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Below the Line: an Analysis of Income Poverty in New Zealand, 1984 - 1998

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BELOW THE LINE: AN ANALYSIS OF INCOME POVERTY IN NEW ZEALAND, 1984 - 1998.

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Abstract

The economic and social reforms between 1984 and 1999 led to claims of increasing economic hardship, a widening income distribution and adverse consequences on living standards from higher housing costs. This article provides a systematic discussion of those claims, based on an analysis of Statistics New Zealand annual Household Economic Survey. Using a focus group determined poverty line, the paper explores who was poor in 1998, as well as commenting on trends in poverty between 1984 and 1998, on both the basis of disposable income and when this poverty measure is adjusted for relative housing costs. Trends in the incidence and severity of poverty depend crucially on whether an absolute or relative approach is taken to adjusting the poverty line through time.

Key Words: Poverty, focus groups, income distribution, trends.

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BELOW THE LINE: AN ANALYSIS OF INCOME POVERTY

IN NEW ZEALAND, 1984 - 1998.

INTRODUCTION

The last decade has seen intense media, academic and political debate on the subject of poverty and income inadequacy. Elliott *et al* (1999) developed a 66 page annotated bibliography about poverty in New Zealand since 1990, and Waldegrave *et al* (1997) provided a 46 page review of issues in the poverty debate. The debate has occurred over the appropriate conceptualisation of poverty; the level at which a poverty standard should be set; the method for adjusting that standard for differences in household size and composition; and the mechanism for altering the poverty threshold through time in order to measure trends in the incidence and severity of poverty.

This paper recognises that each step in the analysis of poverty is controversial. The authors agree with Mollie Orshansky (1969) (developer of the official USA poverty line) when she stated that "counting the poor is an exercise in the art of the possible. For deciding who is poor, prayers are more relevant than calculation because poverty, like beauty, lies in the eyes of the beholder ... when it comes to defining poverty you can only be more subjective or less so". In any developed economy, poverty measurement becomes a political exercise: the absolute destitution of central Africa and parts of the Indian sub-continent have disappeared, leaving no firm measuring rod. Poverty is thus seen in terms of deprivation rather than destitution: it is relative to the standards of living in the community - an ability to function in society, rather than survival (Atkinson 1989).

Poverty and hardship is a legitimate concern for policy, both as a direct issue of social justice as well as offsetting the downstream consequences of poverty on poorer health outcomes, lower educational attainment of children and the possibility of inter-generational cycles of low-income and poverty (Smithies and Stephens 2000). Policy analysts, politicians and the public need some form of consistent measurement and monitoring of who is poor and the dimensions of their poverty. Measurement will permit policies to be developed to help alleviate and ameliorate hardship by directing resources to those most in need, and the source of their need; will allow the impact of economic and social change on disadvantaged groups to be monitored; and will measure the

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effectiveness of government interventions to alleviate poverty. Other rationales for measuring poverty include ascertaining the cost to government of eliminating poverty; acting as a standard of adequacy for social security payments; and to permit research into the causes and effects of poverty.

The paper commences by briefly describing the methodology used in setting a poverty standard. It then looks at the incidence and severity of poverty and the effectiveness of social security and personal income tax payments in alleviating poverty in 1998, using a variety of household type classifications. This analysis is done both before and after adjusting the poverty standard for housing expenditures. The article then considers trends in the incidence and severity of poverty between 1984 and 1998, permitting an analysis of the impact of a period of economic and social change on those in the lower socioeconomic groupings.

METHODOLOGICAL ISSUES

The conceptualisation of poverty and the resultant methodological approach were largely determined by the inter-related objectives of this research into poverty. One objective was to monitor the impact of economic and then social policy reform between 1984 and 1998 on the least advantaged groups in society. A second objective was to provide policy makers and politicians with information on who is poor and the dimensions of their poverty (low employment earnings, inadequate benefit income, high housing costs, large family size etc.). Third, a mechanism for determining the adequacy of social security benefit levels was required. Fourth, to evaluate the effectiveness of existing interventions tax and transfer payments in the alleviation of poverty.

These objectives led to several requirements for a poverty measure. First, the measure needed to be set relative to current standards of living in New Zealand and policy parameters such as the extent of user pays, targeting of government services and impact of direct and indirect taxation. The measure also had to be absolute, in the sense that failure to achieve that standard of living resulted in either adverse social outcomes in the form of deprivation or required stigmatising behaviour such as application for special benefits/needs grants or food-parcels. Second, the measure had to be operationalised for each year between 1984 and 1998: this meant recourse to official statistics, with the annual Household Economic Survey (HES) providing the only consistent data source. Third, given that the major policy variable is the level of government financial assistance

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to households, the appropriate conception of poverty was the 'right to a minimum level of resources', leading to an input (or income) measure. The alternative is an outcome, or standard of living, approach, where concern is with consumption of either specific commodities or total consumption, including that derived from use of accumulated assets. The Survey of the Aged showed that, for the elderly at least, there is no direct correlation between current income levels and present living conditions (Department of Social Welfare 1975). While surveys are expensive, they are essential to provide validity to the income-based poverty measure, and a small survey of low-income households has been undertaken (Waldegrave *et al* 1999).

A consistent input measure of poverty has been developed based on a consensual measurement of income adequacy using focus groups (Stephens *et al* 1995 and Waldegrave *et al* 1996 provide the justification for the focus group methodology and the initial results). The first set of focus groups, based in Wellington in 1993, provided a fairly uniform estimate of the required level of income which would permit a minimum adequate household expenditure. This minimum adequate expenditure would enable the household to purchase its own food and clothing, pay for utilities and rent without either going into debt or taking out special benefits and food-banks. Despite a varying proportion of one-and two-parent households, income levels, housing tenure arrangements, age of oldest householder and income sources, the estimates for two adults and three children varied between $442 and $491 per week, with housing costs being the major source of variation.

Subsequent focus groups, undertaken in both rural North Island towns and Auckland as well as Wellington, have confirmed that housing costs are a major cause of differences in living standards[1]. Housing costs vary independently of the condition and size of the dwelling: those who have a mortgage-free dwelling or purchased prior to the 1980s inflationary spiral will have relatively low housing costs for roughly similar housing standards compared to those who have bought recently or who rent on the open market. Thus the level of household income after subtracting the household's expenditure on housing is regarded as an alternative measure of standard of living[2]. Poverty estimates are provided both on the level of the household's disposable income (adjusted for household size by the Jensen (1988) equivalence scale) and after adjusting income for differences in housing costs[3].

The poverty standard has been transcribed into a poverty measure by relating the standard to Statistics New Zealand's annual Household Economic Survey (HES). Those households declaring

self-employed losses or with an expenditure three times their income have been omitted as there is some doubt as to whether their disposable income level correctly indicates their potential standard of living[4]. In 1991, this omission reduced the data-base by 4.4%, and lowered the overall poverty incidence in that year by three percentage points. Census 1996 indicates that 2.3% of the population do not normally reside in private dwellings and are thus outside of the HES sample - traditionally many of those excluded who live in boarding homes and motor camps have a high poverty risk.

Focus groups estimates of a minimum adequate expenditure form the basis of the poverty level. This poverty level would alter in response to changes in economic conditions or policy parameters which impinged on the achieved standard of living - a rise in GST rates, or an increase in health charges, would alter the required minimum expenditure and thus poverty threshold irrespective of changes in income. Thus any poverty measure should be time-specific, related to the given set of economic conditions and policy parameters. The focus group methodology has proved to be a robust technique for considering adequacy of social security benefit levels, including assistance to families with dependent children.

However, it has not been possible to use the focus groups to establish a separate poverty line for each year. Obviously, backcasting focus group results to 1984 was not feasible, so an alternative mechanism was required. Moreover, the out-of-Wellington focus group results provided a less consistent measure of a minimum adequate level of expenditure due to variations in housing and food costs. It is not known how the focus groups would respond in their estimate of a minimum adequate expenditure to the impact of general economic growth. At one level they may have expanded the quantity and quality of the essential items - once luxury items such as a television have almost become a necessity if a child is not to be excluded by their peers, and home computers may shortly be added as necessities. In this perspective, the poverty line would be set relative to average standards of living in the community. On the other hand, the existing quantity and quality of goods and services may be maintained, in which case adjustment by price changes is appropriate - an absolute poverty standard[5]. Repeated Gallup polls and subjective poverty measurement questionnaires have indicated that the public's perception is midway between an absolute and relative threshold adjustment (Kilpatrick 1973, Hagenaars 1986, Citro and Michael 1995).

Two alternative approaches for altering the poverty line through time have been developed.

First, the average 1993 focus group estimate was used as the basis for calculating a poverty line through time that was relative to average living standards in the community. The focus group estimate was equivalent to 60% of median household equivalent disposable income in 1991. However, when the 1993 HES results came out, the decline in median income over the period resulted in the focus group poverty line being actually 66% of median equivalent household disposable income. Subsequent focus groups, especially those in Auckland, have indicated that 66% is a reasonable estimate of a minimum adequate expenditure to avoid poverty and hardship[6]. Both the 60% and 66% levels have been developed as relative poverty measures, along with a lower, minimum safety net level, set at 50% of median equivalent household disposable income. Second, both the 1991 and 1993 poverty standards have been operated as absolute standards, i.e. adjusted by the consumer price index, centred on 1993.

THE INCIDENCE AND SEVERITY OF POVERTY IN 1998

Table 1 presents information on 5 inter-related measures of poverty, or degree of income inadequacy, for the year to March 1998. In the top part Table 1, using disposable income and the relative adjustment of the original, focus group determined poverty level (60% of median equivalent household disposable income), some 15.4% of households, comprising 14.7% of the population, were poor. The difference between the two figures indicates that, on average, the incidence of poverty is greater among small rather than large households - the reverse of the 1993 results (Stephens *et al* 1995). Some 4.1% of households were below the lower poverty threshold - 50% of median equivalent household disposable income while 23.8% of households were below the 66% level.

