

# **The Impact of Economic Recession on Youth Suicide:**

A comparison of New Zealand and Finland

Report 4: Social Explanations for Suicide in New Zealand

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## Preface: Suite of Six Reports

### Social explanations for suicide in New Zealand: utilising trend data to 1999

This paper is one of a suite of six reports that the Ministry of Health commissioned from the Wellington School of Medicine and Health Services between 2001 and 2004. The suite of reports explores a range of possible social explanations, analyses and evidence about New Zealand's suicide trends. Due to a three-year time lag in coroner statistics being available, most of the reports address suicide trends up to 1999.

### National suicide prevention strategy

The suite of reports aims to inform discussion on New Zealand's proposed national suicide prevention strategy: *A Life Worth Living: New Zealand Suicide Prevention Strategy*.

Report no.	Topic	Author/s	Title
1	Literature review (2002)	Caroline Maskill Ian Hodges Velma McLellan Dr Sunny Collings	<i>Explaining Patterns of Suicide: A selective review of studies examining social, economic, cultural and other population-level influences</i>
2	Review of routine data (2002)	Stuart Ferguson Assoc Prof Tony Blakely Bridget Allan Dr Sunny Collings	<i>Suicide Rates in New Zealand: exploring associations with social and economic factors</i>
3	Māori (2004)	Paul Hirini Dr Sunny Collings	<i>Whakamomori: He whakaaro, he korero noa. A collection of contemporary views on Māori and suicide</i>
4	New Zealand–Finland comparison (2003)	Assoc Prof Philippa Howden-Chapman Dr Simon Hales Dr Ralph Chapman Dr Ilmo Keskimäki	<i>The Impact of Economic Recession on Youth Suicide: a comparison of New Zealand and Finland</i>
5	Data analysis from the New Zealand Census–Mortality Study (2004)	Dr Sunny Collings Assoc Prof Blakely June Atkinson Jackie Fawcett	<i>Suicide Trends and Social Factors in New Zealand 1981–1999: Analyses from the New Zealand Census–Mortality Study</i>
6	Context and summary of reports 1–5 (2004)	Dr Sunny Collings Assoc Prof Annette Beautrais	<i>Suicide Prevention in New Zealand: a contemporary perspective</i>

## **Copies of reports and suicide publications**

The Ministry of Health website, at [www.moh.govt.nz/](http://www.moh.govt.nz/), contains pdf copies of the following suicide related documents:

- the suite of six reports (2001–04)
- *A Life Worth Living: All Ages Suicide Prevention Strategy* (2005)
- Comprehensive review of the suicide prevention literature (Beautrais et al 2005)
- the latest annual statistics, published as *Suicide Facts*.

Copies of suite of reports and other suicide or injury prevention-related information is available at: New Zealand Injury Prevention Strategy [www.nzips.govt.nz](http://www.nzips.govt.nz), and Suicide Prevention Information New Zealand [www.spinz.org.nz](http://www.spinz.org.nz).

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## Executive Summary

New Zealand and Finland are both small, developed countries with governments that support redistributive welfare policies. A severe economic recession hit both countries in the late 1980s and early 1990s, but the New Zealand and Finnish governments reacted very differently: New Zealand reduced the scope of its welfare state and increased income inequalities, while in Finland income inequality did not increase, partly because Finland increased its social spending.

In this document we examine institutional arrangements and the policy conditions that may have contributed to the differences in suicide rates, particularly those of young men (aged 15 to 24). In New Zealand the economic recession and rising income inequality was associated with increasing rates of suicide in young men, but the economic recession did not have the same effect in Finland. The more comprehensive welfare state in Finland appeared to buffer vulnerable young men more than in New Zealand.

Implications of the findings are discussed in terms of effective policy interventions to minimise excess mortality of vulnerable populations during economic recessions. The strengths and weaknesses of learning from cross-country comparisons are also considered.



# Introduction

New Zealand and Finland share many common characteristics. In 1996, following the severest economic world-wide recession since the 1930s, suicide in males aged 15–24 was the second most common and most common cause of death, respectively.<sup>1</sup> Experiments relating to disease and death are usually not possible in health research. Within one country it is difficult to disentangle the effect of government policy from ongoing social change. Comparisons between two countries that have both experienced a recession at about the same time provide a second dimension, which enables us to see patterns more clearly. Indeed, Durkheim first utilised a similar approach to illuminate the different cultural patterns that lay behind suicide (Durkheim 1951).

Where two countries start from relatively similar positions, but inequalities in health or avoidable mortality in one country become larger than in the other, it suggests the difference may be to at least some extent avoidable and remediable (Kunst et al 1995). By the late 1980s both New Zealand and Finland had become highly urbanised and their production diversified from an agricultural base. In both countries, tax-supported welfare states had been developed but had come under fiscal strain. By the mid-1970s both countries had comprehensive welfare states and shared many of the features of comprehensive welfare regimes (Esping-Andersen 1999), in terms of the relations existing between welfare states, labour markets and families, as classified by Titmus (1958, 1974) and Esping-Andersen (1990). The New Zealand welfare state included fewer universal benefits than Finland and relied on what were still very high levels of employment. In the mid-1970s the summary measure of benefit entitlement (benefit in relation to the average production worker's salary) in New Zealand was 0.26, whereas that for Finland was almost double at 0.46 (OECD data, Brenner 1979).<sup>2</sup> However, both were above the OECD average of 0.21. (A more detailed comparison of New Zealand and Finland is provided in the Appendix.)

In the mid-70s, in line with the theory that countries associated with particular welfare regimes tend to follow similar development paths, there was considerable similarity in policy directions in the two countries, and by the late 1980s both had largely deregulated their economies. However, in the early 1990s their responses to the largely common, external stimulus of a major economic recession diverged considerably. New Zealand's welfare state became even less comprehensive, and more of a liberal 'safety net' model, while Finland, following the Nordic social democratic model, reacted less harshly to economic difficulties and largely maintained the comprehensive nature of the Finnish welfare state. In this document we explore the possible impact of these divergent policies on suicide, and in particular, youth suicide.

<sup>1</sup> WHO Statistics. Table 1: Numbers of deaths and death rates, 2002.

<sup>2</sup> The OECD summary measure of benefit entitlement is defined as the average of the gross unemployment benefit replacement rate for two earnings levels (66% and 100% of average production worker), three family situations (single, with dependent children, with spouse in work) and three durations of unemployment (after one year, between two and three years, between four and five years).

# 1 Previous Work Relating Economic Factors to Mortality

Brenner (1979: 568) restated old observations about economic cycles having an impact on health:

Economic instability and insecurity increase the likelihood of immoderate and unstable life habits, disruption of basic social networks, and major life stresses – in other words, the relative lack of financial and employment security of lower socioeconomic groups is a major source of their higher mortality rates.

Noting the consistent inverse relation between socioeconomic status and mortality, he predicted that in times of high unemployment and unusually low rates of economic growth the less skilled would be laid off, leading to an increase in mortality, which would be evident two to three years after the recession. Suicide and homicide would have shorter time lags and show increases within a year of unemployment increasing. He postulated that when unemployment *or* rapid economic growth acts to ‘increase’ mortality, it is by inhibiting the long-term decline in mortality rates. By the same logic, ‘smooth’ economic growth should be inversely correlated with mortality-rate trends. He tested his hypothesis on data from the US, England and Wales using time-series analysis and found statistically significant associations in the predicted directions.

The question of causation is, however, problematic. While Brenner’s empirical work supported his hypothesis, it has been subject to methodological criticism (Gravelle et al 1981; Bartley et al 1996). Recent work suggests that the relationship between economic recession and mortality is complex. Ruhm (2000), using US panel data, found mixed effects, but enough perverse impacts to raise the question: ‘Are recessions good for your health?’ He also found that, unlike other causes of mortality, suicide behaves counter-cyclically (rising as economic growth falls), consistent with Brenner. Neumayer (2004), however, using ‘fixed-effects’ estimation on German data, recently found that suicide was in general one of the causes of mortality that was pro-cyclical; in other words, lower in recessions. However, he did not disaggregate suicide by age group, or include mortality data on those under 20, which may be a group particularly vulnerable to external economic shocks. Also, for males (rather than females or both sexes combined) he found that suicide did *not* behave pro-cyclically, and when he measured recession by using changes in gross domestic product (GDP) rather than unemployment, there was no pro-cyclical effect on suicide.

There is thus continuing debate about the meaning of the association between mortality and economic factors and the possible causal pathways. For example, unemployment could be a direct result of ill health among the unemployed. It may be the result of the higher levels of disease in those who lose their jobs and, once having been made unemployed, find it difficult to regain secure employment. Or it could be an indicator of an indirect selection effect, whereby a single spell of unemployment signals an insecure work history. This, in turn, is more likely to be associated with lower levels of educational attainment and perhaps relatively poor working conditions and low pay. These conditions are independently associated with health risks or lifestyle risks, such as heavy alcohol consumption and smoking, and are likely to be cumulative over a lifetime.

Nonetheless, all studies show higher rates of ill health, both psychological (Warr 1984) and physical, in women and men who are in insecure work (Bartley et al 1996) or are unemployed (Bartley 1988). Several studies in Finland and New Zealand have shown that the mortality of the unemployed is higher than that of employed persons (Isaksson 1989; Lahelma 1992; Valkonen and Martikainen 1995; et al 2002; Blakely et al 2003), even if they are later re-employed (Martikainen and Valkonen 1996). During economic recessions, when more people are unemployed, the health effects are less marked (the unemployed stand out less) than in more prosperous times, when unemployment levels are low (Martikainen and Valkonen 1996). A protracted period of unemployment at a young age seems to have a particularly deleterious effect on the mental health of young men, regardless of their social background (Bartley et al 1996).

The literature on the impact of income inequality on mortality is equivocal; ie, the evidence that greater inequality contributes to worse health outcomes is mixed (Mackenbach 2002; Gravelle et al 2002). Neumayer's recent German study (2004) is consistent with this: while he found that income inequality was positively associated with mortality, the relationship was not statistically significant.

In this study we develop and use a socioeconomic model of suicide, detailed below, to examine how national social and political policies can mitigate the effects of economic cycles on suicide. By comparing two countries, which are similar in many respects but differ in the way their welfare systems responded to a common recession, we have the opportunity to explore policy-specific effects.

