



TIME SERIES ANALYSIS OF DISPARITY BETWEEN MAORI AND NON-MAORI LABOUR MARKET OUTCOMES IN THE HOUSEHOLD LABOUR FORCE SURVEY

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Abstract

Disparity in labour market outcomes between Maori and non-Maori is examined using Household Labour Force Survey (HLFS) data. The paper explores the nature of the ethnicity question and ethnic classification in the HLFS. It shows that there are substantial differences in labour market outcomes between those Maori who report only Maori ethnicity and those who report Maori and another ethnicity ("mixed" Maori). The paper then considers various methods of measuring disparity and uses these to examine the time series behaviour of disparity between 1985 and 1998. It concludes that disparity between Maori and non-Maori is greater today than in 1985. However, all this deterioration occurred between 1985 and 1992. Since 1992 disparity has been in decline. The bulk of time series variation in disparity between Maori and non-Maori has been driven by changes in outcomes for the sole Maori group. Mixed Maori, about a quarter share of the Maori ethnic group, has outcomes which closely track those of the non-Maori population over time.

Keywords: *Maori, non-Maori, ethnicity*

The fact that there are disparities between Maori and non-Maori in terms of labour market outcomes - principally in terms of wages earned and the chances of obtaining work - has been well explored and warrants little further comment. However, the more interesting issue of trends in this disparity over time has received much less attention.

This paper considers changes in disparity in labour market outcomes over time between Maori and non-Maori using Household Labour Force Survey (HLFS) data. Our work is inspired by the *Closing the Gaps* report by Te Puni Kokiri.

Before we explore disparity, we consider it important to explore in some detail the nature of the ethnicity question in the Household Labour Force Survey. We show that there are substantial differences in dynamic labour market performance between Maori who report a solely Maori identity and those who report Maori and another ethnic group. Our analysis suggests that the mixed and sole group may occupy substantially different labour markets. Both Statistics New Zealand and social scientists using HLFS data should therefore be cautious about automatically aggregating the two groups and reifying a particular statistical definition of Maori as representing a clear underlying social reality. We acknowledge qualitatively similar but better known intra-group differences among the non-Maori population but do not explore these for reasons of brevity.

We move on to critically consider the various methods for measuring disparity between Maori and non-Maori. We then use the various methods to address the question of whether

there has been a recent relative deterioration in Maori labour market performance. We look at disparity between the two populations over the longest possible time period within the HLFS - 1985.4-1998.2. For reasons of brevity we focus solely on ethnic differences and do not consider gender differences, which may potentially throw additional light on relative Maori labour market experiences.

A further caution which we wish to draw readers' attention to is that our HLFS data set, being a sample, contains sampling error. This error means that one should be cautious about conclusions regarding trends in disparity between quarters or years unless these trends are pronounced.

We do not focus on explaining disparity. However some brief mention of causes is worthwhile. Labour market outcomes for any population are a product of both demand and supply influences. Disparities in labour market outcomes between two populations reflect differences in demand and supply factors between the two populations. In comparison to non-Maori, the Maori population has a number of observed supply characteristics which are correlated with poorer labour market outcomes. In particular the Maori population is younger, has lower educational qualifications and is more likely to live in areas with poor labour market performance. These factors are likely to be causative. Other supply-side factors possibly include higher rates of sole parenthood. In addition, for a given level of education, Maori productivity may be lower - because Maori qualifications are not of as high a quality as non-Maori, or Maori levels of literacy are lower. Another factor

lowering unobserved Maori productivity may be poorer Maori health outcomes, especially through the schooling years. This factor illustrates the linkages between disparity in one area of the socio-economy - the health sector - into another - the labour market (connections are also likely in the other direction as poor labour market outcomes lead to mental and physical health difficulties). Finally for cultural reasons Maori may have a stronger preference for unpaid work and leisure over paid employment than non-Maori. This could lead to lower amounts of labour supplied to the paid labour market.

Labour demand factors are also a potential cause of disparities between Maori and non-Maori. Demand for Maori labour may be lower because of racial discrimination in hiring decisions by employers. Employers may racially discriminate against hiring Maori because they personally are racially biased, the rest of their workforce is racially biased or their customers are racially biased. Furthermore, employers may statistically discriminate against Maori if Maori on average have lower levels of productivity, productivity varies across Maori individuals, and productivity of individual Maori is not easily observable. Under these circumstances it may be privately efficient for employers to screen their workforce by ethnicity. Labour market discrimination may mean that Maori have reduced access to employment, promotion, training and financial capital, and may also have an influence on lower wage rates. In addition to discrimination, demand for Maori labour may vary over time in a manner different from non-Maori because Maori are in different labour markets which experience differential growth in demand. Maori are concentrated in different industries, occupations and regions to non-Maori. Finally it may be that Maori operate within different labour market networks to non-Maori which generate fewer job offers and opportunities (see Easton 1994 for more detail).

There is a certain amount of multi-variate empirical literature utilising cross-sectional data sets in the area of disparity in Maori labour market outcomes (see Winkelmann and Winkelmann 1997, Maloney 1995, Easton 1994, Bacica 1984). This literature suggests that educational qualifications, location, family structure and age are statistically significant causes of disparity. Unfortunately testing for unobserved productivity differences, cultural differences in labour supply behaviour, the existence of differential labour market networks, and the existence of widespread racial discrimination against Maori in hiring is very difficult: we have little solid information on the importance of these factors in generating disparity.

