turns out, the coefficient is significant, adding support for the notion that there is a compounding of the negative impacts when a large number of disadvantages occur together.

SOURCES OF LIVING STANDARDS VARIATION

A Brief Overview of What the Findings Suggest

The results presented above, together with others in *New Zealand Living Standards 2004*, point to the conclusion that living standards are influenced by a large number of different factors. These have been grouped into a comparatively small number of types to enable a simple diagrammatic representation, shown in Figure 17.

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30 As in the case of the regression analyses referred to previously, income was expressed as the log of the EFU's equivalised disposable income

Figure 17 The Types of Factors Influencing Living Standards
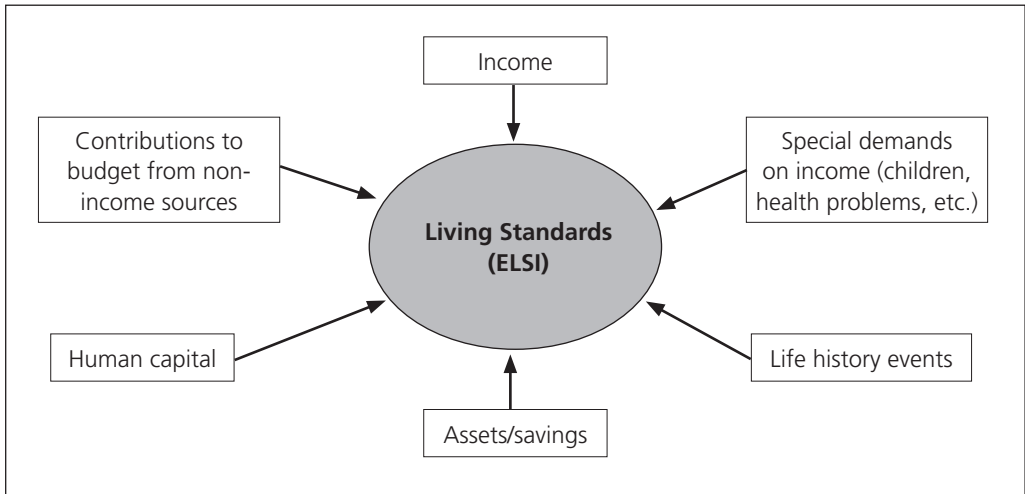
The figure clearly points to why income, by itself, can offer only a partial explanation for differences in living standards, and why other factors must be taken into consideration if a satisfactory understanding is to be achieved. This is important in relation not only to the scientific goal of explanation, but also to the policy goal of improving the effectiveness of state interventions. Concerning the latter point, the above framework points to the conclusion that there may be an upper limit on how much can be achieved by policies that rely primarily on income measures to ensure minimum levels of material wellbeing, and raises the possibility of increasing the impact of state interventions through the development of new policies built around some of the other factors.

Importance of Non-Income Factors for Low-Income Families

One way to get a sense of the potential importance of non-income factors to living standard variation is to look at variation among just those with low incomes. For the present purposes, the low-income group has been defined as in *New Zealand Living Standards 2004* (Jensen, Krishnan et al. 2006:146). The low-income group contains approximately a third of EFUs. However, because the distribution of equivalised incomes is strongly skewed towards the lower end of the range, with a floor value effectively provided by the core benefit rate, there is comparatively little variation in equivalised incomes within the group.

Figure 18 shows the distributions obtained by subdividing the low-income EFUs according to the main source of EFU income (i.e. income-tested benefit, market income or New Zealand Superannuation). The striking feature of the figure is the extreme

contrasts that are revealed between the living standards of the three subgroups. The beneficiary subgroup has a very unfavourable distribution. Almost a quarter are in severe hardship (with a further third in significant hardship or some hardship), while the proportion with good living standards is only 5%. The mean is 27.0 ELSI points. By contrast, the Superannuatant subgroup has a favourable distribution, with only 2% in severe hardship and nearly 40% with good or very good living standards; the mean is 42.7 ELSI points. The market income subgroup has a distribution that is intermediate between the other two; the mean is 36.5 ELSI points.