## **2 Social, Economic and Health Trends in Finland and New Zealand**

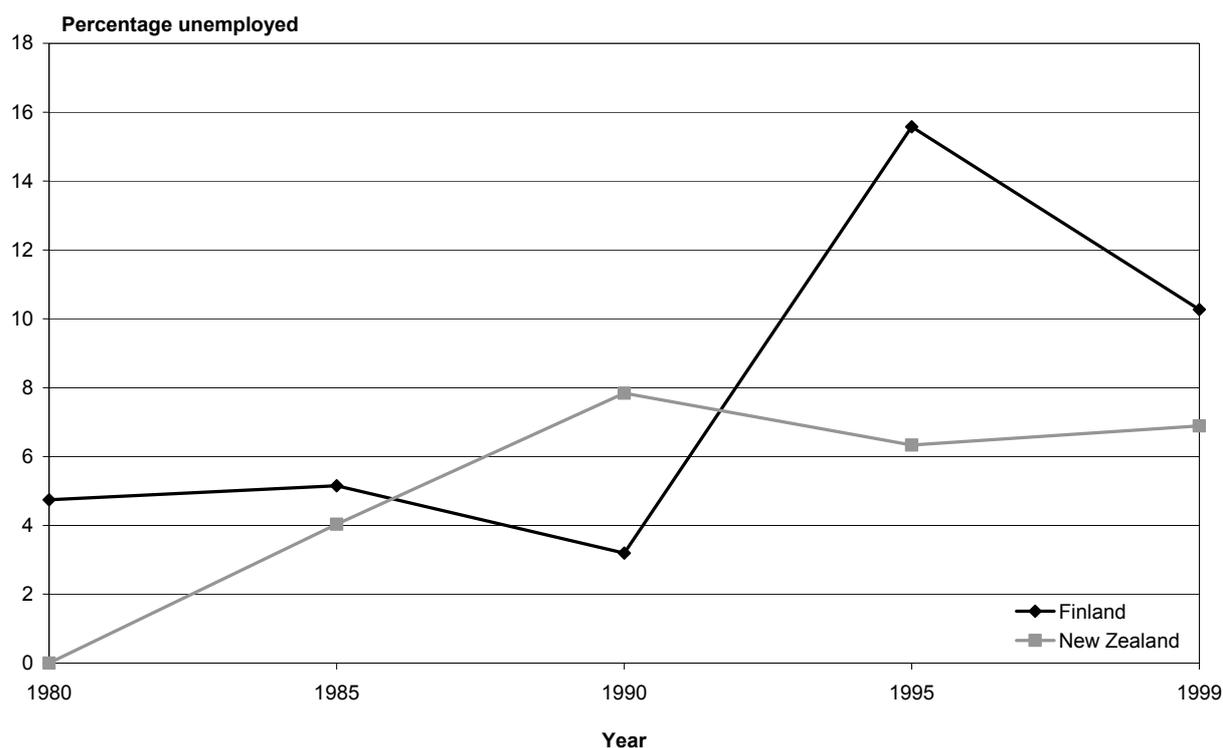
### **Macroeconomic trends**

In the late 1980s and early 1990s the severe world economic recession hit New Zealand and Finland at approximately the same time, reducing demand for exports in both countries and leading to significant declines in GDP. In New Zealand, after a turbulent decade, the economic recession began in 1989 and continued until 1991. Unemployment reached 10 percent in New Zealand at the peak of the recession. New Zealand has a Closer Economic Relationship agreement with its large neighbour Australia, but is not part of any general economic union, and with a high level of public external debt had a smaller fiscal buffer than Finland with which to weather the recession.

In Finland the 1980s had been a time of economic boom, with unemployment rates remaining low (about 5 percent). The boom ended suddenly in 1991 with a 7 percent decline in GDP. Economic output continued to decline for two more years and reached its low point in early 1993 at less than 90 percent of the 1990 level (Valkonen and Martikainen 1995). The recession continued until 1995, but average household income and household spending were still lower in 1996 than in 1990 (Statistics Finland 1999). Unemployment rose to levels comparable with the 1930s' Great Depression and reached a peak in 1994 of about 19 percent (Statistics Finland 1994) (see Figure 1 which is calculated on OECD data that reports a peak of 16 percent for Finland).

Before the recession, Finland had one of the lowest public debt rates in the OECD and was thus able partially to cushion the recession by borrowing internationally. Finland became a member of the European Union in 1995 and after the first year became a net payer.

**Figure 1:** Unemployment in Finland and New Zealand, 1980–99



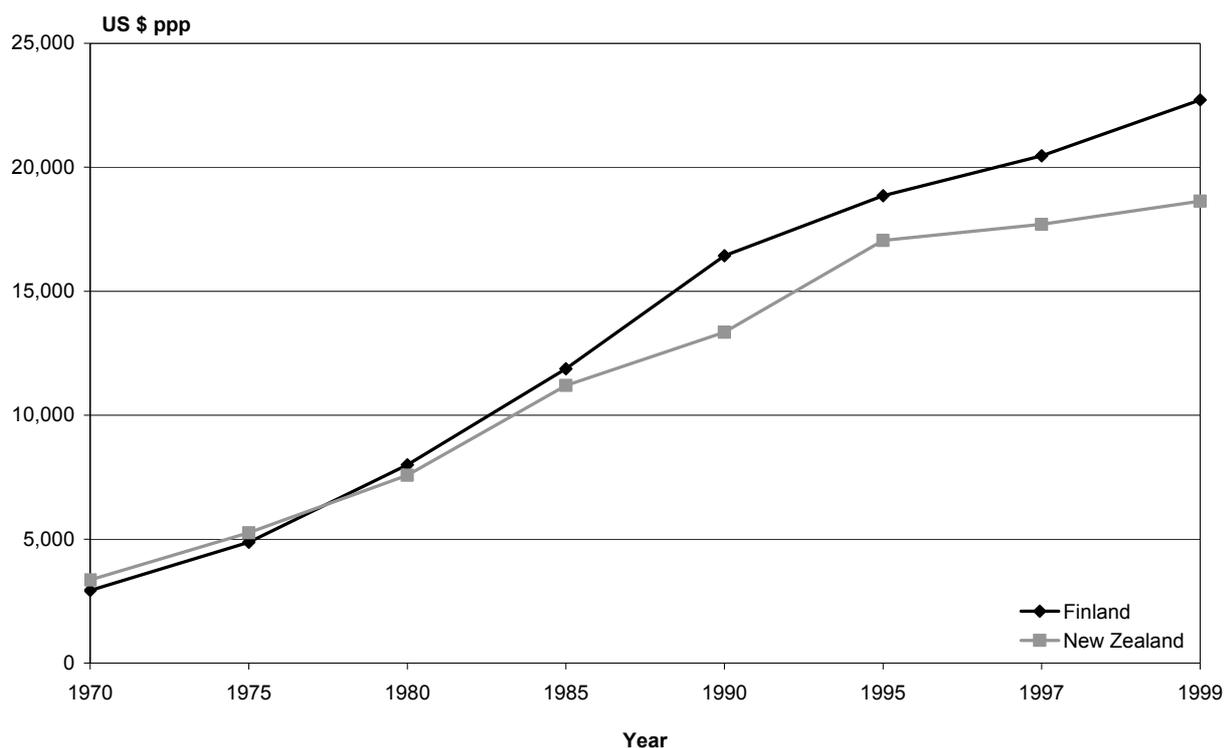
Source: OECD data, 2002

In the decade preceding the recession, both the Finnish and New Zealand economies had been deregulated and had adopted similar policy settings such as trade liberalisation and deregulation. However, the responses of the two governments to the recession differed and appear to have had different impacts on their countries' income distributions.

In New Zealand the government responded to the recession by targeting and cutting government benefits and by making taxation less progressive.<sup>3</sup> In Finland, although cuts were made in the social security system in response to the recession, government benefits remained universalistic and the coalition government avoided rapid changes to these welfare arrangements. Despite the introduction of policies favouring large companies, the Finnish economic recession was so deep that both middle-income and low-income households were affected. However, the subsequent upward trend in Finnish GDP per capita was less affected by the recession than New Zealand's GDP trend, which continued to grow but at a slower rate (Figure 2).

<sup>3</sup> In the 1990s New Zealand's total tax revenues as a percentage of GDP were about average for OECD countries. Taxation levels were (and remain) lower than in Finland. In New Zealand, taxpayers at the income level of an average production worker were already exposed to the then top marginal tax rate of 33% (now 39%), whereas in Finland the top marginal tax rate was 61%, taking into account municipal taxes, social security taxes and church, but the marginal tax rate of the average worker was 50% (Kam 1999; Statistics Finland 2000; Laakkonen 1998).

**Figure 2:** GDP per capita in Finland and New Zealand, in \$US



Source: OECD data, 2002.

Note: Exchange rates at purchasing power parity (PPP).

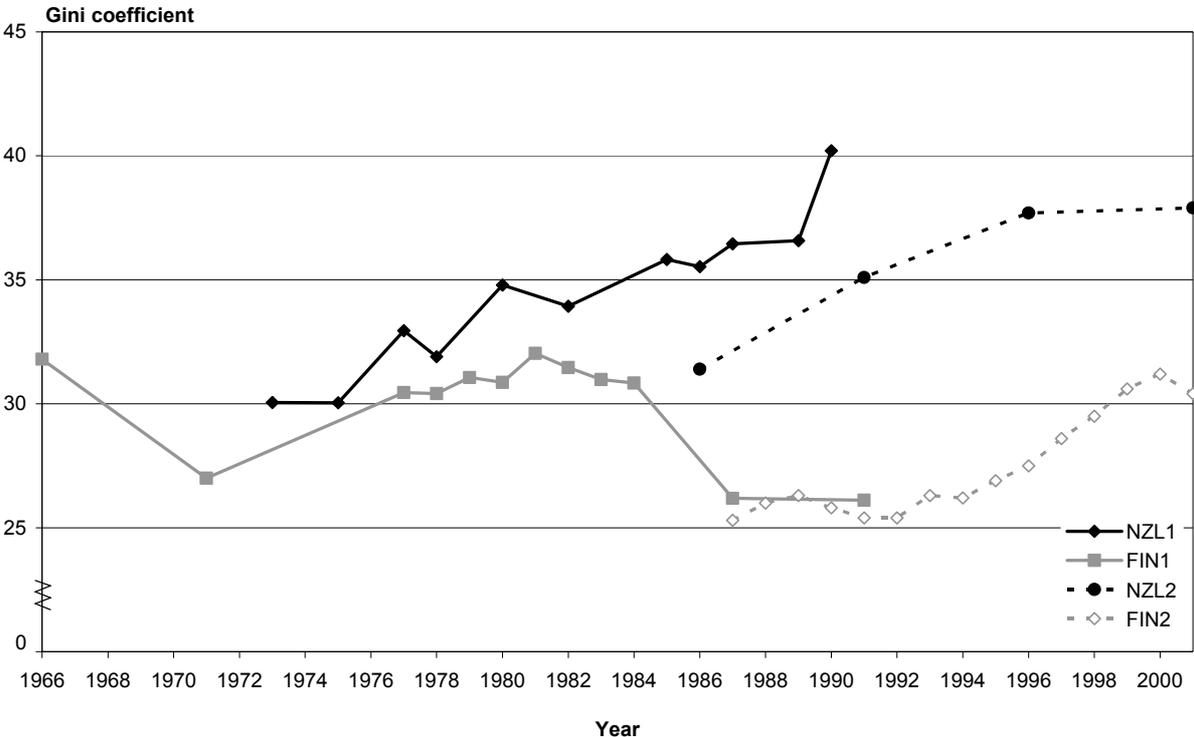
## Income inequality

From the Second World War until the mid-1970s there had been an ongoing slight reduction in income inequality in New Zealand and real incomes had increased steadily (Martin 1977a, 1977b). There was a dramatic change during the late 1980s, when income inequality rose, regardless of how it is measured: before or after tax, from different sources and after adjusting for changes in household size and composition.<sup>4</sup> Having risen most substantially in the late 1980s, income inequality continued to increase, albeit more slowly, during the 1990s. This continued increase during the recession and the subsequent economic expansion in the 1990s suggests that it was driven by structural changes to the fabric of New Zealand's economy and society, not just by business cycles (Bakker and Creedy 1999).