The severity of poverty has been measured by the poverty gap - the extent to which households fall below the poverty line. At the focus group threshold, the aggregate poverty gap is $400m, or 0.4% of GDP and 3% of social welfare spending. This indicates the cost to the government of alleviating that poverty, assuming resources could be precisely targeted to those in need and the source of their need. The average poverty gap of 11.7% of the poverty line means that those who are in poverty have an average weekly income shortfall of $46. Whilst the total poverty gap at the modest safety net threshold is substantially lower, the average poverty gap for those who

are below this threshold is much higher at $62 per week. In other words, there is a small group of people who are facing severe financial hardship.

TABLE 1

INCIDENCE AND SEVERITY OF POVERTY, 1998, by Poverty Measure

Poverty Measure	Incidence of Poverty		Poverty Gap		Poverty Reduction Effectiveness	
	Household	People	$m	% Pov Line	Incidence	Poverty Gap
Before Adjusting for Housing Costs						
50%	4.1	4.7	146.1	19.0	86.0	96.0
60%	15.4	14.7	400.6	11.7	52.3	91.6
66%	23.8	22.8	788.4	13.5	30.0	85.4
After Adjusting for Housing Costs						
50%	12.4	13.1	572.3	30.5	60.1	86.6
60%	19.3	20.6	1010.0	28.8	42.9	80.5

Source: Calculated from Poverty Measurement Project data base.

The next two columns indicate the extent to which net transfers (social security benefits less personal income tax on benefits and earnings) reduce the incidence severity of poverty, assuming no behavioural responses from the imposition of transfer payments and taxes. This assumed absence of behavioural reactions is unlikely if the programme (e.g. pensions) has been in operation for a substantial period, and its presence taken into consideration when planning future income needs. The starting point for this measure of effectiveness of government direct income distribution policies to alleviate poverty is before-tax market income.

On the basis of market income (wages and salaries, interest, dividends, self-employed earnings), just over 29% of households were below the 50% poverty threshold. The provision of social security payments reduced that incidence to 2.3%, but the imposition of personal income tax, including tax on social security benefits, raised the poverty rate in terms of disposable income to 4.1%. Thus the overall effectiveness of net transfer payments in reducing poverty incidence was 86% at the minimum safety net poverty level[7]. In terms of the severity of poverty as measured by the poverty gap, the net effectiveness was an even greater 96% - even for those who were still in poverty, the severity of their poverty was largely eliminated.

The effectiveness of net transfers in reducing the incidence of poverty falls dramatically to 52.3% at the focus group determined poverty level and 30% at the 66% level. Only a small part

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of this fall relates to market income - the market income poverty incidence is 32.3% at the 60% level and 34% at the 66%. A significant proportion relates to the negative impact of the tax effect, which reduces the effectiveness by a third at the focus group level and almost half at the 66% level: admittedly a significant proportion of this is due to tax on social security benefits, especially New Zealand Superannuation. The majority is due to the absence of any effective tax threshold for low income earners and the high effective tax rate faced by low income earners in New Zealand (Stephens 1993). Although the poverty gap effectiveness reduces with higher poverty thresholds, the effectiveness is still over 85%, with the tax effect having a very small offsetting impact. At the focus group poverty threshold, social security benefits reduced the poverty gap by some 95%, with a small offset from the tax imposition to give a net effectiveness result of 91.6%.

After adjusting the poverty measure for housing costs, there is a rise in the incidence and severity of poverty, and a reduction in the effectiveness of policy in reducing poverty[8]. At the focus group determined poverty level, 19.3% of households and 20.6% of people had a combination of high housing expenditures and relatively low income. While some households with low incomes, for example pensioners, had below average housing costs and thus escaped poverty after housing costs, many with low equivalent incomes had above average housing costs. Some of this is a deliberate choice decision, as young couples take out a mortgage based on expected life-time income rather than current income. But most of the difference is a result of paying market rents to both public and private sector landlords. There is a significant jump in the overall poverty gap estimate, indicating how high housing costs have had a significant effect on potential living standards for many householders.

The Generosity of the Poverty Thresholds

Overseas estimates of consensual-based poverty lines, based on direct interview questioning, indicate that consensual poverty lines are higher than thresholds derived from more objective data (and the additional required expenditure for dependents is less) (Veit-Wilson 1987). To check whether focus groups provide a realistic estimate of a minimum adequate income, a comparison between the three income-based poverty thresholds and the level of social security benefit payments is made in Table 2 for the major household types.

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At the outset it must be recognised that the poverty thresholds incorporate an allowance for housing costs. The benefit system implictly considers that average housing costs can be paid from benefits (or earnings), but that above average housing costs (combined with low income) requires additional supplementation. This supplementation is done through the Accommodation Supplement which is paid subject to a maximum of $150 in Auckland, $100 in Wellington and $75 per week in the rest of the country. In 1998, the average payment for those receiving the Accommodation Supplement was $47.48 per week (Department of Social Welfare 1999), and this needs to be added to the benefit payments listed below. In addition, Special Benefits and Special Needs grants could be applied for to reduce the discrepancy between needs (as measured by the poverty threshold) and benefit payments.

TABLE 2

RELATIONSHIP BETWEEN POVERTY MEASURES AND BENEFIT LEVELS

Benefit Rates and Poverty Levels as at 1 April, 1998

Household Type	Poverty Measure				Benefit Category ($)		
	50%	60%	66%	UB	DPB	NZSuper	Invalids
Single (S)	176.48	211.78	232.20	147.34	153.47	210.52	184.17
S+1 child (C)	247.08	296.49	325.08	258.04	277.24	257.52	288.93
S+2children	309.53	371.42	407.25	309.24	309.24	289.52	338.30
2 Adults	271.52	325.81	357.24	245.56	--	323.88	306.94
2A+1 child	328.54	394.23	432.27	307.94		370.88	353.94
2A+2C	382.84	459.39	503.70	339.94		--	385.94
2A+3C	429.00	514.78	564.44	371.94			417.94

Source: DSW (1998) and Poverty Measurement Project data base.

The most noticeable congruence is between the payment of New Zealand Superannuation and the focus group poverty line, with that poverty measure for a single person and for a couple less than $2 per week above New Zealand Superannuation. The unemployment benefit (subsequently renamed Community Wage) for a single person aged 25 and over is almost $30 a week below the 50% poverty level (the 18-24 single person unemployment benefit rate is a further $25 lower). However, the unemployment benefit rate for a single person with one child is above the 50% poverty level, as is the DPB, and the single person with 2 children rates are identical. The unemployment benefit rates for couples, with and without children, are substantially below the 50%

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poverty threshold, indicating that the equivalence scales implicit in the unemployment benefit rate are significantly out of line with the Jensen (1988) equivalence scales.

The comparison of the Invalids Benefit with the poverty thresholds is instructive. The Invalids Benefit was not cut in nominal terms in the 1991 benefit cuts, although the real level of the benefit fell by about 4% due to the abolition of the normal CPI adjustment (Stephens 1992). It thus approximates to the pre-1991 benefit levels, when the discussion and measurement of poverty was reasonably mute (Waldegrave and Coventry 1988 are a notable exception). For most family types, the benefit level is above the 50% threshold, but still below the 60% threshold, even if the 4% cut in real benefit level were restored[9].

An alternative method of considering the generosity of the poverty thresholds by comparison with the minimum wage of $7.00 per hour[10]. Assuming a person works a 40 hour week for 52 weeks, the disposable income of a single person would be $229 per week, similar to the 66% threshold. If this person had dependent children, then they would be eligible for the Family Support Tax Credit. With one child their disposable income would be $276 per week, $20 per week less than the 60% threshold. From 1997 they would also have become eligible for the in-work benefit, the Independent Family Tax Credit, of $15 per week per child.

If only one partner worked, a couple would be $42 below the 50% threshold, but if both worked, their income would be well in excess of the 66% threshold. With a dependent child and only one partner in full-time employment, the family would be some $37 below the 50% threshold even with the combined effect of child assistance. In other words, this family would be in superior financial position on the unemployment benefit than in work at the minimum wage - the unemployment trap. The discrepancy between the 50% threshold and the minimum wage plus child assistance grows with the number of dependent children.

A survey undertaken by Waldegrave *et al* (1999) provides a further check on the realism of these poverty thresholds. With a national random sample of 400 low-income households, they showed substantial amounts of deprivation, or poor social outcomes among these households. For example, over 40% of households were overcrowded, with a quarter paying half of their income on rent or a mortgage. Over 60% reported that they had been unable to purchase essential food items over the previous three months, and just 40% had not been able to afford visits to the doctor

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three or more times in the previous year, and 56% not able to afford prescriptions. Two-thirds of these households were debt, 73% unable to pay regular household bills and 13% inadequately clothed. The authors concluded "many low New Zealand households are substantially deprived of some essential household items and services."

WHO ARE THE POOR

This section interweaves some of the ways by which the HES data-base can be analysed. The small size of the data-base means that cross-tabulations are not feasible due to the substantial margin of error resulting from small numbers in many of the cells. To obtain a picture of who is poor, in 1998, it is necessary to interpolate between the different methods of analysing the data. The analysis starts with the traditional use of household type before switching to using stage of lifecycle, employment status followed by number of dependent children. Ethnic divisions are also provided. At the outset, the analysis will be based on disposable income, including the net effectiveness of tax and transfer policies in lowering poverty. Subsequently the impact of housing costs is introduced, using the three different poverty thresholds, although most attention will be placed on the focus group poverty level of 60% of equivalent median household disposable income.

Household Type

At each poverty threshold, Table 3 shows that the incidence of poverty differs significantly between the family types. Sole parents have by far the highest poverty incidence at each poverty threshold, with 45% being poor at the focus group threshold. The severity of their poverty is demonstrated by having 13.2% below the 50% threshold. A comparison of the 50% poverty threshold with the level of the DPB in Table 2 indicates that those below the 'safety-net' threshold are likely to be larger sole parent households. Single adults are the group to have the second highest poverty incidence: this group consists largely of retired elderly with some young unemployed people. The poverty rate for the elderly (both singles and couples) at the 60% threshold is 20.2%, implying (from Table 2) that a substantial proportion of elderly have no income in addition to their pension[11]. In fact a high proportion of the single elderly have little additional income as 42% are below the 66% threshold.