Confining attention to just the low-income population permits an examination of living standards variation that occurs independently of income. Because the subgroups have essentially the same incomes, the differences between their living standard distributions are due almost entirely to factors other than income. The extreme contrasts show that the combined effect of the non-income factors is very great indeed.

The living standards differences arise, in large part, through differences between the subgroups in the factors that have been examined, and that have been combined together to produce the measure of total disadvantages. The subgroups differ substantially in their mean numbers of disadvantages. The means for the subgroups, considered in the order shown in the figure, are 5.7, 4.4 and 3.7 respectively. The range is very large: the difference between highest and lowest of these means (i.e. 2.0) is about 1.25 standard deviations of the disadvantages variable.

Figure 18   Living Standards Distribution of Low-Income Economic Family Units, by Income Source, 2004
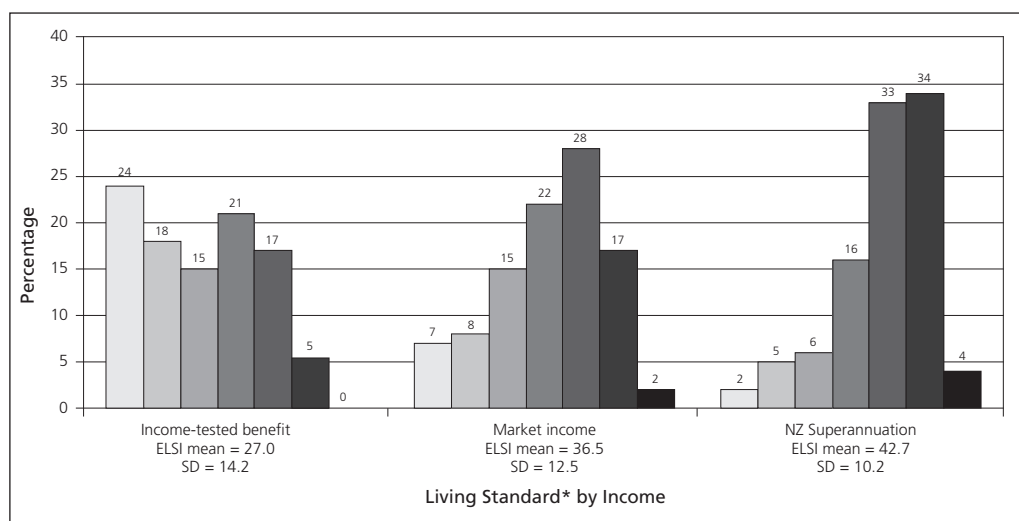
* Living standard ranges from severe hardship (left-hand bar) to very good living standards (right-hand bar). See Figure 2 for a full explanation.

To conclude this section, it is informative to return to the relationship between living standards and total disadvantages, but now considering it within the confines of the low-income population. Doing this augments the earlier result using partial correlation, because it provides another way to examine the level of association independently of income.

The results of doing this are shown in Figure 19. Unlike the earlier figure based on total disadvantages (i.e. Figure 16), there is not a separate distribution for EFUs with no disadvantages. This is because the low-income population contained insufficient EFUs with no disadvantages to permit a separate distribution to be obtained. The two bottom categories shown previously were therefore combined, giving the new category of "zero to four" disadvantages.

As would be expected from the previous results, Figure 19 shows a very strong living standards gradient across the groups defined by total disadvantages. For those with the fewest disadvantages (zero to four), the proportion in severe hardship is only 3% and the proportion with good (or very good) living standards is 30%; the mean living standards score is 40.9 ELSI points, which is very close to the overall national mean. By contrast, for those with the most disadvantages (nine or more), almost half are in severe hardship and none have good living standards; the mean living standards score is 15.2 ELSI points.

The correlation between ELSI and total disadvantages within the low-income population is 0.54. This is similar to the partial correlation (0.52) that was obtained earlier by including all EFUs but controlling for income by means of the statistical procedure.