<sup>4</sup> For income after taxes, benefits and government expenditure the household Gini coefficient had been fairly stable: 0.263 in 1981/82 and 0.235 in 1987/88.

By contrast, in Finland throughout the period of the recession income inequality, as measured by the Gini coefficient of equivalised gross household income, was stable in the early 1980s, fell in the late 1980s, was stable during the recession, and only rose significantly during the latter part of the 1990s (Figure 3). A growing capital income share seems to have made the most significant proportional contribution to growth in overall inequality in the 1990s, although as in New Zealand since 1991 there was a fall in the proportion of households with income from work (Riihelä et al 2003). Also, a comparison of average incomes in the mid-1980s and mid-1990s by different social categories such as age, class and gender showed that the incomes of the younger age groups in Finland, Norway and Sweden had deteriorated relative to those of other social groups (Fritzell 2001). There are no comparable data available for New Zealand.

**Figure 3:** Gini coefficients for New Zealand and Finland: equivalised gross household income



Sources: NZ1, FIN 1: Deininger and Squire 1996; NZ2: Blakely et al 2002; 2001 data O’Dea 2001; FIN2: Statistics Finland 2000; NZL3: O’Dea 2000

There are several known reasons for the increase in income inequality in New Zealand, although about half the increase is unexplained (Bakker and Creedy 1999; O’Dea 2001; Mowbray 1993). Changes to taxation in the 1980s appear to have been regressive, although removing tax loopholes and increasing company tax may have partially offset this effect. The most significant factor appears to be the increase in income inequality among the employed due to widening income differentials by occupation, education and hours of work. At a household level there was also a reduction in the number of households where a bread-winner supports another adult and children, resulting in some polarisation into work-rich households, where both adults work, and work-poor households, where no adults are in paid employment (Callister 1998). There has also been a change in household composition, with the growth of sole-parent households and older

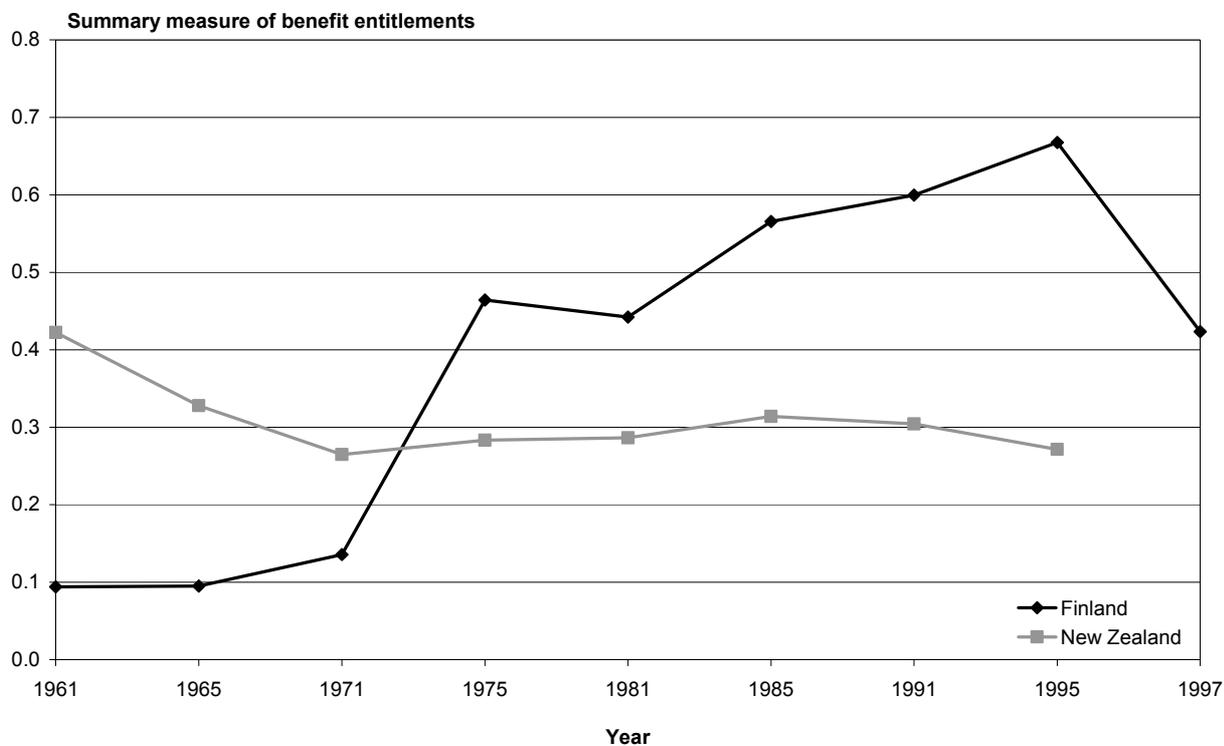
households without children. These two factors are likely to be related to the stresses of economic restructuring prior to and during the economic recession.

In 1991 the New Zealand Government cut welfare benefits, which also had an impact on income inequality, since during the recession more people relied on benefits as a source of income (Stephens et al 1995). The result was that income inequality rose in the period from 1988 to 1994 faster than in any other country in the OECD (Statistics New Zealand 1998). The proportion of income that middle-income families received was squeezed. Low-income earners lost proportionately less of their income, but as they had less to begin with this placed some vulnerable households in situations of extreme hardship.

There is some debate as to what intrinsic significance to give to changes in Gini coefficients. The OECD classifies New Zealand as having had a ‘significant rise’ in income inequality between the mid-1980s and the mid-1990s (more than 15 percentage points’ increase), whereas Finland is classified as having had a ‘modest rise’ in income inequality (between two and seven percentage points increase) (Burniaux et al 1998). Atkinson classifies a significant rise in the Gini as a change of three or more percentage points.

Figure 4 shows that in terms of benefit entitlements during the period from 1961 to 1997, the average entitlements remained fairly flat in New Zealand, reducing slightly from 1985 to 1991, while they increased markedly in Finland, especially during the economic recession (ie, counter-cyclically). As these are average figures it does not allow us to see the differential hardship caused by the fall in benefit entitlements in New Zealand compared to Finland.

**Figure 4:** OECD summary measure of benefit entitlements, 1961–97

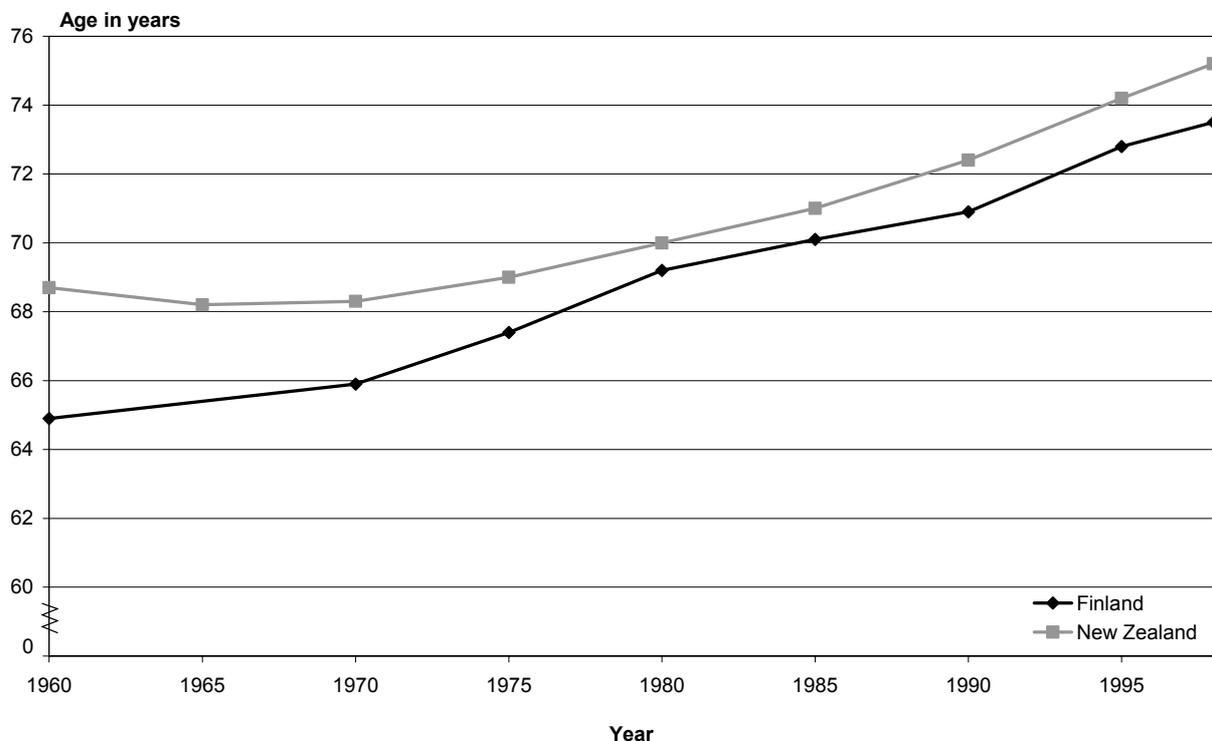


Source: OECD data

## Social trends and health

With the exception of the health of youth, health inequalities in Nordic countries (including Finland) have not increased over time. In fact the economic recession slowed rather than sped up the gradual growth of relative inequalities among middle-aged men and women in Finland (Valkonen et al 2000). But mortality differences in Finland are still the second largest among Western European countries, despite egalitarian social policy efforts and other health policy responses by the government (Sihto and Keskimäki 2000). Although Finland has consistently had small income inequalities, it has higher male mortality than many countries with a less equal income distribution (Lahelma et al 1999). For example, the size of absolute inequalities in mortality for both men and women is greater in Finland than in Norway, although the years of health expectancy are similar (Sihvonen et al 1999). As shown in Figure 5, male life expectancy has been consistently lower in Finland than in New Zealand.