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The other noticeable feature is that in couple relationships, the poverty incidence increases with the number of dependent children for each of the poverty thresholds (see also Table 6). Several inter-related explanations can be offered:

- the degree of assistance provided to families with dependent children does not offset the additional costs of children as measured by the Jensen (1988) equivalence scale, even though there was some increase in the level of the family support tax credit from 1996, and the in-work benefit - the Independent Family Tax Credit - was introduced in 1997.

- despite the fact that New Zealand targets assistance to low income families, the level of assistance provided to families with dependent children, by international standards, is not generous (Stephens and Bradshaw 1995).

- many of those in larger families are Maori and Pacific Islanders who have above average unemployment rates and below average incomes.

TABLE 3

The Incidence, Structure and Severity of Poverty, by Household Type, 1998
(Before Adjusting for Housing Costs)

Household type	Poverty Incidence			Structure	Poverty Gap (60%)		Effectiveness (60%)	
	50%	60%	66%	60%	Total$m	$per person	Incidence	PovertyGap
1 Adult (A)	3.9	21.9	34.1	30.2	86.6	1710	58.2	95.2
1A+ Children	13.2	45.0	62.3	17.7	77.3	808	43.0	90.7
2 Adults	3.1	11.7	18.0	23.9	99.4	1242	60.2	92.5
2A+1Child (C	4.4	10.2	17.3	4.8	26.0	1082	29.7	81.3
2A+2C	3.9	12.4	20.8	7.8	31.0	594	27.1	79.6
2A+3+C	5.8	17.5	28.2	8.5	40.2	498	19.0	76.2
3+ Adults	1.9	5.2	8.1	3.5	20.4	1077	63.6	86.9
3A+C	3.4	8.3	14.3	3.6	19.6	604	59.3	85.2
Total	4.1	15.4	23.8	100.0	400.6	921	52.3	91.6

Source: Adapted from Poverty Measurement Project data-base.

The structure of poverty indicates the proportion of the total poor who are in each household type. This shows a different but as important a picture for development of anti-poverty policy. The incidence estimates imply that the problem is the level of assistance given to families, especially sole parents, to offset the costs dependent children. The structure estimates indicate that the issue is one of the general level of benefits. At the 60% threshold, over 57% of those who are poor do not have

dependent children, with 30% being single adults. Despite their high poverty incidence sole parents make up less than a fifth of the total poor population, while couples with dependent children represent almost a quarter of the total poor households[12].

The severity of poverty, as measured by the poverty gap, is shown in two ways for the 60% poverty threshold: first the total poverty gap and second the mean poverty gap per person in each poor household. The largest poverty gap, and the greatest per person, is for one and two adult without children households. However, only about $33 million of the total poverty gap can be attributed to the elderly, whose average poverty gap is just under $500 per person[13]. The average poverty gap is almost $2500 for non pensioner people without dependents, indicating the significant difference between the poverty threshold and the unemployment benefit rate, especially for those under 25. While the poverty gap per person falls with number of dependent children, the poverty gap per household actually increases. The structure of the poverty gap is fairly similar to that of incidence (single adults are less and families are more prevalent), indicating that in New Zealand at least, the poverty gap is a similar poverty measure to poverty incidence (c.f. UK, where Bradshaw (1983) indicates that the poverty gap is quite a separate measure of poverty).

As with the aggregate effectiveness measures, at the 60% threshold, the combined effect of the social security and tax system is far less successful at reducing the incidence of poverty than the poverty gap. The effectiveness differs significantly by household type. Moreover, the poverty rate based on pre-tax market income varies by household type, ranging from a low of 14% for both couples with one child and three or more adult households to 22% for couples with three children to 52% for single adults and 79% for sole parents. Couples with children are largely in the workforce and receive little assistance from the state except from family support. The strong targeting of family support and its relatively low value has resulted in a very small reduction in the poverty incidence, though about 80% of their poverty gap has been eliminated.

The high final poverty incidence for sole parents is a combination of low market income and a relatively low poverty reduction effectiveness. Tax on both earnings and social security benefits reduced the incidence effectiveness by a third. For sole parents, most of their poverty gap was eliminated, with the tax offset being very small. Households without dependent children have the largest net reduction, indicating the relative success of the New Zealand Superannuation scheme in

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reducing poverty.

Stage of Lifecycle

This section considers who is poor on the basis of stage of lifecycle[14]: whether the poor are children, working age adults or pensioners. Children belong to families where the adults are of working age, but not all working age adults have dependent children. The results are presented on a per person basis, as opposed to the household basis above, and only for the 60% median equivalent household disposable income threshold, on both a before- and after-housing cost basis.

TABLE 4

The Incidence, Structure and Severity of Poverty, 60% of Median Equivalent Household Disposable Income Threshold, by Stage of Life Cycle, 1998.

	Before Housing Costs				After Housing Costs		
Lifecycle Stage	Incidence %	Structure %	Poverty gap $m	Effectiveness %	Incidence %	Structure %	Poverty Gap $m
Children	20.4	38.2	161.8	34.2	33.0	44.2	420.9
Adults 15-64	11.2	46.3	205.3	37.4	16.8	53.5	483.0
Elderly 65+	20.2	15.5	33.5	72.9	10.9	8.3	106.1
Total	14.7	100.0	400.6	52.3	20.6	100.0	1010.0

Source: Calculated from Poverty Measurement project data base.

On the basis of disposable income, Table 4 indicates that the incidence of poverty is almost identical for children as for the elderly, and almost double that of working age adults. However, the absolute size of the poverty gap, averaged per household member, is almost five times as great for children as for the elderly, indicating a far greater severity of poverty for those children who are poor. Demographics influence the structure of poverty, with only 15.5% of the total poor being elderly and 38% children, with working-age adults being the dominant poverty group.

The final incidence of poverty is a combination of the poverty rate based on market income and the effectiveness of the social security and tax systems in reducing that poverty incidence. On the basis of market income, 75% of the elderly would have been poor, but net transfers reduce that incidence by over 72%. Only a third of children were poor on the basis of market income, but the lack of family support relative to the estimated cost of children means that the poverty reduction

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effectiveness is only 34%. Working-age adults have a relatively low market poverty rate of 18%, and a low poverty reduction effectiveness.

After adjusting the poverty measure for housing costs, the incidence of poverty for children and working-age adults rises, as these are the groups most likely to be paying mortgages or rent, whereas the poverty rate for the elderly falls significantly. Outright home ownership is an excellent way of reducing the possibility of poverty in old age. But those who are renting have a substantial increase in their poverty gap, even allowing for the Accommodation Supplement.

Workforce Status

The popular perception is that poverty is largely restricted to beneficiaries. Employment is seen as the major escape route from poverty. However, as argued above, employment at the minimum wage is not necessarily sufficient to escape hardship. Furthermore, there have been claims that the Employment Contracts Act (ECA) 1991 has increased the ability of employers to offer low wages (Walsh and Brosnan, 1998). Dixon (1998) was unable to find any conclusive evidence that ECA has had a significant impact on wages and the lower end of the earnings distribution. On the other hand, Stephens (1996) indicated that real weekly earnings between 1991 and 1994 for all employees fell significantly at the bottom end of the income distribution. As the fall in real earnings was similar across all earnings levels for full-time employees and by hourly earnings, the impact of the ECA seems to have been mostly felt by part-time employees.

The effect of workforce status on poverty is shown in Table 5[15]. Over a third of beneficiaries were below the focus group determined threshold, compared to 10% of households with one person employed and just under 5% with two employees in the household[16]. Employees make up almost 30% of the total poor at this threshold, but contribute to over 40% of the total poverty gap, with the greater depth of poverty occurring in households with two people employed.

The beneficiary group consists of the elderly, where the estimated household poverty rate for those over 65 is 22.8%, and those of working age where about three-fifths are poor. At the 50% threshold, virtually all the beneficiaries who are poor are of working age, and some 81% of working age beneficiaries fall below the 66% threshold. Given the information on the level of benefits relative to thresholds in Table 2, many beneficiaries have some employment-related

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earnings (either part-year employment or part-time work) and/or are in receipt of the Accommodation Supplement. The Department of Social Welfare (1999) report that 18% of the unemployed received other income during the year, with over half reporting more than $80 per week gross income. Almost a quarter of sole parent and invalid beneficiaries reported additional income, with a fifth receiving over $180 gross per week. Over 80% of sole parents were in receipt of the Accommodation Supplement, two-thirds of unemployed beneficiaries, but only 5% of superannuitants.

TABLE 5

The Incidence, Severity and Structure of Poverty, by Workforce Status, 1998.

(Before Adjusting for Housing Costs)

Household Type	Incidence			Structure	Poverty Gap (60%)		Effectiveness (60%)	
	50%	60%	66%	60%	Total $m	per person	Incidence	Poverty gap
Beneficiary	7.4	35.8	55.1	68.4	205.9	823	60.0	95.3
Employed 1	3.9	10.2	17.8	17.2	86.5	812	37.4	68.8
Employed 2	1.9	4.9	6.9	11.5	85.1	1288	-25.6	4.1
Other	--	--	--	2.9	23.1	1914	--	--
Total	4.1	15.4	23.8	100.0	400.6	921	52.3	91.6

Source: Derived from New Zealand Poverty Measurement data base.

There are noticeable differences in the effectiveness of net social security to reduce the incidence and severity of poverty. While the combined impact of the social security and tax systems eliminates most of the poverty gap, the incidence of poverty is only reduced by 60% for beneficiaries - the tax on benefits and earnings lowers the effectiveness by 30 percentage points. Among those employed on low wages, only those with dependent children are eligible to receive any assistance from the state, and all earnings are subject to tax. Without tax on low earnings, the incidence of poverty would have been 66% lower for those households with one employed and almost 60% lower for those with 2 employed - the negative sign indicates that the tax effect more than offsets the assistance given to those families for their dependent children.

Number of Dependent Children

The information in Table 4 showed a high incidence of poverty for those with dependent children. This section expands that analysis, using the number of dependent children as the

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organising feature. Table 6 provides information, on the incidence and severity of poverty, by the number of people in each household. The incidence of poverty is shown for three thresholds (50%, 60% and 66%), but the remainder of the analysis on poverty gaps and effectiveness relates only to the 60% threshold.

TABLE 6
Incidence, Structure and Severity of Poverty, by Number of Dependent Children, 1998.