Figure 19   Living Standards Distribution of Low-Income Economic Family Units,
by Combined Disadvantages, 2004
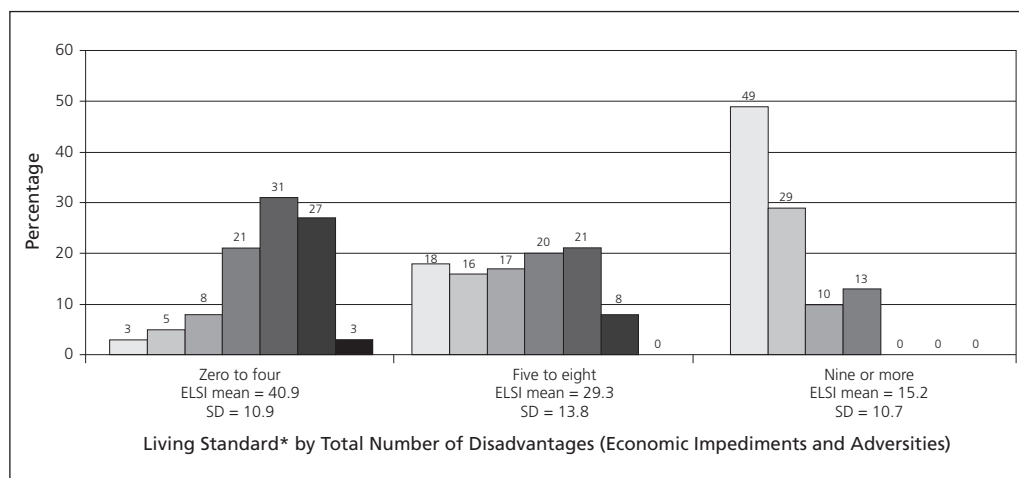
* Living standard ranges from severe hardship (left-hand bar) to very good living standards (right-hand bar). See Figure 2 for a full explanation.

CONCLUDING COMMENTS:
IMPLICATIONS OF THE RESULTS FOR SOCIAL POLICY

Discussions of living standards sometimes seem to proceed on the basis of an unexamined assumption that they are simply a function of incomes. However, while research provides abundant evidence that income is a major determinant, it also points to there being many other factors that contribute to living standard variation and which, in their combined effect, are also of major importance.

This paper has examined the relationship between living standards and a range of non-income factors, with information on these then being combined to create a measure of multiple disadvantage. The findings show – contrary to the "unexamined assumption" – that people with low incomes do not have exclusively (or even predominantly) low living standards, but rather show a wide range of living standards. The findings also show that among this group there is a strong negative relationship between living standards and disadvantages. When hardship occurs, it is rarely the consequence of just a single factor. Rather, it commonly reflects the compounding impacts of multiple disadvantages.

In the design of social assistance schemes, income is used as a policy parameter primarily in two ways. The first of these is in the targeting of social assistance; that is to say, specifying who have entitlements to various types of assistance. The second is in determining the amount (quantum) of assistance to be received by each person with

an entitlement. It is useful to draw a clear conceptual distinction between these two uses of income as a policy parameter, although a distinction is not always apparent at the level of administration.

The primary policy goal of most social assistance is to respond to an immediate threat to a person's material wellbeing (e.g. a threat such as the loss of a job, inability to continue working because of illness, or restricted work participation because of parenting), thereby avoiding or ameliorating the hardship that would probably have occurred in the absence of the assistance. However, the policies for reactive assistance are formulated in the broader context of long-term policies of social and economic development that are intended to reduce the prevalence of such immediate threats to wellbeing and increase people's resilience in responding to them when they do occur. One of the fundamental dimensions of a government's social development strategy is deciding precisely where the balance should be struck between the short-term ameliorative goals and the longer-term social development goals.

The state's principal social assistance programmes are those that provide various forms of income-tested monetary assistance. The main mechanisms for delivering such assistance are the first-tier income support benefits, which relate primarily to lack of earnings because of unemployment, sickness, disability and parenting responsibilities; second-tier income support programmes for people with high accommodation costs and people responsible for the care and support or children; third-tier income support (mainly grants to meet special needs); and in-work payments to working parents.[31]

