

# INCOME INEQUALITY

## Introduction

There has been much debate in recent years regarding the influence of income inequalities on population health. While it is widely acknowledged that poverty plays a crucial role in shaping health disparities, authors such as Wilkinson and Marmot [1] argue that income inequality itself also plays a role, via its links to psychosocial pathways associated with relative disadvantage. They cite the Whitehall studies of British civil servants, which found that mortality increased in a stepwise manner as relative socioeconomic status decreased, with social gradients being evident even amongst those who were not poor. In addition, they note that while health inequalities exist within societies, there is little association between average income (GDP per capita) and life expectancy across rich countries. Rather, there appears to be a strong correlation between income inequality and mortality. In Wilkinson and Marmot's view, such associations suggest that it is not absolute material deprivation which shapes health at the population level, but rather the effects such inequalities have on psychosocial outcomes such as the degree of control over work, anxiety, depression and social affiliations. In support of this argument, they cite a number of studies which demonstrate social gradients in the lack of control over work, low variety at work and a severe lack of social support, with animal experiments also suggesting that low social status, via its effects on neuroendocrine pathways, leads to atherosclerosis, unfavourable lipid profiles, central obesity, insulin resistance and raised basal cortisol [1].

Others such as Lynch [2] however, would argue that it is not the psychological effects of income inequality which play the greatest role, but rather the lack of material resources (e.g. differentials in access to adequate nutrition, housing and healthcare), coupled with a systematic underinvestment in human, physical, health and social infrastructure (e.g. the types and quality of education, health services, transportation, recreational facilities and public housing available). In Lynch's view, the combination of these negative exposures is particularly important for the health of the most disadvantaged (who have the fewest individual resources), and that in this context, the associations between income inequality and health are not inevitable, but rather are contingent on the level of public infrastructure and resources available. While debate on the precise pathways continues, both sides of the income inequality argument agree, that reducing income inequality by raising incomes for the most disadvantaged, will reduce inequalities and improve population health [3].

The following section explores income inequalities in New Zealand since 1984 using two different measures, the P80/P20 Ratio and the Gini Coefficient.

### Definition

1. *Income Inequality as Measured by the P80/P20 Ratio*
2. *Income Inequality as Measured by the Gini Coefficient*

### Data Source

Statistics New Zealand Household Economic Surveys (NZHES n=2,800–3,500 households per survey) via Perry 2011 [4].

Note: The P80/P20 Ratio and Gini coefficient are monitored by the Ministry of Social Development using NZHES data [5], which was available 2-yearly from 1982–1998, and 3-yearly thereafter. Since 2007, income data has become available annually through the new NZHES Incomes Survey. The full NZHES (including expenditure data) however remains 3-yearly. For more detail on methodology used see Perry 2011 [4].

### Indicator Category Proxy B

### Notes on Interpretation

*P80/P20 Ratio:* When individuals are ranked by equivalised household income and then divided into 100 equal groups, each group is called a percentile. If the ranking starts with the lowest income, then the income at the top of the 20<sup>th</sup> percentile is denoted P20 and the income at the top of the 80<sup>th</sup> percentile is called P80. The ratio of the value at the top of the 80<sup>th</sup> percentile to the value at the top of the 20<sup>th</sup> percentile is called the P80/20 ratio and is often used as a measure of income inequality (e.g. a P80/20 ratio of 3.0 indicates that those at the top of the 80<sup>th</sup> percentile have incomes 3.0x higher than those at the top of the 20<sup>th</sup> percentile). In general, the higher the ratio, the greater is the level of inequality [5].



**Gini Coefficient:** The Lorenz curve is a graph with the horizontal axis showing the cumulative % of people in a population ranked by their income. The vertical axis shows the corresponding cumulative % of equalised disposable household income (i.e. the graph shows the income share of any selected cumulative proportion of the population). The diagonal line represents a situation of perfect equality (i.e. all people having the same income). The Gini coefficient is derived from the Lorenz curve and is the ratio of the area between the actual Lorenz curve and the diagonal (or line of equality), compared to the total area under the diagonal. When the Gini coefficient = 0 all people have the same level of income. When it approaches 1, one person receives all the income (i.e. it is an overall measure of income inequality: the higher the number, the greater the level of inequality) [6]. When comparing changes in income distributions over time, the Gini coefficient is more sensitive to changes in the more dense low-to-middle parts of the distribution, than it is to changes towards the ends of the distribution [5].