**Figure 5:** Male life expectancy, Finland and New Zealand, 1960–98

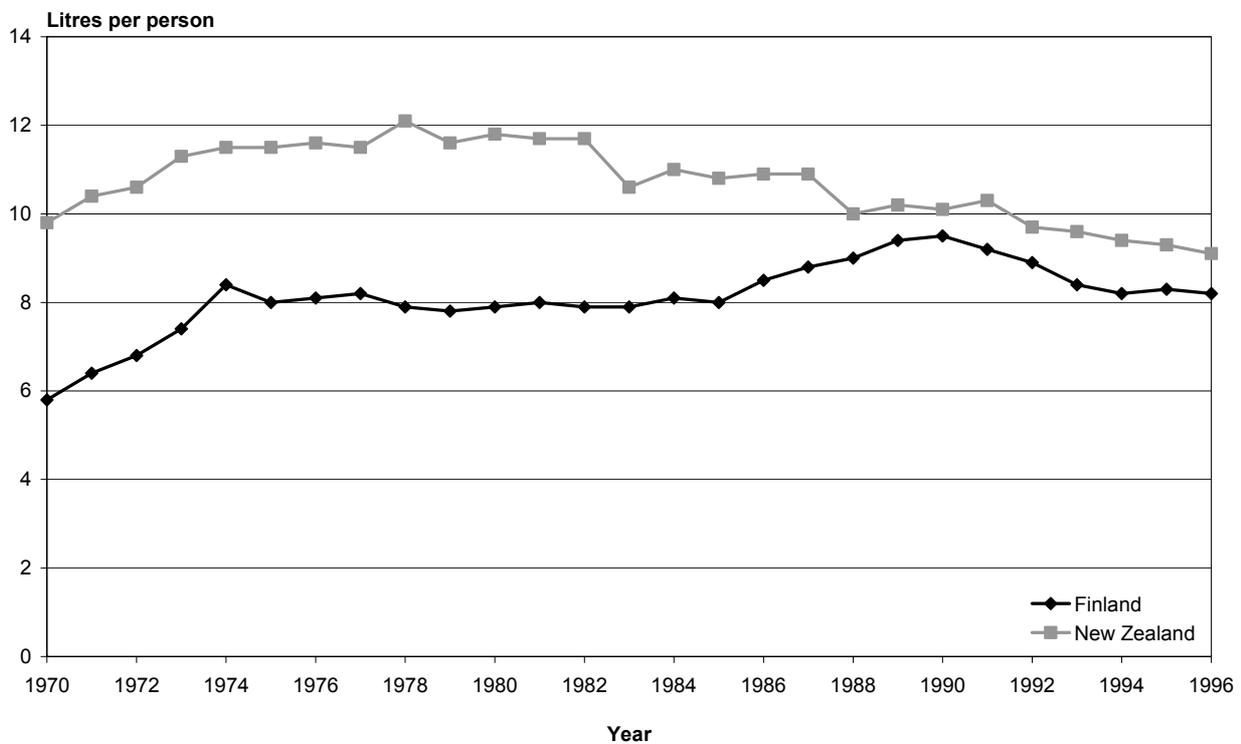


Source: OECD data, 2005

In terms of behavioural health risk factors, New Zealand and Finland have a lot in common. Both are among those countries where large-scale take-up of cigarettes began early (the others being the UK, USA and Australia). In both countries lung cancer death rates have peaked or are predicted to do so soon. In both countries the changing roles of women have led to more women working outside the home, incidentally removing the social taboos against cigarette smoking. There has been an uptake in smoking by women in both New Zealand and Finland.

Alcohol consumption is relatively high in both countries and now remarkably similar, as shown in Figure 6. In Finland in 2000, the total alcohol consumption was 8.6 litres per capita, while in New Zealand it was 8.9 litres per capita.<sup>5</sup> Binge drinking is common in both countries and in Finland leads to particularly high levels of alcohol poisoning and injuries. Finland is able to link its census data with data from the death register and is therefore able to look at the contribution of alcohol use to socioeconomic variation in mortality (Makela et al 1997). Makela and colleagues found that alcohol-related deaths accounted for half of the excess mortality from accidents and violence among manual workers over upper non-manual employees among men, and for 38 percent among women, whereas in disease-based excess mortality the role of alcohol was modest. They concluded that class differentials in alcohol-related mortality are an important factor in the socioeconomic mortality differentials in Finland, especially among men and younger age groups, and in mortality from accidents and violence.

**Figure 6:** Alcohol consumption, Finland and New Zealand, litres per capita, 1970–96



Source: OECD data, 2005

<sup>5</sup> OECD health data, 2002.

## Health status of youth

The welfare state originated in most countries with old-age pensions, as older people were historically the most vulnerable to poverty (Rowntree 1901). Nowadays, with superannuation or pensions being universal in most welfare states, this vulnerability is less evident. In New Zealand, where superannuation is one of the only remaining universal benefits, there is evidence that the health of older people is relatively better than that of younger people (Ministry of Social Policy 2001).

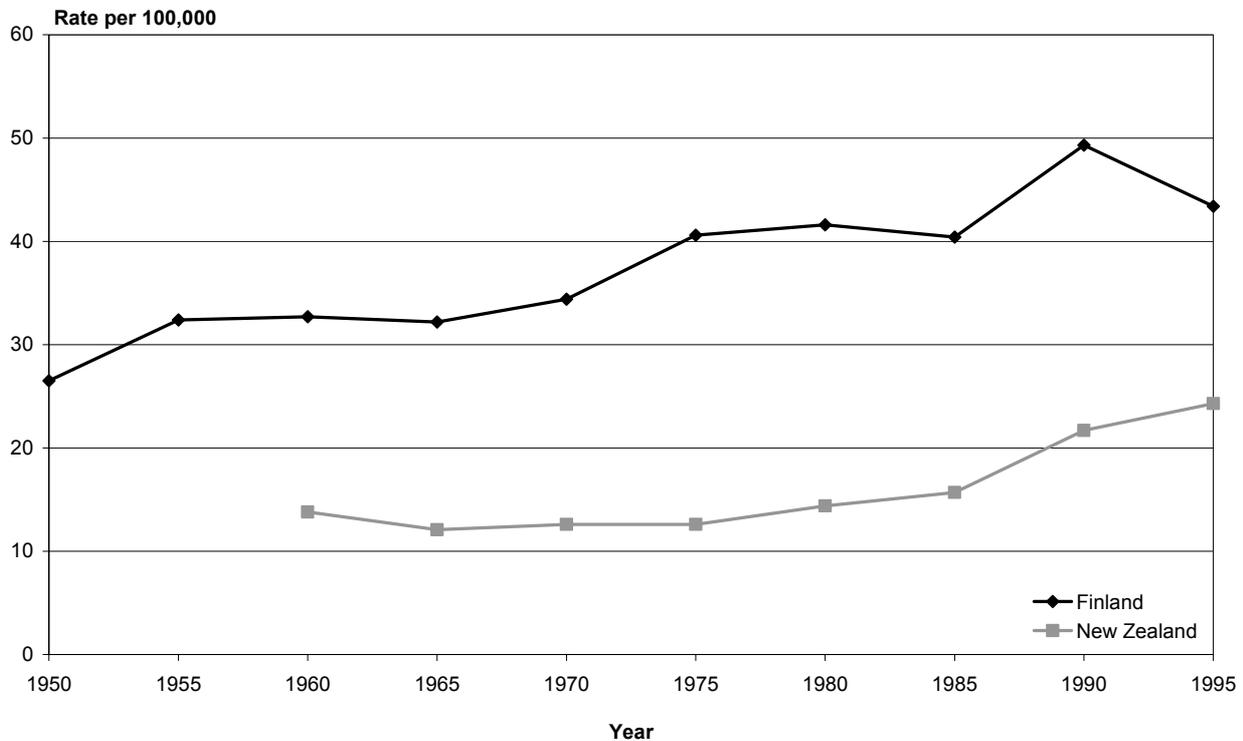
There is growing evidence that the ‘new’ vulnerable groups are sole parents, children and youths (Sarfati and Scott 2001; Fritzell 2001; Whitehead et al 2000). A recent OECD report has also highlighted the younger segments of the population as the new prime vulnerable group (OECD 1998). As in most countries in the world, in New Zealand and Finland the youth unemployment rate is approximately double the rate of adult unemployment (International Labor Organization 2000). In New Zealand this has been of concern as a labour issue but not as a health issue. The International Labor Organization has noted that the rate of youth suicide in English-speaking countries, including New Zealand, rose as income inequality rose. In countries like Norway, where earnings inequality is small and the social safety net high, youths reported being happier and more satisfied with their lives (International Labor Organization 2000).

Despite the large body of clinical literature on youth suicide, we found only two references to the possible direct association between the rise in youth unemployment and youth suicide. Hassall (1997) noted that the abrupt rise in youth suicide in the late 1980s in New Zealand coincided with the period of rapid economic restructuring. Blakely et al (2003) studied the link between unemployment and suicide and found a strong association for 18–24-year-old men. Sensitivity analyses suggested that confounding by mental illness might explain about half – but not all – of the association between employment and suicide. More commonly, youth unemployment is seen as a confounding rather than a contributing factor (Fergusson et al 2001).

## Suicide rates

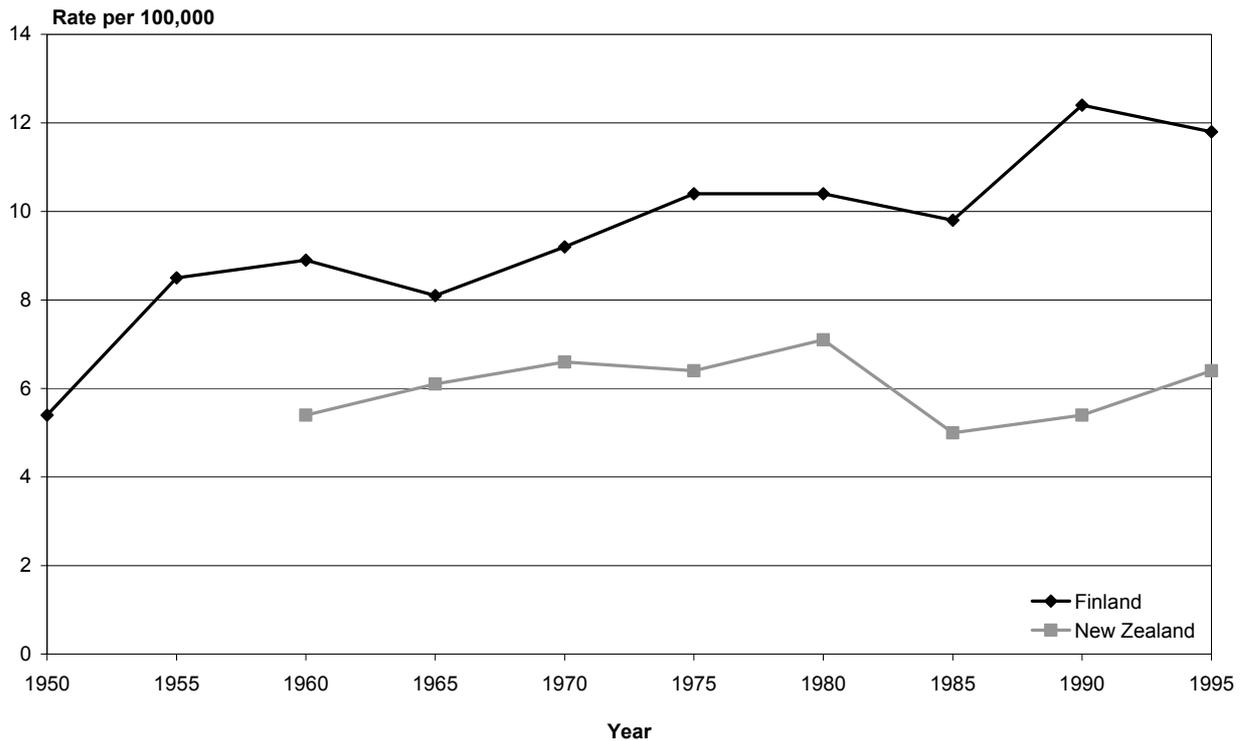
The suicide rates in both men and women have been consistently higher in Finland than in New Zealand. Figure 7 shows the male suicide rate per 100,000 since the Second World War, and Figure 8 shows the female suicide rate for the same period.