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31 Accounts of income assistance in New Zealand sometimes include New Zealand Superannuation, the state pension programme, but that programme has not been included here because it is not income tested. That is not a great limitation to a high-level discussion of policy responses to hardship, as the prevalence of hardship among New Zealand Superannuitants is relatively low, reflecting in part the low prevalence of multiple disadvantage. Nonetheless, the group's living standards raise some interesting policy issues, which are worth mentioning here. Results for New Zealand Superannuitants given in Figure 18 show that most of the current population of older people have adequate living standards. However, this reflects in part the advantages accruing to that particular cohort from a historically specific set of favourable social and economic conditions during most of their childhood and working lives. Thus, for example, many people in that cohort were the beneficiaries of substantial universal child assistance (Family Benefit), an extensive system of state rental housing, state policies to assist home ownership (cheap state-provided home financing and the option of "capitalising" Family Benefit to obtain deposits for home purchase), high labour demand, very low unemployment rates and a low level of wage inequality (compared to more recent levels). In the context of that particular historical experience, present retirement incomes provide adequately for the majority of the current population of older people. However, such relatively benign conditions, especially as they relate to the life stages of family formation and the parenting of dependent children, do not apply to many people currently in the early and middle stages of their working lives. It cannot be assumed that simply maintaining the current real value of New Zealand Superannuation will be sufficient to ensure that future populations of older people will have a living standards distribution as favourable as that of the present population.

All of these forms of assistance (with one minor exception[32]) use income as a targeting parameter. For the first-tier benefits it is the primary parameter; for the others it applies in combination with other parameters. The findings of the research draw attention to the caveats that need to be recognised concerning the relatively imprecise relationship between income and the risk of hardship, with the consequence that only a limited degree of precision that can be achieved by targeting based on income. The issue that arises here – which is well recognised, and subject to constant scrutiny – is not that income is inappropriate as a targeting parameter, but that in particular contexts it may be possible to improve targeting precision by also utilising other parameters. The findings add impetus to the further examination of that issue, particularly in relation to an approach that recognises the way in which compounding disadvantages are predictive of hardship.

A similar issue arises in relation to the procedures for determining the amount of monetary assistance. Discussion of social assistance is rarely conducted with an appreciation of the surprisingly large amount of variation in living standards (and degrees of hardship) among people with similar low incomes. The results of the research show that the combined effect of the current types of monetary assistance produce a wide range of outcomes, with considerably worse outcomes being achieved for people with multiple disadvantages than for people with few disadvantages. It would be desirable for the variability in the outcomes to be reduced. The challenge is to find ways of doing this that are feasible and not offset by undesirable side-effects.

In terms of responses to multiple disadvantages, the most effective approach is probably one that combines greater differentiation in monetary assistance with a strengthening of non-monetary assistance. A development in the latter direction is made complicated by the variety of particular difficulties and special needs that are found among people with multiple disadvantages. Types of assistance that may be relevant are debt restructuring and relief, personal counselling, mental health care, parenting assistance, relationship counselling, treatment of addictions (drugs, gambling), occupational training, access to health care, management of chronic health problems such as diabetes, and assistance in finding accommodation. Moves in this general direction have been occurring within Work and Income New Zealand: the utility of the research, at a general level, may be to reinforce belief about the potential gains that can be obtained through those developments. Whatever the specifics of the developments, the research points to the importance of case managers assessing the circumstances of those receiving assistance in a holistic way to arrive at a customised strategy for responding to the particular combination of needs that are disclosed. There are precedents in some other policy areas of new approaches for coping with

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32 The exception is the entitlement of blind people to Invalid's Benefit. That entitlement is not subject to an income test.

this sort of complexity, the most obvious one being the use of the "wrap-around" model for the integrated provision of services to people in the community with acute, complex needs.

More broadly, the findings of the research underscore the potential for long-term returns to be obtained from social investment to lift human capital (especially investment to reduce the numbers of people with very low educational attainments and job skills) and increase personal asset accumulation (especially among those with negligible assets). The potential merits of "asset-based welfare" have not received prominence in New Zealand policy discussion, although they have been widely canvassed in the United Kingdom.[33]

The next stage of the living standards research is to use the wide range of information collected in the 2004 survey (including information not used in the present paper) to produce a well-developed explanatory model of living standards variation. That work will include using regression procedures to estimate the individual contributions of the explanatory variables to determining the pattern of living standard outcomes, and identifying important interactions between explanatory variables in affecting the outcomes. It is intended that a comprehensive report of that work will be produced in 2007.