Number of children	Poverty Incidence			Structure of Poverty		Effectiveness		Poverty Gap	
	50%	60%	66%	Incidence	Poverty Gap	Incidence	Poverty Gap	$m	per person $
0	2.8	11.6	17.9	34.4	51.5	60.0	93.8	206.5	4157
1	3.8	19.7	17.2	11.7	14.0	51.1	88.7	56.3	1106
2	4.4	16.7	26.6	22.5	16.2	36.0	87.1	64.9	664
3	5.3	17.1	28.9	15.5	8.8	28.2	85.3	35.4	523
4	16.2	26.1	37.4	8.6	5.9	30.9	81.2	23.7	634
5+	21.4	53.1	61.2	7.3	3.6	20.5	75.1	13.9	440
Total	4.7	14.7	22.8	100.0	100.0	47.1	91.6	400.6	921

Source: Derived from the data base of the Poverty Measurement project.

At each poverty threshold the incidence increases with the number of dependent children, with the most significant increases coming for the larger families of four and five children. In part, the higher poverty incidence for the larger families is ethnically based: Maori and Pacific Islanders have on average larger families as well as lower employment rates. In addition, it indicates the assistance per child is less than the additional costs of those children. However, the structure of poverty (at the 60% threshold) indicates that those without dependent children are actually the largest single family type in poverty, and account for over half of the total poverty gap. The poverty gap per person is very high for those without dependent children, and fairly low per person for larger households. Large families account for just over a quarter of the total poor, as do those without dependent children.

The effectiveness of net transfers in reducing the incidence of poverty is less on a per person basis than a per household basis as a result of the substantially reduced effectiveness for larger families. On the basis of market income, two-thirds of 5+ child families and two-fifths of 4 child families were poor, indicating either an absence of earnings or earnings at low wage rates. Transfers and taxes had a very low effectiveness in reducing the incidence of poverty, although it was more successful in reducing the poverty gap.

Ethnic Status

The information in Table 7 is designed to highlight the differences in the incidence of poverty by ethnic status, poverty threshold and child/adulthood. The incidence of poverty obviously increases at each threshold level. At each poverty threshold, Europeans have a significantly lower incidence of poverty than either Maori or Pacific Islander families. The Pacific Island poverty rate is either the same or higher than the Maori rate, while that for other ethnic groups (often recent Asiatic immigrants and refugees) is even higher, but they only account for 9.1% of the total poor population. For each ethnic group, the poverty rate for children is in excess of that for adults, with difference being greatest for Pacific Island families: they have the largest family size and lowest average household income.

While the incidence estimates indicate that the alleviation of poverty requires giving prime attention to Maori and Pacific Island families with dependent children, estimates on the structure of poverty indicate that attention also needs to be given to European adults. At the 60% and 66% poverty thresholds, European adults make up just under three-quarters of poor adults, but just over half of children are European who fall below these thresholds. Maori children account for 26% of poor children and Pacific Islanders 12%. But at the 50% threshold, Maori children make up 40% of poor children, indicating a far greater severity of poverty for Maori families with dependent children.

Table 7

The Incidence of Poverty: Ethnic Status Age and Poverty Threshold, 1998

Ethnic Group	50% Threshold		60% Threshold		66% Threshold	
	Adults	Children	Adults	Children	Adults	Children
European	2.4	3.8	11.0	15.5	17.9	24.7
Maori	7.3	13.9	17.9	26.3	26.3	38.4
Pacific Island	9.0	14.2	18.3	35.1	32.7	49.2
Other	14.2	17.1	27.1	40.6	31.1	50.5
Total	3.6	7.4	12.6	20.2	19.8	31.0

Source: Derived from the Poverty Measurement project data base.

Earlier work (Stephens *et al* 1995) had shown that the poverty reduction effectiveness was far greater for Europeans than Maori and Pacific Islanders. This was attributed in part to demographics, as most of the Pakeha poor, on the basis of market income, were elderly where, in 1993, the poverty

reduction effectiveness was greatest. Maori and Pacific Island poor are mainly of work force age and also have large families – two groups with low poverty reduction effectiveness. However, the differential unemployment rates, compounded by earnings levels differentials, between these groups was also significant, with Pakeha having a low poverty rate based on market income compared to other ethnic groups. In 1998, although not directly calculated, poverty rates based on market income by ethnic group have remained almost constant, but there has been a fall in the effectiveness of the pension in reducing poverty, giving more Pakeha poor in 1998. There has been a slight fall in the incidence for Maori and Pacific islanders, perhaps a result of the small increase in assistance to families with dependent children as well as a lower unemployment rate for those in the work force.

THE INFLUENCE OF HOUSING COSTS ON POVERTY

Housing expenditures are a large component of most household's spending, but housing costs vary significantly by tenure of dwelling, age of householder and family size as well as income level. For many households, in the short-term at least, housing costs are a fixed cost, especially for beneficiaries who have their rent taken out at source[17]. Households with the same income level and dwelling quality but with different housing costs will not be able to achieve the same final standard of living. Low-income households, for instance pensioners, who have low housing costs through owning their home outright, are more likely to escape poverty on an after-housing cost basis. Other modest income households, but with high housing expenditures, are less likely to have sufficient income left over, after paying for their housing, to avoid poverty. Thus poverty after housing costs is a separate and equally important measure of standards of living.

Housing Tenure

Table 8 shows that there is a significant difference in the incidence of poverty (using 60% of median equivalent household disposable income) by form of housing tenure. Before adjusting for housing costs, those owning their home generally had a lower incidence of poverty than renters, as home ownership is a function of income as well as age. The higher incidence for those owning without a mortgage, who are mainly elderly, is a result of the pension being slightly below the poverty level. Because home ownership is the dominant tenure type, with 38.1% of households

owned with a mortgage and 33.4% owned without a mortgage in 1996, owners constitute the majority of the poor as well as the poverty gap.

There are significant differences in the effectiveness of net transfers to reduce the incidence of poverty. Home owners, with a mortgage, had a very low 23% reduction: but this group is likely to be in full-time employment and thus started with a low market income poverty rate of 10.9%. All the same, while the social security system reduced the incidence by 73%, due primarily to in-work family assistance, the tax on earnings had an almost equal offsetting effect. On the other hand, owners without a mortgage are more likely to be elderly, and although the effectiveness of the net social security system is relatively high, because they started off with a poverty rate based on market income of 37%, they still finish up with a final poverty rate of 15%. On the basis of market income, 73% of state tenants were poor, but only 27% of private renters. While net transfers (including the accommodation supplement) are more effective for state tenants, their final poverty incidence is still double that of private renters.

After adjusting for housing costs, those who own outright had a substantial reduction in their poverty incidence and poverty gap, while those owning with a mortgage had an increase. Some of this increase represents a deliberate choice decision in terms of an investment in housing through purchase by mortgage, especially by those in the 25-34 age group buying their first home on the basis of lifecycle rather than current income. All the same, this home purchase may have adverse consequences in terms of adequacy of income for other expenditures.

Except for those few renting from employers, renters had a high incidence of poverty before housing costs. State housing, run by Housing New Zealand, only operates 6% of the housing stock, and traditionally had been allocated on the grounds of affordability and accessibility. When Housing New Zealand was given commercial objectives and charged market rentals, the criteria for allocating state housing were relaxed. However, by 1998 still over a third of state tenants were poor prior to adjusting for housing, showing a substantial degree of targeting of the state's housing stock. Maori and Pacific Islanders are far more likely to live in rental accommodation, with Maori especially likely to be in state housing as a result of urban migration in the post-war period.

Table 8

Incidence and Severity of Poverty, 1998, by Housing Tenure, 60% Threshold

Before Adjusting for Housing Costs

Tenure Type	Incidence (%)	Structure (%)	Poverty Gap ($m)	Effectiveness (Incidence) %%
Owned				
With Mortgage	8.4	17.2	69.0	22.9
Without Mortgage	15.0	38.9	139.7	63.1
Rented				
Housing New Zealand	36.9	13.4	66.5	51.3
Employer	14.9	2.2	3.5	30.9
Private	18.1	17.9	81.2	42.9
Other	28.5	10.4	40.8	48.4
TOTAL	15.4	100.0	400.6	52.3

After Adjusting for Housing Costs

Tenure Type	Incidence (%)	Structure (%)	Poverty Gap ($m)	Effectiveness (Incidence) %%
Owned				
With Mortgage	17.2	28.0	245.0	n.a.
Without Mortgage	4.7	9.8	83.2	n.a.
Rented				
Housing New Zealand	71.9	20.7	254.9	n.a.
Employer	17.3	2.1	18.7	n.a.
Private	32.2	25.4	280.3	n.a.
Other	48.2	14.0	128.0	n.a.
TOTAL	19.3	100.0	1010.1	42.9

Source: Derived from the data base of the Poverty Measurement project.

After housing costs, most of the increase in poverty is due to public and private renters paying open-market rents. In general, these rents are in excess of average household housing costs. Despite the operation of the targeted Accommodation Supplement, over 70% of state tenants and a third of private renters were poor after adjusting for housing costs. Some 80% of sole parents receive the housing subsidy and 60% of the unemployed, but very few pensioners and low-income workers. While the housing subsidy has reduced the housing outgoings to income ratio substantially, only 28% of recipients have a ratio of less than 30%, most being 30-39% and 4% above 60%.

Policy making to alleviate poverty should not be solely based on the incidence of poverty. Attention must also be given to the absolute numbers, or proportion of the total population, who are poor. Whilst the incidence figures indicated that state housing was well targeted, thus giving little credence to the policy of moving to general assistance for all forms of tenure status, the structure of poverty figures tell a different story. Column 2 of Table 8 shows the structure of poverty. Only

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13% of the poor were actually in state housing, and another 18% rented privately. When attention is placed on poverty after housing costs, Table 6 shows that under a third of all poor are home owners with a mortgage, but only 10% of the poor are owners without a mortgage. Only one-fifth of the poor rent from the state, and a quarter rent from private landlords.

After adjusting for housing costs, the total poverty gap is $1010 million, or 7.8% of social security expenditure and 1.03% of GDP. The level of the poverty gap also varies by housing tenure. There is a significant increase in the size of the poverty gap after-housing costs for those renting from both the public and private sector, and those owning with a mortgage, and a fall for those owning outright.