**Figure 7:** Male suicide rate per 100,000, Finland and New Zealand, 1950–95



Source: OECD data, 2002

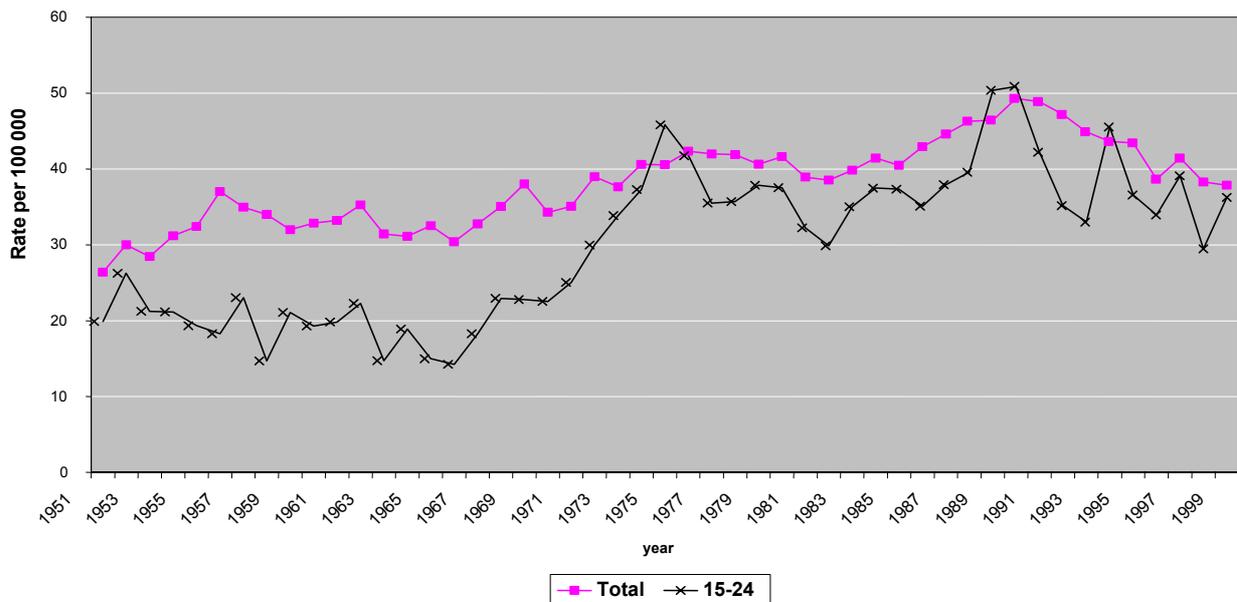
**Figure 8:** Female suicide rate, Finland and New Zealand, 1950–95



Source: OECD data, 2001

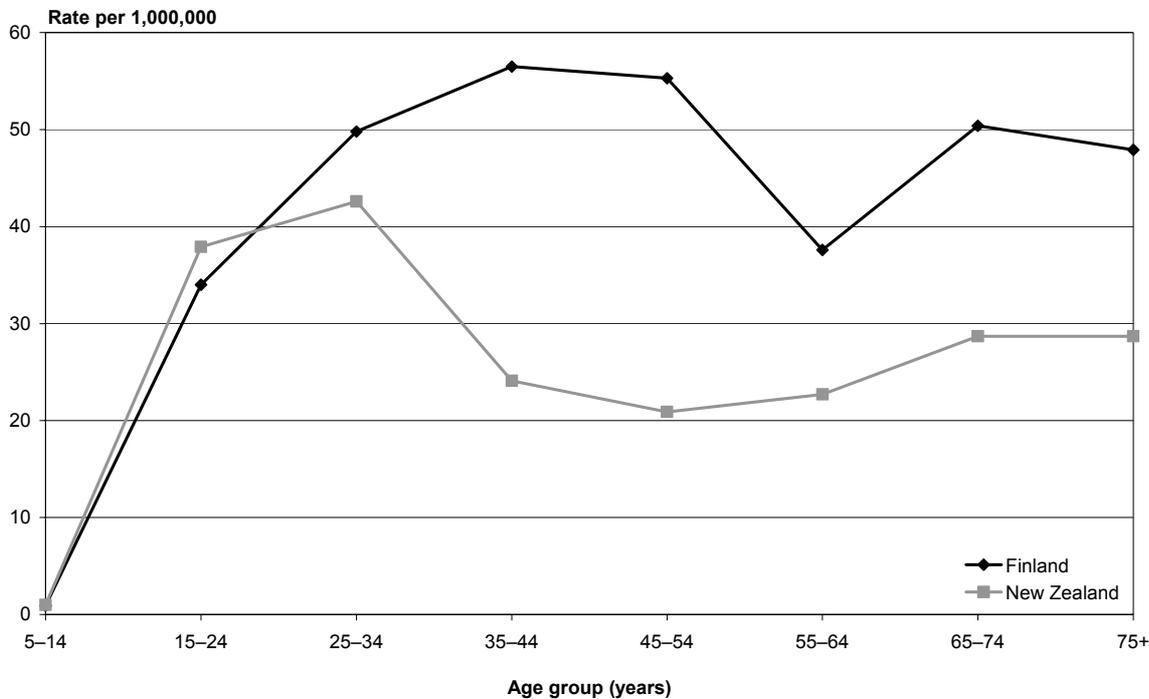
However, the picture changes when we look at the rates for male youth suicide rates (shown for Finland in Figure 9). Since the 1991 economic recession, male youth suicide rates after briefly exceeding the overall male rates have trended down below the male rates overall.

**Figure 9:** Male suicide rates, Finland, total and 15–24 years, 1951–99



As Figure 10 shows, the male youth suicide rates in 1996 in Finland were lower than for any other age band. This was not the case in New Zealand, where the male youth suicide rate was relatively high (second only to the male suicide rate in men aged 25–34).

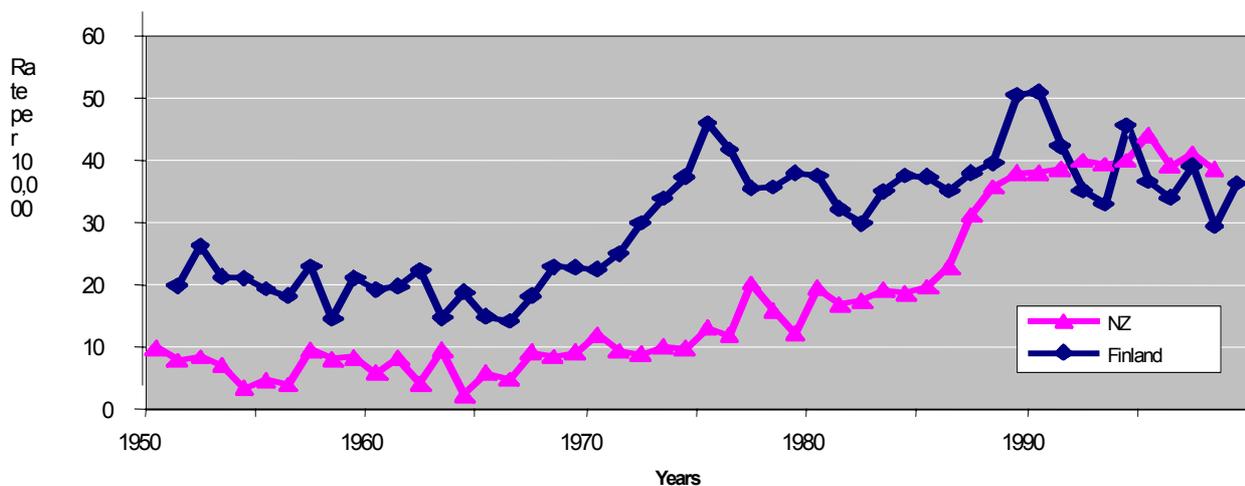
**Figure 10:** Age-specific suicide rates, Finland and New Zealand, males, 1996



Source: OECD data, 2002

Figure 11 shows that, although suicide rates overall are lower in New Zealand than Finland, this is not true for 15–24-year-old males. The period when the New Zealand rate of suicide began to exceed the Finnish rate of male youth suicide was during the economic recession. The New Zealand rate peaked in 1995.