The analysis presented in this paper gives useful information on how well the current systems of social assistance, taken together, are succeeding in the goal of averting hardship. As noted, it also has the potential to contribute to thinking about how the targeting of social assistance might be strengthened. However, the analysis does not give a good basis for quantitatively estimating the changes in living standards outcomes that would be expected to result from possible changes in the assistance regimes or from social investment policies to raise human capital, home ownership rates, personal savings, availability of good-quality childcare, and so on. Estimating changes in outcomes – which is an important part of assessing new policy options – requires an understanding of the processes that give rise to the outcomes. The development of the explanatory model will be a step towards developing that understanding and will provide an analytical tool for quantitatively assessing the likely impacts of interventions directed at producing better outcomes.

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33   See, for example, *Asset-Based Welfare and Poverty* (Kober and Paxton 2002).

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APPENDIX: LINEAR REGRESSION PREDICTING ELSI SCORES FROM INCOME AND OTHER VARIABLES EXAMINED IN THE PAPER

Unit of analysis: Economic family unit (EFU)

Dependent variable: ELSI score

Independent variables: The regression model has 10 independent variables, as follows:

- logEDY: income, expressed as the logarithm of the equivalised EFU income over the previous year
- ASSETS: value of financial assets ($), not including the value of the EFU's accommodation (when owned)
- TENURE: ordered categorical variable relating to the EFU's accommodation, with categories: rented (=0), owned with mortgage (=1), owned mortgage-free (=2)
- HOTI: the ratio of housing outgoings to income (net); i.e. a measure of the cost of accommodation relative to income
- EDUCATION: ordered categorical variable giving the highest educational attainment of the survey respondent, with categories: no qualifications (=0), school qualification only (=1), occupational certificate or diploma (=2), degree (=3)
- CHILDREN: presence of dependent child(ren) in the EFU, expressed as a binary variable: child(ren) (=0), no child(ren) (=1)
- BREAK-UPS: marriage break-ups of survey respondent (where marriage is either *de facto* or *de jure*), expressed as a binary variable: two or more break-ups (=0), one or none (=1)
- LIFE-SHOCKS: life-shocks, not including marriage break-ups, expressed as an ordered categorical variable, with categories: seven or more (=0), from one to six, inclusive (=1), none (=2)
- HEALTH-RESPONDENT: restrictions in social and economic activities of survey respondent due to health problems (of the respondent), expressed as a binary variable, with categories: restricted in three or more areas of social/economic activity (=0), restricted in fewer than three areas or not restricted (=1)
- HEALTH-CHILDREN: restrictions in social and economic activities of survey respondent due to health problems of children, expressed as a binary variable, with categories: restricted in three or more areas of social/economic activity (=0), restricted in fewer than three areas or not restricted (=1)

Regression coefficients: The following are the estimates of the standardised regression coefficients obtained by fitting the linear regression model to the survey data.

Independent Variable	Standardised Coefficient	Statistical Significance
logEDY	0.27	$p < 0.0001$
ASSETS	0.11	$p < 0.0001$
TENURE	0.23	$p < 0.0001$
HOTI	−0.12	$p < 0.0001$
EDUCATION	0.04	$p < 0.005$
CHILDREN	0.13	$p < 0.0001$
BREAK-UPS	0.05	$p < 0.0001$
LIFE-SHOCKS	0.14	$p < 0.0001$
HEALTH-RESPONDENT	0.15	$p < 0.0001$
HEALTH-CHILDREN	0.07	$p < 0.0001$

Note 1: The significance level of the coefficient is obtained on the basis a *t*-test; as can be seen from the p values, all of the coefficients are highly significant.

Note 2: The negative sign of the coefficient of the HOTI variable indicates that higher values of accommodation cost relative to income are associated with lower living standards.

Variance explained: Adjusted $R^2 = 0.40$, indicating that 40% of the variance in ELSI is accounted for by the regression model. The coefficient of multiple correlation (R) between the ELSI scores and the regression estimates is given by R = 0.64.