Age of Householder

This section considers, just for the 60% focus group-determined poverty threshold, the effect of housing expenditures on the incidence, severity and effectiveness of transfers, using age of head of householder as the identifier. Table 9 shows that, before making adjustments for housing costs, the incidence of poverty was reasonably even across all age-groups, although the elderly had the highest incidence at 22.8%, more than double that of the 25-29 and 40-49 age groups.

TABLE 9

Impact of Housing Costs on the Incidence and Severity of Poverty, by Age of Householder: 60% median equivalent household disposable income.

	Before Housing Costs					After Housing Costs		
Household Age	Incidence (%)	Structure (%)	Poverty Gap ($m)	Effectiveness Incidence	Effectiveness Poverty gap	Incidence (%)	Structure (%)	Poverty gap ($m)
15-24	17.1	5.7	37.0	33.7	61.6	29.5	7.9	89.4
25-29	10.6	5.4	22.6	48.3	88.9	25.9	10.6	108.1
30-39	14.9	23.6	116.7	30.4	72.5	26.4	33.2	340.2
40-49	10.5	14.2	68.7	34.3	62.8	16.1	17.3	173.1
50-59	13.2	13.5	91.6	13.2	53.1	13.6	11.1	132.1
60-64	19.5	8.3	30.5	52.9	93.6	18.0	6.0	61.1
65+	22.8	29.3	33.5	71.4	98.8	13.5	13.9	106.1
TOTAL	15.4	100.0	400.6	52.3	91.6	19.3	100.0	1010.0

Source: Derived from Poverty Measurement Project data base.

The raw data indicates that many of those in the youngest age group are single adults, where the incidence of unemployment is high, average earnings are low and tertiary education study common. Those families with children have a high risk of poverty - 28% of children with a young

head of household are poor before adjusting for housing costs and 43% after making the housing cost adjustment. It is this group, perhaps many of them young sole parents, who determine the almost 30% after-housing cost poverty rate. They account for less than 8% of the total poor population and slightly more of the poverty gap. The net transfer system is not effective at reducing either the poverty incidence or poverty gap, indicating low benefit levels relative to needs.

The next few age groups demonstrate the importance of considering poverty on both before- and after-housing cost bases. On the basis of disposable income, the 25-29 age group have a relatively low incidence, implying reasonable employment rates and comparatively few children. However, there is a large jump to the after-housing cost poverty rate indicating high housing costs, probably associated with the high initial costs of home ownership. This age group accounts for double the proportion of the poor on a post-housing basis as pre-housing, with a far larger poverty gap. The 30-39 age group has a larger before-housing poverty incidence, primarily a result of a significant increase in the number of poor children in these households, possibly linked to lower (full-time) labour force participation rates by one spouse in a couple relationship. This also explains the low effectiveness in reducing pre-housing poverty. Home ownership is the probable explanation of the significant jump in after-housing costs poverty rates.

The poverty rates for the next two age groups are relatively low, and their high labour force participation rates explains the low degree of effectiveness of net transfer payments. There is a very small increase in after-housing costs poverty incidence as the relative size of mortgage repayments falls. The 60+ age groups have a high incidence of poverty before housing costs, and account for 37% of the total number poor, but only 16% of the total poverty gap. The net transfer system is very effective for these two age groups, especially using poverty gaps - on the basis of market income some 80% of the elderly were poor. This group has relatively low housing costs, largely because of home ownership without a mortgage, reducing the incidence of poverty after housing costs. Home ownership is one of the most important ways of alleviating poverty in old age. In the absence of policies which encourage or enable home ownership, pension levels may have to be increased significantly if the objective of minimising poverty in old age is to be maintained.

TRENDS IN POVERTY THROUGH TIME

An objective of the project was to analyse the impact on the incidence and severity of poverty. This meant considering the combined impact of the 1991 benefit cuts; the significant increase in unemployment, especially during the late 1980s; the low (and negative) economic growth during the 1980s and early 1990s and the subsequent recovery during the mid 1990s; the introduction of the Employment Contracts Act 1991; the move to market rentals for state housing combined with the targeted Accommodation Supplement available to all forms of tenure; and changing demographic patterns, especially the increase in the proportion of sole parent families.

This proved to be too ambitious a task for several reasons. First, the effects of these policies are too inter-related for separate effects to be shown. Second, the data source is not sufficiently statistically robust to separate sampling errors from policy changes. Third, because the focus group methodology used to establish the initial poverty line was expanded to take account of regional variations in costs of living (Waldegrave *et al* forthcoming), the approach was not able to also isolate out the separate impact of changes to policy parameters such as lowering of the middle personal income tax rate, further introduction of user charges or the impact of changes in prices structures for utilities. Thus, rather than using the focus groups to determine how the poverty line should alter through time in relation to changes in average standards of living and price movements, the project has resorted to providing information on trends using both a relative and an absolute poverty adjustment mechanism.

Absolute poverty standards are invariant to changes in average living standards, being adjusted by movements in consumer price levels. Economic growth which is evenly distributed across all household types and income levels should reduce the incidence of poverty, but differential price movements between income levels will not be incorporated. Relative poverty measures adjust the poverty standard for changes in average standards of living within the community, so changes in income distribution are the major cause of changes in the incidence of poverty. The proxy for changes in average living standards used here is median equivalent household disposable income: alternatives are mean income or per capita GDP[18].

Trends in Disposable Income

Chart 1 shows that there has been a substantial difference in the trends in median (5th decile)

and mean income: over the 14 year period, median income fell by 6.8% whereas mean income rose by 3.6%. All decile groups bar the top (10) had a decline in their real disposable income between 1984 and 1993, with the median failing by 17.3% (similar to the other low income groups) while the mean dropped by only 5.5%, due to the 15.7% increase for the top decile. Since 1993, all income deciles have had a roughly similar improvement in their real standard of living of about 7.5%, but the median rose by 9.0% and the mean by 9.4%.

Chart 1

Trends in Equivalent Household Disposable Income: 1984-1998. March 1996 Prices.
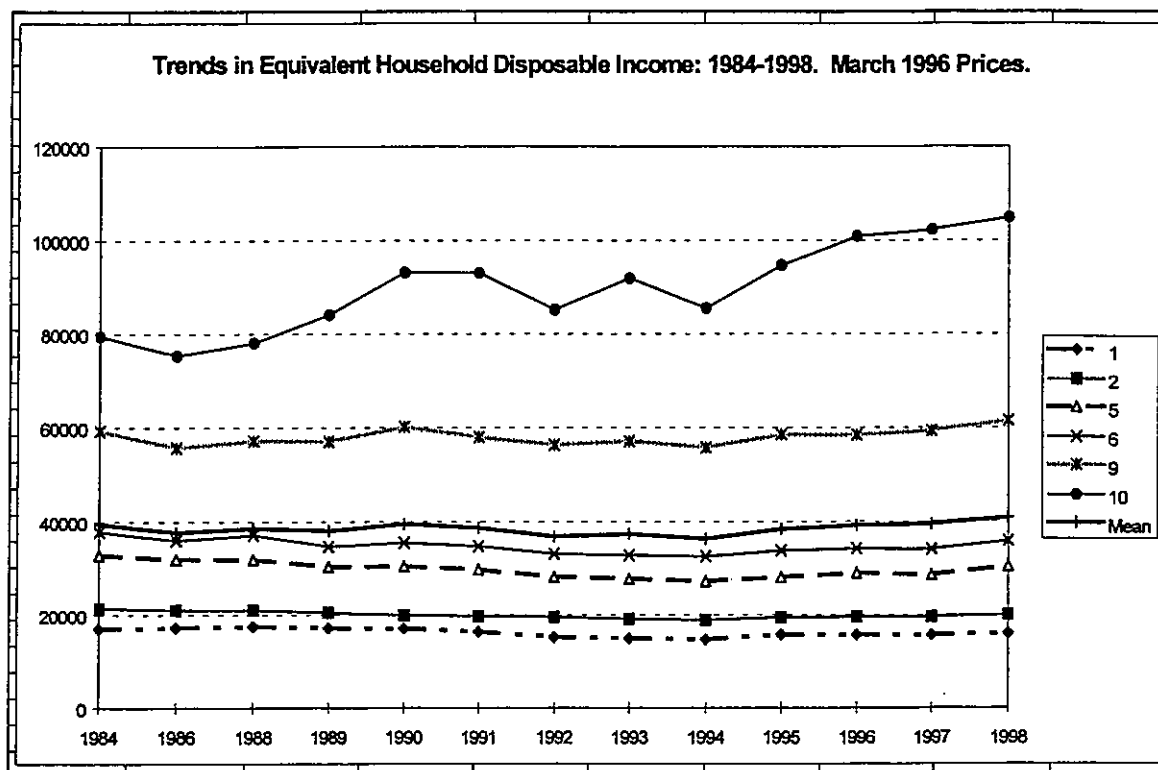
In many liberal democracies, relative poverty lines are used because it is believed that the poor should improve their standards of living along with the rest of the population (Atkinson 1989). In periods of substantial economic decline, while the logic of a relative poverty line implies that the poor should have an equal decline in their living standards, meaning that only income distributional effects influence the incidence of poverty, the public perception seemed to be that the poor should not have a fall in the their living standards - an absolute poverty standard.

Complicating the poverty measurement has been that the income distributional effects have not been felt just on the basis of disposable income, but also by household type, tenure, ethnicity,

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stage of lifecycle, gender and age of householder. For example, New Zealand Superannuation is almost at the same level as the 60% poverty threshold: the incidence of poverty among the elderly is dominated by the relative movements of the threshold and the pension (Chart 3). The overall trend in the incidence of poverty, using either an absolute or relative standard, is dominated by these distributional effects for different categories of household.

Trends in Relative and Absolute Poverty

Chart 2 looks at trends in the incidence of poverty over the 14 year period, using two different relative poverty thresholds (50% and 60%) and one absolute threshold, based on the 1993 60% threshold. Each threshold is shown on a before- and after-housing cost basis in order to show the additional impact of housing costs on the incidence of poverty. Over the 1984-93 period of low and negative economic growth, especially on a per capita basis, rising unemployment and widened income distribution, the 60% absolute poverty measure captures the appropriate public impression of increasing hardship. The poverty rate rises from 4.8% of the population in 1984 to 10.8% in 1993. From 1994 onwards, with economic growth and declining unemployment the poverty rate falls again, to 8.4% in 1997 and 6.7% in 1998. However, as shown later in Chart 4b, the movements are not uniform by household type.