**Figure 11:** Suicide rates, Finland and New Zealand, males, aged 15–24, 1950–2000



Source: OECD data, 2002

### 3 Socioeconomic Models of Suicide

#### Economic models of the determinants of suicide

Demonstrating causality in a natural experiment is difficult. It is, however, aided by an explicit model that takes account of time-lags. Three general models of mortality causation are usually proposed:

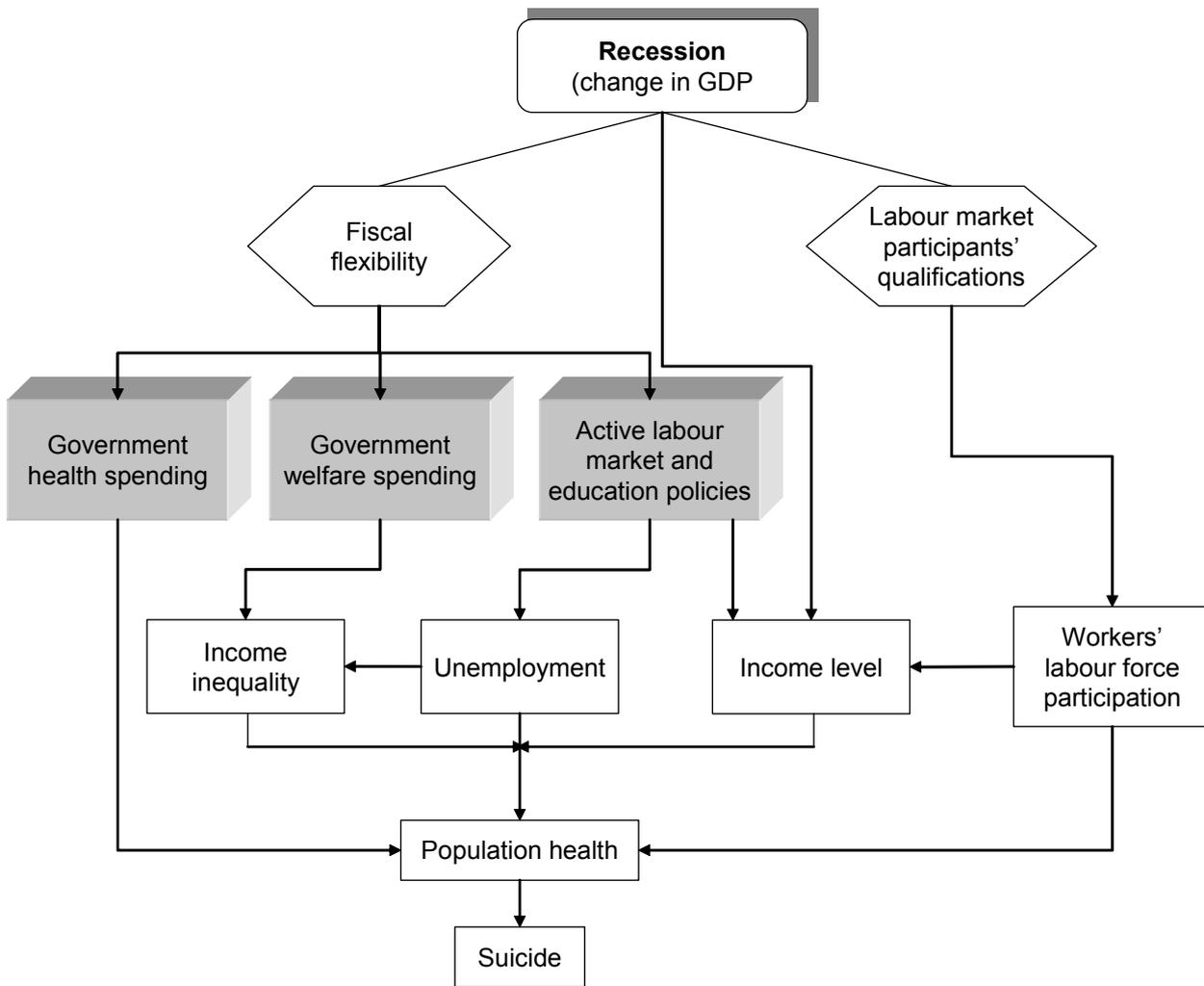
- the shock model
- the ‘accumulation of risks’ model
- the ‘response to complexity’ model – a multi-factor causal model (Thiltges et al 1995).

In the first model an environmental shock such as an economic depression or the trauma of war affects the whole or part of the population during a definable period of time (Foster 1991). Although the exposure to the hazard is limited in time, with peaceful prosperous times predominating in developed countries, the initial ‘shock waves’ can cause debilitating effects on survivors later, particularly on the economically vulnerable members of the community.

The recent major fluctuations in economic output in Finland and New Zealand provide an opportunity to test such a shock model, by looking at the differential impact of recent recessions as part of a longer time series over the post-war period, which also includes economic booms and periods of sustained growth. For example, the Korean War was the stimulus for an economic boom in New Zealand in the 1950s and 1960s, and the 1980s was an economic boom time for Finland. New Zealand’s economy also grew rapidly from 1992 to 1995.

In line with the economic shock model, the model proposed here is that a largely unavoidable global economic recession has a differential impact on a country’s economy and society depending on the response of the national government (shown in Figure 12 by the three shadowed boxes) and the state of the economy and society when recession hits (with two key state variables shown by diamond-shaped boxes). While a trading country cannot stave off a global recession, it can to some degree protect its citizens – particularly its more vulnerable ones – from the worst effects of a recession, which in the first instance are likely to include a rapid increase in unemployment rates.

**Figure 12:** A model of socioeconomic determinants of suicide



Research has consistently shown that those people with less education and income are likely to have poorer health. These people are more likely to be relying on government welfare benefits as part of their income, so the impact of an economic recession will be magnified if, in addition to there being fewer available job opportunities, their welfare benefits are cut. If the government cuts welfare payments, but protects superannuation and the salaries of public servants, for example, the social and economic impact of the recession will fall differentially and most heavily on those who are already likely to be in poorer health. Such policies, along with the impact of unemployment, will be reflected in increasing income inequality, as measured by the Gini coefficient.

An economic recession hits countries at different stages in their economic cycle. However, some countries are more prudent in building up savings so as to buffer themselves against difficult economic conditions. A government that has a high proportion of *external* public debt is less able to borrow outside the country for policies such as maintaining the level of welfare benefits and health spending. A refined model would also consider the constraining effect of high *internal* fiscal debt.

As a first step to a broader predictive model of mortality, we have focused here on suicide. Apart from its intrinsic and tragic interest, the investigation of suicide has the advantage that it is less likely to be particularly sensitive to cumulative economic and social circumstances. Because it involves deliberate self-harm, usually in response to recent circumstances, suicide ‘lags’ are likely to be shorter than where there is chronic disease.

Figure 12 abstracts from the complex interactions between schooling, labour-force participation and economic recession. For current purposes, qualifications are likely to increase individuals’ employment prospects and eventually health. In ordinary economic circumstances, youths in lower income groups are less likely to stay at school and gain qualifications, for a variety of reasons including parental and peer expectations and understandably shorter time horizons. Moreover, many first jobs are gained through social networks, which in the case of people in lower social class groups are more limited, and because they are more likely to come from ‘work-poor households’ they are more likely to become ‘discouraged workers’ who do not appear in the labour-force participation rates. Paradoxically, there is some evidence that an economic recession has the immediate effect of increasing the number of years that youths stay at school, beyond the compulsory school-leaving age. However, it is unclear whether these extra years of ‘default schooling’ lead to more qualifications. In any case, a government that is burdened by a high degree of debt is less likely to be able to invest in increased state education opportunities for less successful students in order to help them gain qualifications.

For two groups in particular – those at the beginning (aged 15–24 years) and the end of their working lives (55–64 years)<sup>6</sup> – the impacts of a recession will be more immediate than for those who have already secured jobs and are in the middle of their working lives. In other words, we are proposing that in addition to an economic shock effect there is an identifiable impact from cumulative socioeconomic risks. The impact is likely to be more marked for men than for women. The consequence of this process is that unemployed young and older middle-aged men will be hardest hit by an economic recession. Depending on the ‘generosity’ of government allocation for public welfare, the income at their disposal will decrease disproportionately and the cutting off of work-place relations means that they have fewer social supports. At a population level this can lead to higher rates of depression, which leads in some cases to the most psychologically vulnerable committing suicide.

## Regression models

We tested our model using male youth suicide (15–24-year-olds) as the outcome variable. Comparable data sets from New Zealand and Finland were identified for our comparison. We sought archival data back to 1950 in order to have several transition points in the economic cycle in both countries, but the data were not available. We mainly used OECD data and census data, because both countries have five-yearly censuses only a year apart (eg, 1980 in Finland, 1981 in New Zealand).

<sup>6</sup> Not examined in this study.

We undertook a number of exploratory linear regression analyses incorporating key variables from our model, where we could identify a suitable data series: GDP, Gini coefficients for Finland (1966–99) and New Zealand (1974–2001), and unemployment.<sup>7</sup> Because the data sets were not directly comparable, the model was run separately for each country, controlling for secular time trends. Due to multi-collinearity between year and GDP, it was not possible to use both of these variables together. Instead, we used annual change in GDP.

<sup>7</sup> While youth unemployment is generally double the overall unemployment rate, consistent series are unavailable in either country earlier than the mid-1980s; therefore overall unemployment rate was used.

## 4 Results

Results for New Zealand, presented in Table 1 indicate (Model 1) that the effect of a recession is apparently to increase young male suicide (ie, when income growth is negative, young male suicide levels increase), but the effect is only significant at the 10 percent level. Model 2 suggests that when inequality increases, suicide also increases, though again the effect is marginally significant. In Model 3, both variables are included together. When income growth is held constant, rising income inequality levels are associated with increasing suicide rates (although this association is statistically significant only at the 10 percent level,  $p = 0.062$ ). This model explains 90 percent of the variance in male youth suicide rates. Unemployment is not included in the regression models presented here, as it did not add any explanatory power.

**Table 1:** Results of regression models for New Zealand

	<b>Coefficient</b>	<b>Standard error</b>	<b>P&gt; t </b>	<b>[95% confidence interval]</b>	<b>Model 1 R<sup>2</sup> = 0.89</b>
Year	1.198	0.077	0	1.043	1.354
GDP	-0.005	0.003	0.08	-0.010	0.001
Constant	-2349	1518	0	-2655	-2042
	<b>Coefficient</b>	<b>Standard error</b>	<b>P&gt; t </b>	<b>[95% confidence interval]</b>	<b>Model 2 R<sup>2</sup> = 0.90</b>
Year	1.025	0.249	0	0.510	1.540
GDP	1.206	0.620	0.064	-0.07523	2.488
Constant	-2052	475	0	-3033	-1070
	<b>Coefficient</b>	<b>Standard error</b>	<b>P&gt; t </b>	<b>[95% confidence interval]</b>	<b>Model 3 R<sup>2</sup> = 0.90</b>
Year	1.0245	0.250	0	0.504	1.545
Gini	1.226	0.625	0.062	-0.069	2.522
GDP	-0.002	0.003	0.426	-0.007	0.003
Constant	-2050	478	0	-3041	-1058

Results for **Finland** are shown in Table 2. In these models, change in GDP and Gini are clearly not statistically significant, either separately or together.