## New Zealand Trends

### Income Inequality: P80/P20 Ratio

In New Zealand during 1984–2010, income inequality as measured by the P80/P20 ratio, was higher after adjusting for housing costs than prior to this adjustment. The most rapid rises in income inequality occurred during 1988–1992. While income inequality also rose during 1994–2004, the rate of increase was slower. During 2004–2010, the P80/P20 ratio fell, a decline in income inequality which Perry attributes firstly to the Working for Families package (2004–2007), and secondly to a fall in higher incomes and a small rise in lower incomes (2007 to 2010) [4] (**Figure 1**).

### Income Inequality: Gini Coefficient

In New Zealand during 1984–2010, income inequality as measured by the Gini Coefficient, was also higher after adjusting for housing costs than prior to this adjustment. The most rapid rises in income inequality also occurred between the late 1980s and early 1990s. Using both the before and after housing cost measures, the Gini Coefficient declined between 2001 and 2007, a decline which Perry again attributes to the impact of the Working for Families package. There was a further decline in 2010, which Perry attributes to a fall in higher incomes, coupled with small gains for lower income households [4] (**Figure 2**).

## Summary

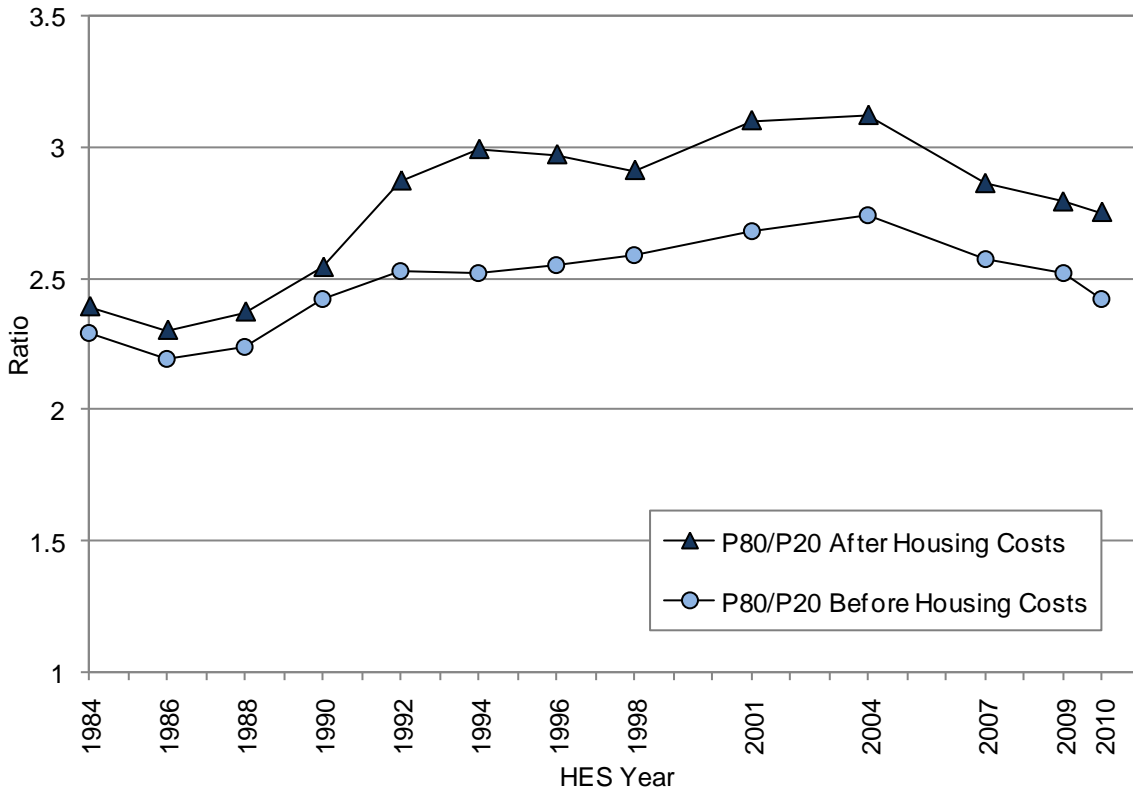
In New Zealand during 1984–2010 income inequality, as measured by the P80/P20 ratio and Gini coefficient, was higher after adjusting for housing costs than prior to this adjustment. The most rapid rises in income inequality occurred between the late 1980s and early 1990s. During the early–mid 2000s however, income inequality declined, a change Perry attributes largely to the Working for Families package. Additional falls in income inequality were seen in 2010, with Perry attributing this to a fall in higher incomes, coupled with small gains for lower income households [4].