In 1984, on this absolute scale, the after-housing cost poverty rate was only marginally above the before-housing cost rate, but the difference grew substantially between the two measures even before the move to market rentals for state housing. Some of this difference can be attributed to the high nominal and real interest rates being paid by home purchasers, where the after-housing cost poverty rate went up from 4.4% in 1984 to 16.4% in 1991. But those renting from Housing Corporation had an after-housing poverty rate go up from 17.8% to 52.4% over the same period, and this increase can only be partially explained by the movement in the pre-housing poverty rate from 16.2% to 28.6%. Since then the differential between the two measures has continued to widen as the after-housing cost measure continued to increase, largely due to those renting from both the public and private sectors, whereas owners with mortgages had declines in their incidence.

Trends in relative poverty tell a different story. Before housing costs, the overall poverty rate actually declined during the period of low economic growth and increasing

unemployment until 1993, although the rate of decline was not consistent. The decline in median income over this period was greater than the decline in disposable income of the bottom quintile, especially for the elderly (see Chart 4a). The relative measure shows a substantial jump in poverty in 1998 far greater than expected based on the slow-down in economic growth and rising unemployment levels. The 50% poverty threshold shows a fairly consistent poverty level, irrespective of economic circumstances. The increase in the after-housing cost differential is not as marked using the relative poverty measure as the absolute during the 1980s, but the post 1991 trends and the differential between the before and after-housing costs measures are similar.

Chart 2

Incidence of Poverty, Before and After Housing Costs, by Absolute and Relative Poverty Thresholds, 1984-1998
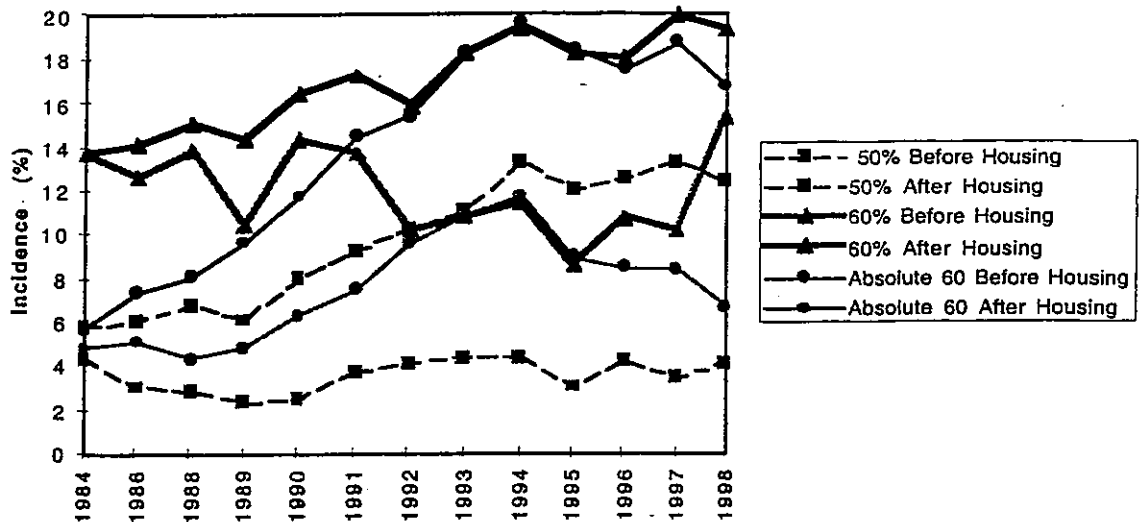
Trends in the Incidence of Poverty, by Household Type

Charts 3a and 3b indicate the different trends in the incidence of poverty for the various household types, using both the 60% relative and the related absolute poverty standard. There are significant similarities: both show that sole parents have by far the greatest incidence of poverty, and that that incidence rose at least until 1992, and since then has fallen[19]. Couples with three or more children have the next highest incidence, but their pattern has varied over the period. Couples without children have a consistently low incidence of poverty, though the rise in 1998 as shown by the relative measure is not supported by the absolute measure.

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Chart 3a

Incidence of Poverty: 1984-1998, by Household Type.
Poverty Measure: 60% median household equivalent
income

One adult
one adult + children
Two adults
Two adults + 1 child
Two adults + 3+ children
TOTAL
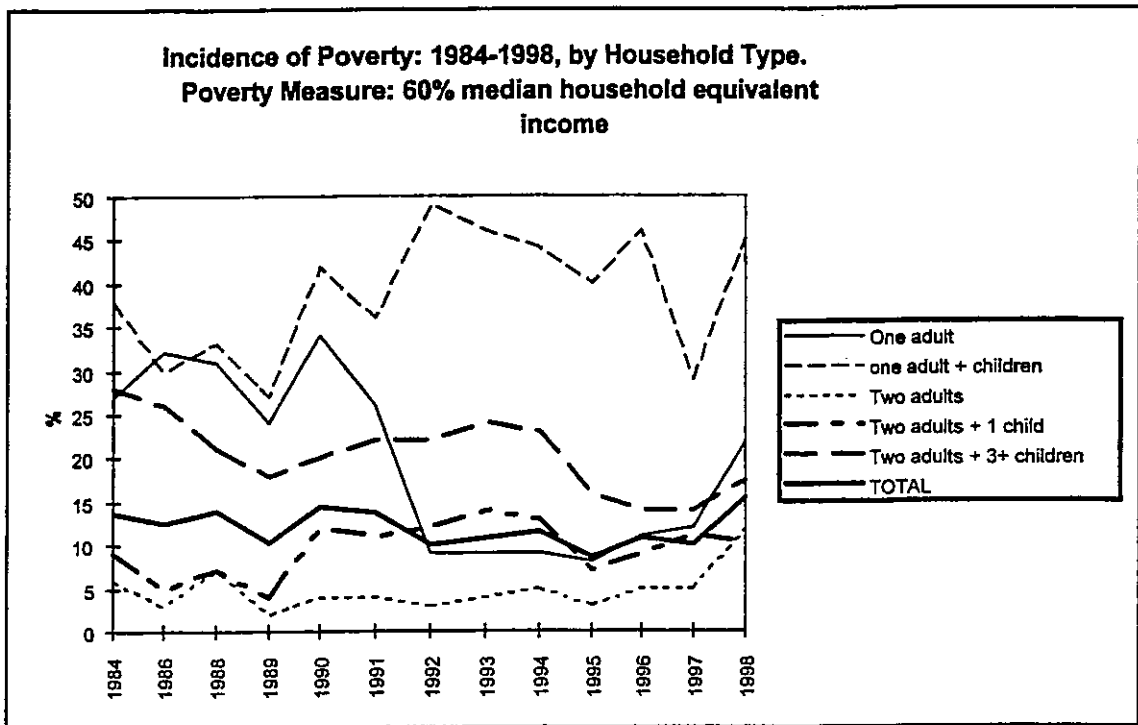
Chart 3b

Trends in the Incidence of Poverty 1984-199{
by Household Type, Absolute Measure

One adult
one adult + children
Two adults
2A+1C
2A+3+C
TOTAL

28
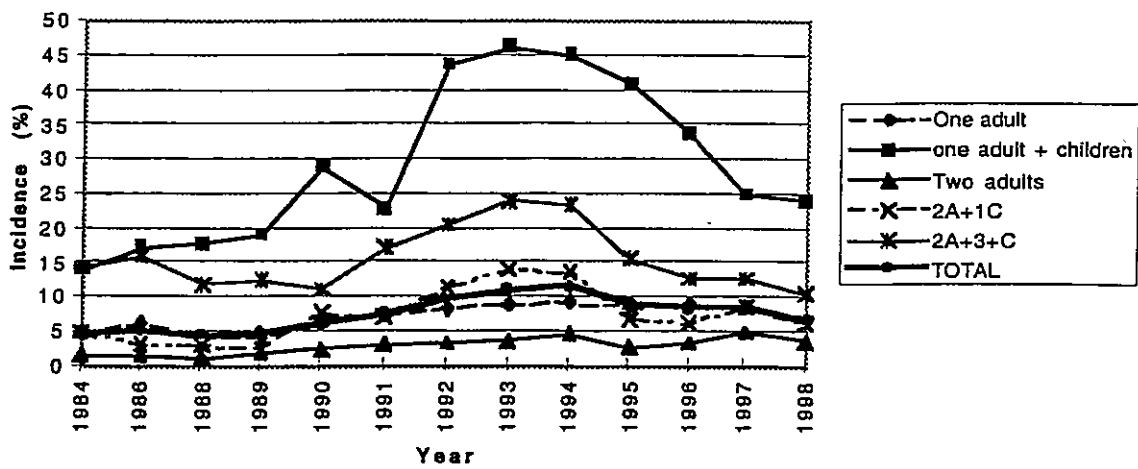
The major difference relates to single adults. Using the absolute standard, the incidence for single adults mirrors that of the total population, rising from 4.6% in 1984 to 9.1% in 1993, and then declining to 6.9% in 1998. On the relative measure, however, 27.5% were poor in 1984 and remaining at roughly that level until 1992 when the incidence fell to 8.6%, remaining at roughly that level until a sudden jump in 1998 to 21.9%. It is this movement in the poverty rate for single adults which drives the overall relative poverty rate. The single adult group is a composite of young (<25) and elderly (65+).

Age and Parental Status

The poverty rate for the elderly depends upon the relationship between 60% of median equivalent household disposable income and the pension. As Chart 4a shows, in the 1980s, the pension rate was just below the 60% threshold, so that elderly with minimal additional income were likely to be poor, and the elderly poverty rate fluctuated between 15% and 24%. After the 1991 benefit cuts, which did not apply in nominal terms to old age pensions, New Zealand Superannuation was just above the poverty line, so that most of the elderly escaped from poverty. But in 1998, the rise in median disposable income with economic growth and the gradual adjustment downwards of the real level of New Zealand Superannuation to a new floor of 60% of average earnings, meant that the elderly with limited additional income were now below the poverty level. The poverty incidence for elderly people went back to 20.2%.