**Table 2:** Results of regression models for Finland

	<b>Coefficient</b>	<b>Standard error</b>	<b>P&gt; t </b>	<b>[95% confidence interval]</b>	<b>Model 4 R<sup>2</sup> = 0.50</b>
Year	0.569	0.117	0	0.331	0.807
GDP	0.001	0.002	0.69	-0.004	0.006
Constant	-1094	232	0	-1563	-624
	<b>Coefficient</b>	<b>Standard error</b>	<b>P&gt; t </b>	<b>[95% confidence interval]</b>	<b>Model 5 R<sup>2</sup> = 0.59</b>
Year	0.881	0.166	0	0.538	1.224
Gini	-0.487	0.635	0.451	-1.800	0.827
Constant	-1694	335	0	-2388	-999
	<b>Coefficient</b>	<b>Standard error</b>	<b>P&gt; t </b>	<b>[95% confidence interval]</b>	<b>Model 6 R<sup>2</sup> = 0.63</b>
Year	0.817	0.188	0	0.427	1.206
Gini	-0.602	0.659	0.371	-1.968	0.764
GDP	0.002	0.003	0.459	-0.004	0.009
Constant	-1565	379	0	-2352	-778

In summary, income inequality and GDP growth are associated with suicide in New Zealand in the expected direction, but not in Finland. However, although the regressions are reasonably robust overall for New Zealand, the coefficient on income inequality is only marginally significant and that on GDP is not significant. A possible interpretation of these results is that in Finland the effect of income inequality on suicide is lessened by social interventions.

## 5 Discussion

This is the first direct comparison between New Zealand and Finland that we know of in the health field, and one of a small number of studies that have looked at cross-country comparisons of the impact of economic recession on mortality. Whereas Finland's comprehensive welfare state seems to have buffered young males from the worst effects of unemployment during the recession, New Zealand's more limited welfare arrangements seem not to have been able to protect young men at about the age when they would usually have been entering the workforce. The economic recession in New Zealand was associated with a noticeable increase in young men committing suicide – the reverse of the Finnish pattern. Our regression model estimation of the impact of increasing inequality and changes in GDP on the suicide rate of young men is consistent with this hypothesis.

Although the impacts of changes in income inequality are not uniformly statistically significant, they suggest that different effects are at work in New Zealand and Finland. In New Zealand, as inequality increased male youth suicide increased, whereas in Finland, other variables seem to have decoupled male youth suicide rates from income inequality. It may be that the more comprehensive welfare state in Finland and/or population interventions to reduce youth suicide were effective in disconnecting inequality and youth suicide.

The impact of the economic recession on mortality fits the model of an environmental shock. Although the recession peaked at different times in New Zealand and Finland, in both countries the after-shocks lingered. In New Zealand the evidence also provides some support for the accumulated risks model, because there was already growing income inequality and Māori had been severely affected by the preceding rapid economic restructuring. (There is unfortunately insufficient data to look further at the differential impact of the economic determinants of health on the mortality of Māori and non-Māori youths over an extended period.)

In New Zealand, income inequality had already begun to rise at the beginning of the 1980s. The rate of inequality growth was fastest in the late 1980s during the recession, but it continued to rise during the 1990s (O'Dea 2001). In both countries the economic effects were felt first, longest and most intensely by people in lower socioeconomic classes, but middle-class incomes were also squeezed, so to some extent the differential impact of the recession fits a risk accumulation model. More work is needed to explore the differential explanatory power of both models.

Unemployment in Finland apparently had little effect on most overall measures of income inequality, as workers and managers at all levels were made redundant. Also, in Finland, people's incomes were relatively equally hit by the recession: incomes declined across the population, not just among the poorest. This was not the case in New Zealand. While data show that the recession was longer and more severe in Finland than in New Zealand, the income inequality and health impacts appear to have been more intense in New Zealand.

One reason for the difference seems to be that the governments in the two countries reacted differently to the recession. In both countries the serious fiscal situation spurred cuts in social security entitlements, such as restrictions in eligibility and shorter duration of benefits (as Figure A2 in the Appendix shows, social spending in relation to GDP rose in Finland as output fell, but such a rise is not evident for New Zealand). Cuts in New Zealand affected unemployment benefits, sickness benefits, pensions, family allowances, housing and income support. But in New Zealand the cuts in targeted benefits to low-income people were proportionally more severe, so that rises in income inequality became the most rapid in the OECD. During the same period, Finland showed unemployment figures that were among the highest in Western Europe, but income inequalities that were, at that time, the lowest in Europe.

A key factor seems to be that Finland's policies have traditionally been universalistic, whereas New Zealand in the last two decades has increasingly moved toward targeted policies. Perhaps most importantly, Finland – like many European states – had explicitly identified reducing social inequalities in mortality and morbidity as a policy priority. There was also no major change in this emphasis during the early 1990s recession years. In New Zealand the key policy direction was based on a 'trickle down' theory of welfare, whereby increasing inequality had merit through creating incentives for greater productivity (and entrepreneurs would lead an export-led recovery).<sup>8</sup>

The consequences of this unprecedented increase in income inequality in New Zealand have been marked for population groups, such as Māori, that were already disadvantaged in terms of access to resources important for health and wellbeing. A recent analysis has shown a correlation between increasing Māori unemployment and Māori male mortality in the period following the mid-1980s economic restructuring (Brown 1999). There has been an increase in the life expectancy of non-Māori and Māori alike, but the ethnic disparities have been growing (Ajwani et al 2003).

It is clear that an increase in poverty and income inequality is not the inevitable consequence of social and economic change. A key factor is the extent to which the living standards of the household are dependent on the labour market position of adults. In countries (or periods) with redistributive fiscal and social policies – progressive taxation and social security benefits pegged to average incomes – poverty and income inequality have not increased with unemployment. Research in both Australia (Shaw et al 2002) and the UK (Page et al 2002) has reported a positive association between Conservative administrations and suicide rates during the twentieth century.

<sup>8</sup> In New Zealand the emphasis was on reducing 'welfare dependency', a concept borrowed from Thatcher's Britain. Families were expected to assume increasing responsibility under a controversial social programme called the Social Responsibility Programme, and letters, signed by the then Prime Minister, were delivered to every letter-box, exalting families to take better care of each other. Government departments were encouraged to work towards 'Strengthening Families'. The Minister of Finance explicitly stated that businessmen needed to earn proportionally more to reward them for their efforts and encourage them to stay in New Zealand, rather than shifting their operations overseas.

## What can the two countries learn from each other?

Finland has a long tradition of community-based preventive programmes, such as that carried out in North Karelia, where death rates from ischaemic heart disease are among the highest in the world (Koskinen 1995). The extensive suicide project in Finland (Upanne et al 1999; NRDCWH 1993), which was based on an ‘interaction’ model rather than a clinical model (Upanne 2001; Silverman and Felner 1995), is another such programme. This Finnish interaction model was strategically designed to draw in the efforts of all sectors – not just the health sector. It addressed the wider antecedents of health, recognised that problems develop because of cumulative interactions between people and environmental circumstances, and supported action at the population level. Recently New Zealand has begun to adopt these features of the Finnish model. It appears, also, that Finnish efforts to buffer the effects of the early 1990s recession were important, and stand in positive contrast to the inequality-increasing policies adopted in New Zealand, which were associated with troubling suicide outcomes.

However, since the late 1990s income inequality has increased in Finland, which can be partly explained by increased capital incomes but also by the facts that the Finnish unemployment rate has remained high, and the cuts made to the welfare system have become permanent and have not been drawn back during the boom after the recession. Although Finland is still clearly a redistributive welfare society with low income inequality and poverty rates, there is a risk that growing long-term unemployment and persistent income problems will create an underclass who are permanently socially excluded. This could have serious repercussions for the health status and equity in health of the Finns, as the New Zealand experience shows.

In New Zealand, legislative requirements mean that inequalities are mainly considered in relation to Māori. The impact of social and economic policies on Māori need to be better understood if effective policies to reduce inequalities in the determinants of health are to be developed in consultation with Māori. Ways of working in genuine – if imperfect – partnership with minority ethnic groups are an important policy development in New Zealand.

To minimise the social variations in health and avoidable mortality, the distribution of household income needs to be carefully monitored. Social and health problems arising from economic recessions should be anticipated, so that policies can be developed for the redistribution of income or government benefits necessary to maintain the health of the population. Policies should attempt to ease the burden of adjustment associated with recessions rather than seeing recessions as an opportunity for cutting welfare benefits.<sup>9</sup> The dynamics of social and economic inequalities over a person’s lifetime and over successive generations are poorly understood, but attitudes to and opportunities for education are likely to be critical. More research is needed to get a better understanding of how not just nations but communities and families can buffer their members from the worst effects of economic recession and promote measured adjustment.

<sup>9</sup> Restructuring of welfare is likely to be a task better suited to more buoyant periods.

As part of the commitment under the Nordic model to equity of outcome, there has been extensive economic, social science and public health analysis of the effects of the economic recession in Finland (Kalela et al 2001; Heikkila and Uusitalo 1997; Kautto 2001). Work on social and economic indicators has been spasmodic in New Zealand since the demise of the New Zealand Planning Council in the 1980s. Only recently has there been a renewed political commitment to social indicators research, and New Zealand has now begun to monitor health inequalities and their determinants (Howden-Chapman and Tobias 2000).<sup>10</sup> Indeed, major socioeconomic trends have sometimes been identified first outside New Zealand, and civil society organisations have sometimes filled the gap. For example, the growing health problems of children and youth have been highlighted by non-governmental organisations such as the Child Poverty Action Group (St John et al 2001) and Action for Children and Youth Aotearoa (Blaiklock et al 2002).

## Conclusion

This study has provided evidence to support a view that, while there is no major single explanation for changes in suicide patterns, outcomes are influenced by a number of socioeconomic drivers, such as changes in GDP and income inequality. The evidence suggests that in Finland, not only did the economic recession *not* speed up growth in income inequality, as occurred in New Zealand, but there was a reduction in young men committing suicide. In comparison with the buffering effects of Finland's more comprehensive welfare approach, it appears that New Zealand's approach had serious negative effects on social inequality and avoidable mortality. Economic trends and policies affect the internal dynamics of family life, which can, in turn, affect the health and future economic wellbeing of the family members. The rise in suicides among young men in New Zealand in the late 1980s and early 1990s suggest that they are particularly vulnerable to the flow-on from an economic downturn.

We conclude from this comparative study of Finland and New Zealand, that an economic recession does not have to lead to an increase in mortality. Had New Zealand followed the Finnish example during the last major economic recession, we may not have had such a dramatic and tragic increase in youth suicide. This is an important policy lesson.

<sup>10</sup> For example, an external study established first that New Zealand had the fastest increase in income inequality in the OECD. This finding by the Roundtree Foundation was only later verified by New Zealand Statistics and the New Zealand Treasury.

# Appendix: Country Backgrounds

New Zealand has (2001 Census) a population of four million, of whom 14.7 percent identify as (indigenous) Māori, 6.6 percent as Asian, and 6.5 percent as Pacific Island people. The remainder are largely of European descent. Finland has a population of 5 million, and while it has a very small indigenous population of Sami (0.03 percent), the largest minority population is Swedish (4–5 percent), who have on average a higher social position than the Finns. Both countries are liberal democracies with relatively well-educated populations, as indicated by the traditionally high turn-out of voters at elections in both countries, but particularly in New Zealand, as shown in Figure A1.