## References

1. Marmot M, Wilkinson R. 2001. Psychosocial and Material Pathways in the Relation Between Income and Health: A Response to Lynch et al. *British Medical Journal* 322(19 May) 1233-36.
2. Lynch J, Davey Smith G, Kaplan G, et al. 2000. Income inequality and mortality: Importance to health of individual income, psychosocial environment or material conditions. *British Medical Journal* 320(29 April) 1200-04.
3. Lynch J, Davey Smith G, Harper S, et al. 2004. Is Income Inequality a Determinant of Population Health? Part 1. A Systematic Review. *The Millbank Quarterly* 82(1) 5-99.
4. Perry B. 2011. Household incomes in New Zealand: Trends in indicators of inequality and hardship 1982 to 2010. Wellington: Ministry of Social Development.
5. Perry B. 2010. Household incomes in New Zealand: trends in indicators of inequality and hardship 1982 to 2009. Wellington: Ministry of Social Development.
6. Wikipedia. 2009. Gini Coefficient. [http://en.wikipedia.org/wiki/Gini\\_coefficient](http://en.wikipedia.org/wiki/Gini_coefficient) accessed 12/09/2009

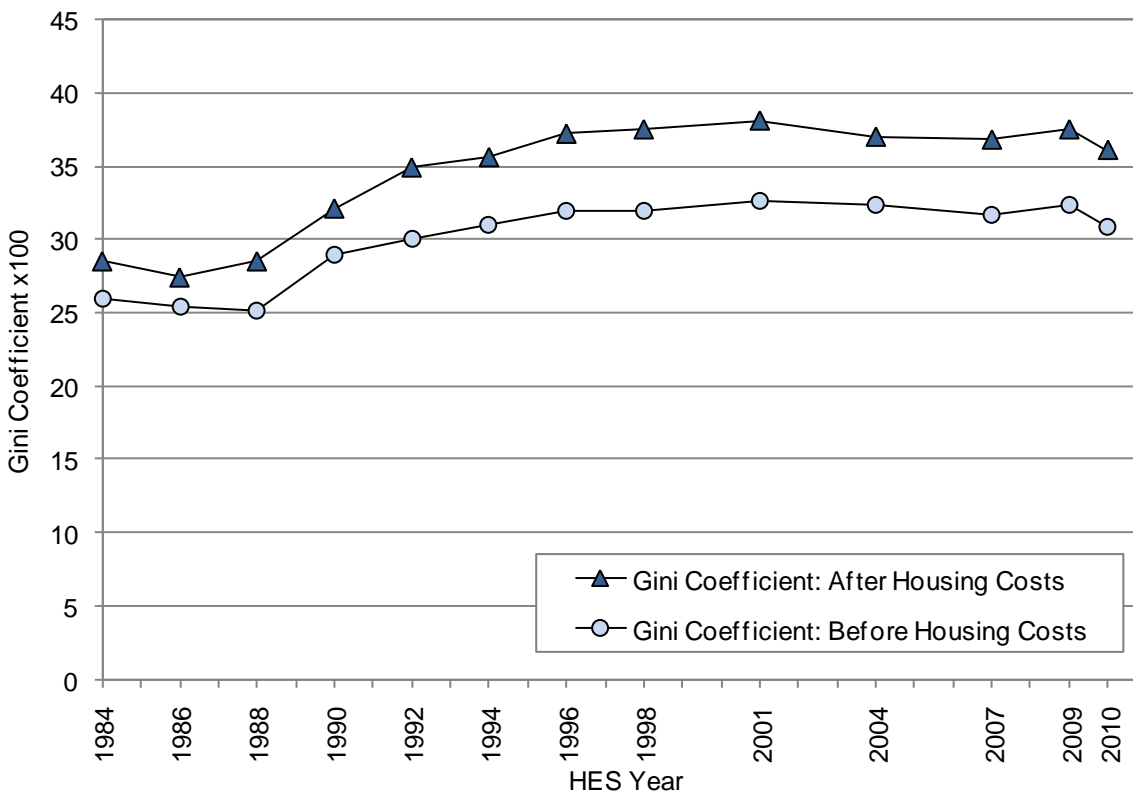


Figure 1. Income Inequality in New Zealand as Assessed by the P80/P20 Ratio for the 1984–2010 HES Years



Source: Perry 2011 [4], derived from Statistics New Zealand, Household Economic Survey (HES) 1984–2010

Figure 2. Income Inequality in New Zealand as Assessed by the Gini Coefficient for the 1984–2010 HES Years



Source: Perry 2011 [4], derived from Statistics New Zealand, Household Economic Survey (HES) 1984–2010