However, Chart 4b demonstrates that with an absolute poverty threshold, the elderly had a very low incidence of poverty over the whole period. The pension adjustment has at least been in line with consumer prices, except for 1991, so that the single and couple pension rate has remained above the absolute poverty threshold.

Both absolute and relative thresholds indicate that children have a high poverty incidence that rises through to 1994, and then declines. The change is more dramatic using the absolute measure rising from 10.8% in 1984 to 24.7% in 1994, whereas the relative measure initially declines (possibly due to the introduction of the family support tax credit), and then rises as first unemployment and then the benefit cuts hit families with dependent children.

The child poverty rate has been broken down into children in sole parent families and those

with two parents. In both measures, children in sole parent families have an extremely high poverty rate. Over 40% of children of sole parents are brought up, for one year at least, in poverty. The 1996 Census showed that only 36% of sole parents were in either full-time or part-time employment, and as the sole parent benefit is below the 60% poverty line, it is interesting to speculate whether the Accommodation Supplement plus part-time earnings are the mechanisms by which some sole parent families escape poverty.

Chart 4a

Incidence of Poverty: 60% Relative Threshold, 1984-1998, by age and parental status
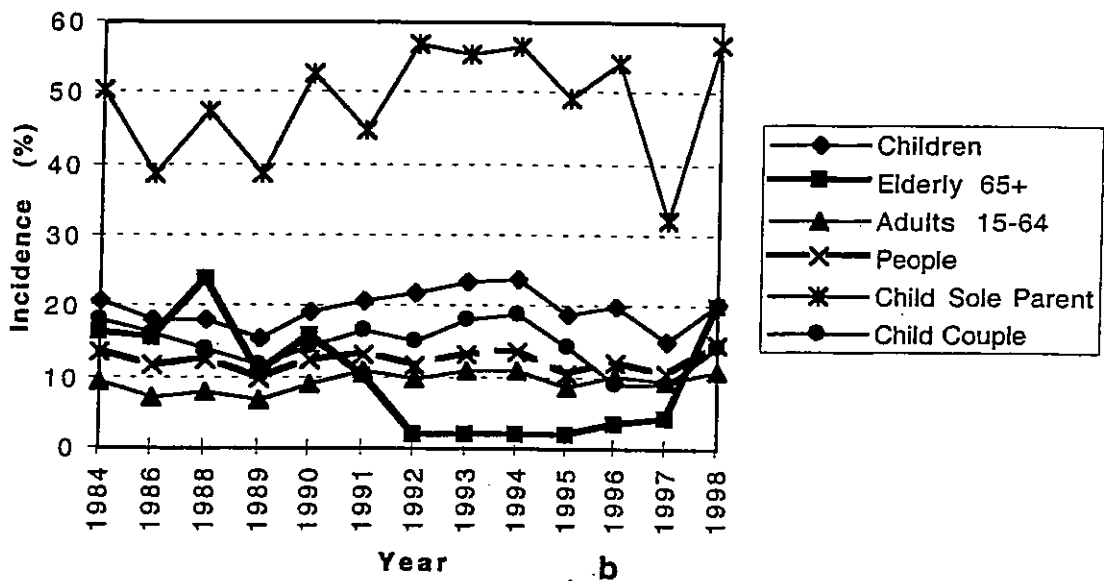
Incidence of Poverty, by age and parental status, 1984-98. Absolute Poverty Threshol
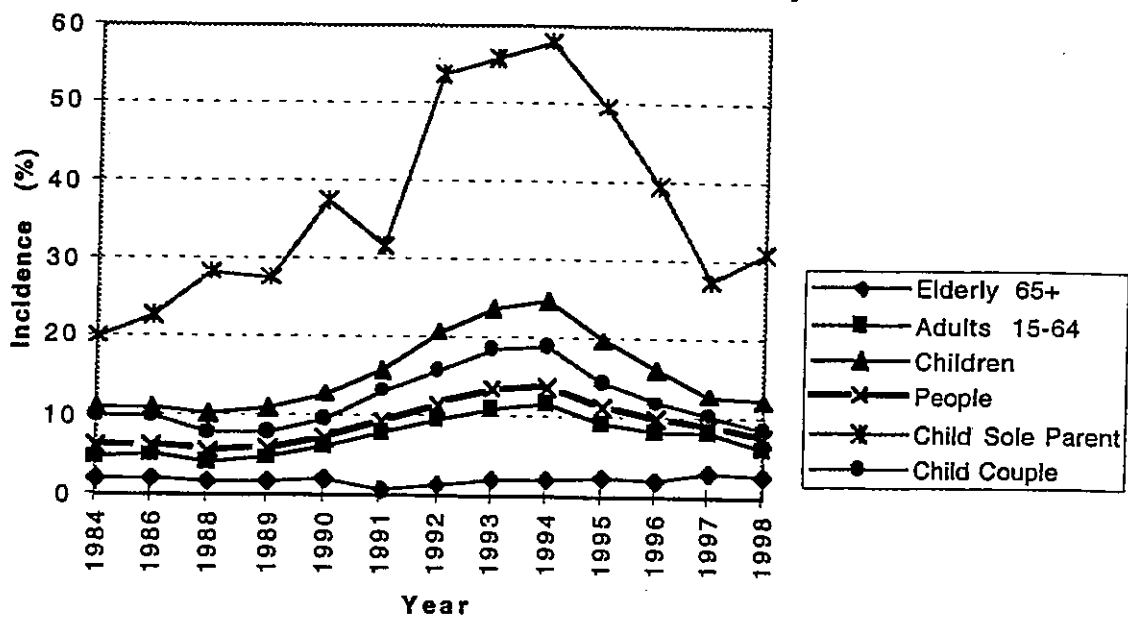
The absolute poverty measure shows an increase in the poverty rate for sole parents from 20% in 1984 to 58% in 1994, and then a decline to 31 % in 1998. The impact of the benefit cuts is the main reason for the large jump in 1992. The improvement in the employment rate for sole parents from 27% in 1991 to 36% in 1996 lies behind the fall in the poverty rate to 1998. Children of sole parents have made up an increasing proportion of children who are poor. On both measures, in 1984 children of sole parents made up just under 20% of poor children, but this proportion rose to about 40% by the end of the period. This increase is a product of both the rising poverty incidence and the increasing proportion of sole parent families in society.

CONCLUSIONS

The article has provided statistical information, using several income-based poverty measures, on who is poor in New Zealand, the extent of their poverty as well as trends in the incidence of that poverty. The initial poverty level was developed using a consensual methodology based on the combined views of focus groups as to what constitutes a minimum adequate expenditure level. The major problem in measuring trends has been the interaction of a substantial widening of the income distribution over the whole period, a fall in average standards of living between 1984 and 1993 when economic growth was stagnant followed by partial recovery with a period of economic growth and changes in benefit levels relative to movements in median household disposable income. The result has been significant changes in the incidence of poverty both in total and for particular household groupings (though not the severity as measured by poverty gaps).

Children, especially children of sole parents, have the greatest risk of being poor, irrespective of how that poverty is measured. This poverty can be attributed to the low employment rates of sole parents as well as the relative lack of assistance given to families with dependent children in New Zealand. Although this cross-sectional data cannot indicate the duration of that poverty for any child, the very high poverty rates for each of the 14 years implies a substantial degree of continuity of poverty for many children. Given the substantial amount of overseas longitudinal data linking childhood poverty with poor adult attainments (Smithies and Stephens 2000, Corcoran and Boggess 2000), and the links between poor health and educational outcomes and income deprivation (Howden-Chapman and Cram 1998), high poverty rates for children should

be a major policy concern both for the future of the children themselves as well as for the economic and social development of New Zealand society.

The elderly, another group with traditionally high levels of poverty, have had mixed fortunes over the period. The pension level has hovered around the focus group determined poverty level, resulting in either very few or about a fifth of pensioners being classified as poor. For those elderly who were poor, earlier tenure choices were vital in determining their after-housing costs standards of living. Home ownership substantially reduced the likelihood of poverty after housing costs, but if the elderly were renting, then poverty rates increased. Future pension levels (if designed to avoid after-housing costs poverty) will not only be influenced by the working/age group ratio but also the level of home ownership and degree of housing assistance.

As anticipated, working-age beneficiaries had a high likelihood of poverty. The social security system was reasonably effective in reducing their poverty, especially when measured by the poverty gap. Employment was not sufficient to escape poverty for many, and the net effect of social security transfer payments and personal income tax imposition had a relatively limited impact in offsetting the effect of low wages (and often large families). Ethnic differences also emerged, with Maori and Pacific Island households having far higher poverty rates than Pakeha – a combination of low employment rates, relative low wages in employment, large family sizes and low poverty reduction effectiveness to offset these adverse results.

Housing costs can make a significant difference to effective standards of living. Housing expenditures differ independently from the standard of accommodation, so that households with moderate income, but high housing costs, may have insufficient income for necessary non-housing expenditures. Housing mortgages may be an investment and reduce future poverty rates, but this may be of little advantage to children who suffer from the decline in standard of living in the meantime. Renters, on average, have higher housing costs than owners - and they have on average lower incomes. Thus the high poverty rates and poverty gap for renters, both before- and after-housing costs, is an indication that both income-supplementation and direct housing assistance are required. Income-related rent for state housing tenants is only a partial solution. The accommodation supplement is both too tightly targeted and not generous enough to give adequate assistance to many low-income families.

The analysis indicates the need for continual social monitoring of the impact of policies and economic events on the lower income groups in society. The data presented here can form the basis of policy development - which groups need assistance, and the forms of that assistance. However, the data source, the Household Economic Survey, will now be undertaken every three years, thereby reducing the ability to monitor social trends. The replacement, the Income Survey, does not contain information on non-wage earnings: income from assets and pensions are a major mechanism for many elderly to escape poverty and this information will not be available.

REFERENCES

Atkinson, A. (1989) *Poverty and Social Security,* London, Harvester Wheatsheaf.