**Figure A1:** Election turnout in Finland and New Zealand, percentage of eligible voters, 1950–99



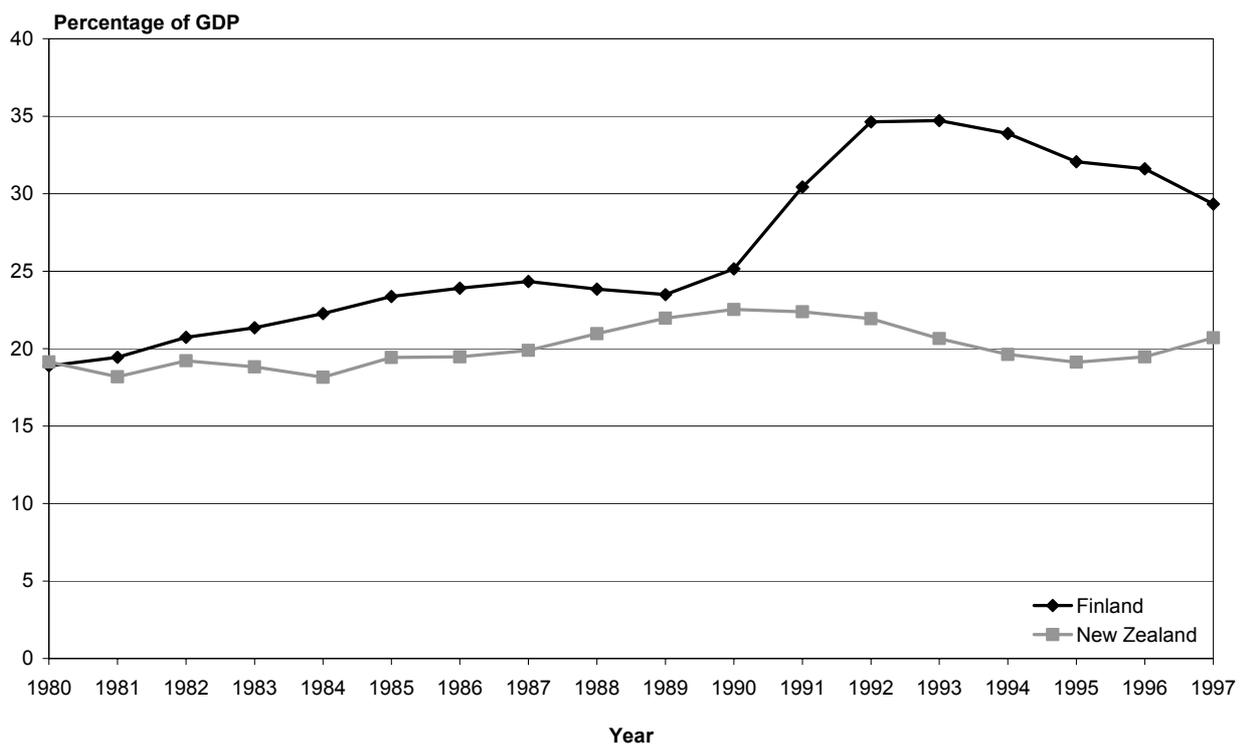
Source: OECD data

New Zealand, a former British colony and now part of the British Commonwealth, has a Westminster-style, unicameral parliament. New Zealand does not have a written constitution, but the Treaty of Waitangi signed between the Crown and Māori chiefs in 1840 commits the government to ensure that Māori have certain inalienable rights to many natural resources and in theory retain certain rights of governance over their affairs, while enjoying the usual benefits of citizenship. Due to the impact of colonisation, urbanisation from the 1950s and a complex range of other factors, Maori experience a disproportionate level of social and economic inequality and disadvantage in New Zealand, including poorer mental health outcomes and a higher suicide rate than non-Maori. The income distribution among Māori is more unequal than among non-Māori, and the mean income is much lower (O’Dea 2001).

New Zealand's welfare state has relied on historically full employment (Castles 1996). Government welfare benefits have not been generous compared to European states (Stephens and Bradshaw 1995). Aside from superannuation, there are few universal government benefits remaining (Boston and Dalziel 1992; Boston et al 1999).

In Finland, the welfare state was set up comprehensively in the mid-1970s in line with the Nordic model (Kautto et al 1999). The Nordic welfare model is associated with a cross-party political commitment to a broad range of public policies that are seen as more than 'the sum of the parts.' The chief driver is seen to be to full employment, which is underpinned by active labour market measures.<sup>11</sup> The income security system is fairly generous, with universal flat-rate basic security and an earnings-related component for those with a work history. In addition, tax-supported services are provided locally to cater for all service and health needs. The fiscal consequence of this Nordic model is that countries like Finland that adhere to it spend a greater share of GDP on social expenditure than countries like New Zealand (Stephens 2000). Also, despite more severe fiscal constraints, Figure A2 shows that the share of GDP allocated in Finland to social expenditure increased considerably during the economic recession, whereas social expenditure as a share of GDP did not increase materially in New Zealand.

**Figure A2:** Social spending in Finland and New Zealand as a percentage of GDP, 1980–98

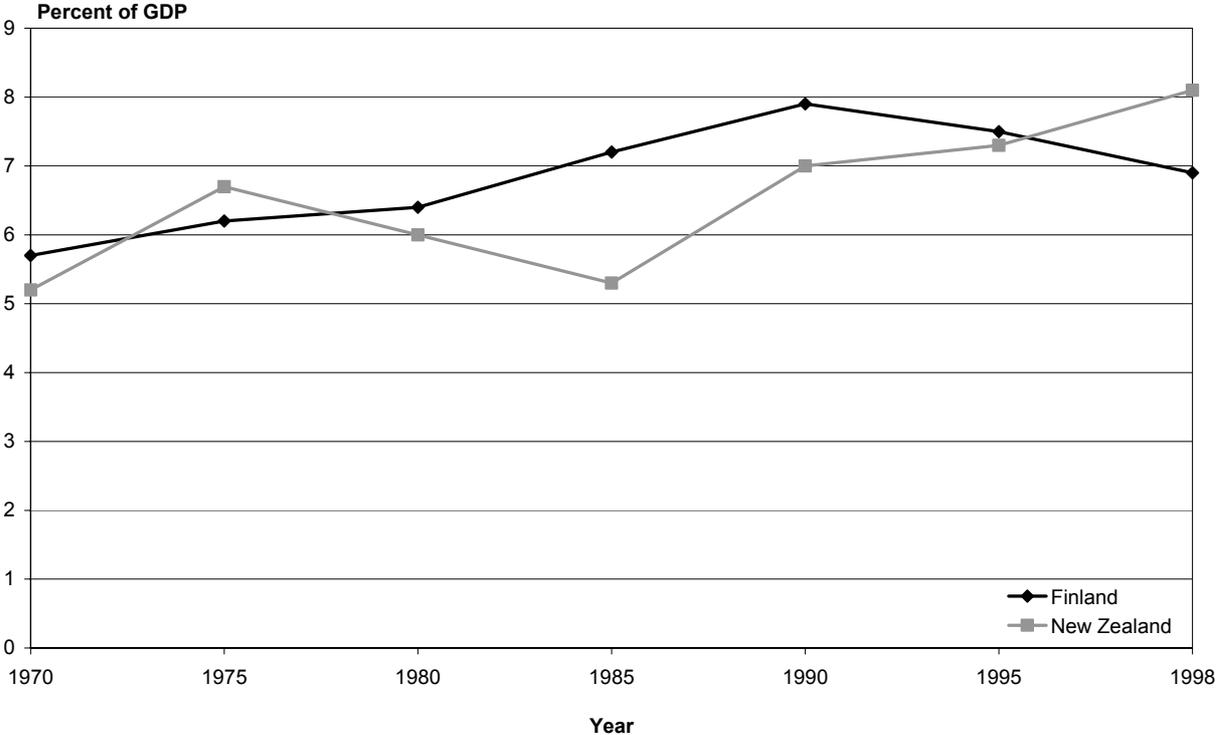


Source: OECD data, 2002

<sup>11</sup> For example, OECD figures show that in 1999 Finland spent double the percentage of GDP on active labour market measures compared to New Zealand (1.22% compared to 0.62%) and also more on passive spending (2.33% compared to 1.57%) (OECD, 2001).

This is less true of expenditure on health, as shown in Figure A3. However, as health expenditure has only a relatively small part to play in the health status of the population, especially for young people who have low health care utilisation, this expenditure may be less significant than other social expenditure.

**Figure A3:** Health expenditure in Finland and New Zealand, 1970–98



Source: OECD data, 2005

An important part of the Nordic model is a commitment to equity of outcomes: low absolute and relative income inequality, low poverty rates, and small differences in health and living standards between different social groups, such as men or women or types of households (eg, sole parents). This commitment is reflected in a significant investment to closely monitor these outcomes.

## **Policies to minimise social variations in health**

Policies to minimise social variations in health must take into account the history of a country and its culture. Public health policies, to be successful, must be country-specific, while taking account of principles and successful practice elsewhere. Finland has a long history of comparing its health status with neighbouring European countries (Sihvonen et al 1999; Kautto et al 2001). New Zealand is relatively isolated and, aside from Australia, has few natural comparator countries.<sup>12</sup> We are aware of only two comparisons of New Zealand's social inequalities in health with Australia (O'Donoghue et al 2000; Woodward et al 2001). A comparison of New Zealand and Finnish economic performance was carried out for the New Zealand Treasury, but there was no mention of health as an outcome of interest (Frame 2000). Nonetheless, comparisons of the impacts of economic and social policy on health are crucially important for policy and research.

One view is that policy-makers with growing numbers of international contacts increasingly seek broadly similar types of solutions to similar pressures and problems so that institutional arrangements gradually converge to a norm. There is evidence of this in the standard solutions adopted in reforming health services, for example (Howden-Chapman 1993). However, political contacts are always selective and there is considerable variation in models even across the OECD. In the case of New Zealand, the rise of neo-liberal politics in the late 1980s and 1990s led to a deliberate move away from the northern European model.

New Zealand's relative isolation enabled the country to be a social laboratory during the recessions in the 1880s and 1930s for the development of the welfare state, but during the late 1980s recession it was a social laboratory for deregulation. Countries adopt policies that later become models for other to follow. The analysis of health outcomes of these models is an important public health research task. In this paper we have identified aspects of the Finnish welfare state that appear to be associated with more positive health outcomes than the more restricted New Zealand welfare state. It may be that further useful insights can be drawn from an examination of the impacts of the elections in 1999 and again in 2002 in New Zealand of more social democratic coalition governments with links to the social democratic parties in Scandinavia.

<sup>12</sup> Small, social democratic/liberal countries such as Ireland, the Netherlands, Finland and Sweden are strong candidates, but their European context introduces some significant differences.

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