Bradshaw, J. (1983) "In Search of a Representative Measure of Poverty", Paper delivered to the Social Policy Agency, Department of Social Welfare.

Corcoran, M. and Boggess, S. (forthcoming) *The Intergenerational Transmission of Poverty and Inequality: A Review of the Literature,* Wellington, Institute of Policy Studies.

Davey, J. (1998) *Tracking Social Change in New Zealand: From Birth to Death iv,* Wellington, Institute of Policy Studies.

Department of Social Security (1992) "Households Below Average Income", London, Department of Social Security.

Department of Social Welfare (1975) *Survey of the Aged,* Wellington, Department of Social Welfare.

Department of Social Welfare (1999) *Statistics Report,* Wellington, DSW.

Dixon, S. (1998) "Growth in the Dispersion of Earnings: 1984-97" *Labour Market Bulletin,* 1&2: 71-107.

Elliott, M., Peace, R. and Barnes, J. (1999) *Hard Times: an annotated bibliography of poverty research in Aotearoa / New Zealand, 1990-1999,* Hamilton, University of Waikato.

Hagenaars, A. (1986) *The Perception of Poverty,* Amsterdam, North-Holland.

Howden-Chapman, P. and Cram, F. (1998) *Social, Economic and Cultural Determinants of Health,* Wellington, National Health and Disability Services Committee (Background Paper 1).

Jensen, J. (1988) "Income Equivalences and the Estimation of Family Expenditures on Children" *mimeo,* Wellington, Department of Social Welfare.

Kilpatrick, R. (1973) "The Income-Elasticity of the Poverty Line", *Review of Economics and Statistics,* 55 (1).

Mayer, S. (1999) "Why Welfare Caseloads Fluctuate: A Review of Research on AFDC, SSI and the Food Stamps Program". Paper delivered to Treasury, Wellington.

McClements, L. (1978) *The Economics of Social Security,* London, Heinemann.

Citro, C. and Michael, R. (1995) *Measuring Poverty: A New Approach,* Washington, DC, National Academy Press.

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Orshansky, M. (1969) "How Poverty is Measured" *Monthly Labor Review*, 92: 37-4 1.

Smithies, R. and Stephens, R. (2000), Parental Welfare use and Children's Outcomes: is there Evidence for a Welfare Culture Model? Wellington, Ministry of Social Policy.

Stephens, R. (1992) "Budgeting with the Benefit Cuts". In Boston, J. and Dalziel, P. (ed.) *The Decent Society: Essays in Response to National's Economic and Social Policies,* Wellington, Oxford University Press.

Stephens, R. (1993) "Radical Tax Reform in New Zealand", *Fiscal Studies,* 14(3): 45 -63.

Stephens, R. (1994) "The Impact of Housing Expenditure on the Incidence and Severity of Poverty in New Zealand", in *Housing Research Conference* Proceedings, Wellington, Ministry of Housing.

Stephens, R. (1996) "Economic Inequality, Poverty and Social Outcomes". In Griffen, G (ed.) *Industrial Relations in New Zealand: Five Years of Deregulation, Melbourne,* Monash University Press.

Stephens, R. and Bradshaw, J. (1995) "The Generosity of New Zealand's Assistance to Families with Dependent Children", *Social Policy Journal of New Zealand,* 4 (July): 53-75.

Stephens, R., Waldegrave, C. and Frater, P. (1995) "Measuring Poverty in New Zealand", *Social Policy Journal of New Zealand,* 5 (December): 88-112.

Veit-Wilson, J. (1987) "Consensual Approaches to Poverty Lines and Social Security", *Journal of Social Policy,* 16(2).

Waldegrave, C. and Coventry, R. (1988) *Poor New Zealand,* Wellington, Platform Publishers.

Waldegrave, C., Frater, P. and Stephens, R. (1997) "An Overview of Research on Poverty in New Zealand', *New Zealand Journal of Sociology,* 12: 213 -259.

Waldegrave, C., King, P. and Stuart, S. (1999) *The Monetary Constraints and Consumer Behaviour in New Zealand Low Income Households,* Lower Hutt, The Family Centre Social Policy Research Unit.

Waldegrave, C., Stuart, S. and Stephens, R. (1996) "Participation in Poverty Research: drawing on the knowledge of low-income householders to establish an appropriate measure for monitoring social policy impacts", *Social Policy Journal of New Zealand,* 7: 191-205.

Waldegrave, C. and Stephens, R. (forthcoming), "The Regional Impacts of Poverty: Auckland and

the rest of New Zealand".

Waldegrave, C. and Stuart, S. (1997) "The Accommodation Supplement and Internal Migration", Lower Hutt, The Family Centre Social Policy Research Unit.

Walsh, P. and Brosnan, P. (1998) "Redesigning Industrial Relations: The Employment Contracts Act and its Consequences". In Boston, J., Dalziel, P. and St John, S. *(eds.) Redesigning the Welfare State in New Zealand: Problems, Policies, Prospects,* Auckland, Oxford University Press.

Endnotes:

[1] The Auckland focus groups showed a minimum adequate level of expenditure approximately $100 greater than the rest of New Zealand, solely due to higher housing costs in that region. A further analysis is being undertaken to provide a regional poverty breakdown, taking account of the higher Auckland housing costs (Waldegrave and Stephens, forthcoming).

[2] The equivalence scale has not been adjusted as McClements' (1978) commodity-specific scales in the UK showed that the exclusion of housing only had a significant impact on the equivalence scale for a single person, lowering it from 0.65 to 0.59. If this result held in New Zealand, there would be a slight over-estimation of poverty after housing costs for single people.

[3] Housing costs, obtained from the HES data-base, are rent, mortgage payments, payments to local authorities, property and water rates, mortgage repayment insurance and insurance on buildings.

[4] HES includes as market income all wages and salaries, self-employment earnings, interest, dividend and rental income. Disposable income is calculated by adding to market income the receipt of all cash social security welfare payments, including the Accommodation Supplement, Family Support and the Independent Family Tax Credit. Personal income tax is subtracted at the statutory tax rate.

[5] Even the regimen in the Consumer Price Index is continuously adjusted. The official USA poverty line is adjusted by the CPI. However, there are significant debates over what constitutes a CPI movement (Mayer 1999). Moreover, adjusting by the CPI has broken the original conception of the poverty line as developed by Orshansky (1969). It was developed on the basis of the share of food in an average budget (one-third), and a low-cost food budget was multiplied by 3 to give the poverty threshold. However, on average, food now only takes one-fifth of expenditure, giving a multiplier of 5 and thus a relative poverty threshold.

[6] Rural North Island focus groups provided estimates less than 60% of median equivalent household disposable income. The issue for policy is whether poverty thresholds and benefit levels should be regionally based.

[7] The formula for the incidence net poverty reduction effectiveness is [Incidence based on gross Market Income - Incidence based on Disposable Income] / Incidence based on gross market income. This formula comprises two parts: a) [Incidence based on gross market income - incidence based on total (market + gross social security benefits) income] / Incidence based on gross market income, Less b) [Incidence based on total income - incidence based on disposable income] / Incidence based on gross market income. The formula for poverty gaps uses the absolute size of the poverty gap rather than the poverty incidence.

[8] The methodology of adjusting the poverty line for housing costs is similar to that undertaken in the UK (DSS 1995), and is explained in Stephens (1994). An alternative specification of adjusting for housing costs, using the focus group income adequacy estimate less average focus group housing costs, has been undertaken at the 66% poverty threshold. This indicates a reduction in after-housing cost poverty - the average focus group housing estimate is greater than average housing costs for the HES sample. It is not possible to calculate the separate effect of the Accommodation Supplement. HES records the Accommodation Supplement as income, which can not be disentangled from benefit payments. Thus both the incidence of poverty and poverty reduction effectiveness before adjusting for housing costs are slightly overstated, and the additional impact of housing costs on poverty underestimated. No comparable estimate on the incidence and severity of poverty has been made at the 66% poverty level.

[9] It is recognised that in times of rising incomes that adjusting benefits by the CPI rather than some measure of average

earnings is likely to result in a decline in the relative standard of living of beneficiaries. However, real median disposable income only rose by 2.2% over the period between 1991 and 1998, and real mean disposable income rose by 5.7%.

[10] From 1 April 2000, the minimum wage has been raised to $7.55 per hour, giving a disposable income for a single person of $250 per week. If that person had a dependent child, family assistance would lead to take-home pay of $313 per week, mid-way between the 60% and 66% thresholds.

[11] The elderly poverty rate at the 50% level is just over 1%, which indicates either non-eligibility for the pension, possibly due to residency requirements, or an under-reporting of income.

[12] The structure estimates for the 66% poverty threshold are almost identical to the 60% threshold. At the 50% level, more of the really poor are families with dependent children - single adults only make up 20% of the total poor, and families with dependent children just over half of the total poor.

[13] This poverty gap per person is larger than the difference between the poverty threshold and the pension level largely because some pensioner households have dependent children. Table 2 shows that the pension plus family support is less than the poverty level, especially for single pensioners.

[14] Davey (1998), using largely Census data, provides a far more detailed breakdown of lifecycle stages, subdividing childhood into pre-school and compulsory school stages, adulthood by 10 year categories and the elderly into young- and old-old. The HES data-base cannot provide this degree of breakdown, and at the 50% poverty threshold, for some years the elderly estimates are under the level of statistical variation.

[15] It should be noted that the employment status is taken at time of the two-week interview, whereas the household income is based on the year, which may be a combination of employment earnings and benefit receipt.

[16] A couple of households with three employees were recorded in the HES data base as having low incomes, but as the statistical error on these must be very high, they have been ignored in the analysis.

[17] Waldegrave and Stuart (1997) showed that many beneficiaries moved out of high rental cost areas after the combined impact of the benefit cuts and the move to market rentals for state housing. This often gave them sufficient income to survive adequately, but low rental areas are also high unemployment areas. Many of these beneficiaries and their children are now trapped in long-term benefit dependency

[18] None of these measures are perfect. Per capita GDP figures are subject to revision and may move independently (exports, investment) of current living standards. In small samples, mean income is subject to variations from extreme values while median income does not necessarily show changes affecting the wider income distribution.

[19] The substantial fall in the incidence of poverty in 1997 is probably a statistical aberration.

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