Having analysed various measures of labour market disparity over time, we conclude that disparity in labour market states between the Maori and non-Maori population is greater today than it was in the mid-1980's. However, disparity has also been falling since 1992. Our best estimate is that disparity is still currently declining, which is surprising to us given the weakening state of the aggregate labour market. The disparity decline is at fairly slow rates

which, if continued, would see it returning to mid-1980's levels in roughly five years. The vast bulk of time series variation in disparity has been driven by changes in outcomes for the group who identify solely as Maori. The mixed Maori population are more like non-Maori than the sole Maori population.

Who are Maori and non-Maori in the HLFS?

The way ethnicity is officially classified subtly (and sometimes not so subtly) differs across data sets. This section considers how ethnicity is defined and ethnicity data collected in the HLFS and compares it to the census. We should point out at the outset that our comments are not based on the belief that there is a problem free approach to ethnic definition and classification, but rather that quality analysis requires an awareness of data collection techniques and the limitations, often inevitable, that collection methods impose.

Current official ethnic classification in New Zealand is ostensibly based on the concept of individual self-identification. Before we undertook this study, we were of the impression that self-identification was also the method of ethnic identification in the HLFS. However, we found that our supposition of individual self-identification was not in fact strictly accurate. The HLFS has individual questionnaires for each household member to answer and also a household questionnaire for the household head.¹ The first interview is carried out face to face by a Statistics New Zealand employee. The household questionnaire asks the household head to list information, including the names of the people in the house, their birth dates, and their ethnic group. The ethnicity question in the HLFS is asked only in the household questionnaire and is answered by the household head on behalf of other household members. The head of the household may check with other household members regarding their ethnic identity or responses to other questions, but there is no requirement for them to do so. If the person answering the household questionnaire is unsure of any of the details about others in the household, the interviewer checks the details with the individual concerned either at the time or later by phone if the individual is not there.

The question relating to ethnicity is "What is ...'s ethnic group?", implying a single group should be chosen. The household head is then shown a card which lists possible categories. It says: "You may choose up to 3 ethnic groups", suggesting - contrary to the first part of the question - that more than one but less than four groups can be chosen. The groups on the card are:

- | | |
|---------------------|-----------------|
| 1 European/Pakeha | 6 Tongan |
| 2 New Zealand Maori | 7 Other Pacific |
| 3 Samoan | 8 Chinese |
| 4 Cook Island Maori | 9 Indian |
| 5 Niuean | 10 Other |

For the remaining seven quarters that the household is part of the survey, interviews are carried out by telephone. The

person responding to the household questionnaire is asked to confirm that the details obtained in the household questionnaire in the first interview. The ethnicity question is essentially consistent throughout the life span of the HLFS.

There are substantial differences in the way the ethnicity question is currently asked between the Census for example and the HLFS. The 1991 census questionnaire asked a similarly ambiguous question to the HLFS in terms of reporting of multiple ethnic groups, with the first part of the question suggesting that one group only is required and the second part allowing that more than one group can be reported. The census question was: "Which ethnic group do you belong to? Tick the box or boxes which apply to you". New Zealand European was the first option and New Zealand Maori was the second option. The 1996 questionnaire is more open and unambiguous in terms of reporting multiple identities. It asked "Tick as many circles as you need to show which ethnic group(s) you belong to". NZ Maori was the first option, NZ European or Pakeha was the second.

The differences between the HLFS and the census are several. The census question is answered by individuals, not household heads on behalf of other household members. There is no census restriction on numbers of groups one can identify with, unlike HLFS. The change in the census ethnicity question between 1991 and 1996 probably led to much of the reported decline in the Maori ethnic group share of sole identity Maori - from 76 percent in 1991 to 59 percent of the Maori ethnic group in 1996. Broadly speaking the HLFS question seems less likely to elicit multiple responses than the 1996 census question. Finally there was an ordering change between 1991 and 1996 in the census listing of ethnic options. Given scarce time, ordering may matter - there may be a tendency for respondents to tick the first applicable box and then move on to the next question.

Any person who responds "Maori" either as their sole identity or in combination with up to two other ethnic identities is officially classified as Maori in the HLFS and not as a member of the other ethnic groups to which they identify. This rarely discussed hierarchical statistical classification procedure is entirely arbitrary - these people could with as much justification be classified as non-Maori. The most obvious impact of the classification procedure is to raise the numbers in the Maori ethnic group and reduce the non-Maori ethnic group.

Given this approach to determining the Maori ethnic group, how has the share of the Maori ethnic group been changing through time? The Maori ethnic group has been rising slowly as a proportion of the HLFS working age population - from around 10 percent in the mid-1980s to 10.5 percent currently. It is likely that the rising Maori share is a mixture of a different demographic structure compared with the non-Maori population (more young people; fewer older people) and net changes in ethnic attribution in the underlying population from the non-Maori to the Maori group.

Unfortunately we have little concrete information on the relative importance of these two factors and - in the case of changes in ethnic attribution - the reasons behind such changes.

The proportion of the Maori ethnic group who also identify with another ethnic group is a sizeable minority of the Maori population. The share of the mixed Maori group increased significantly between 1985 and 1998 from about 22 percent to 27 percent. Again, this rise was probably due to a combination of the younger age structure of the mixed relative to the sole Maori group and attributional changes from the non-Maori group into the mixed Maori group at a faster rate than into the sole Maori group. Thus it is possible that at least some of the rise in the share of the mixed Maori group in the census is not simply the result of changes in the ethnicity question.

If the Statistics New Zealand taxonomic rule was the equally arbitrary criteria that anyone who reported any non-Maori ethnic group was non-Maori, a stroke of the statistical pen would currently convert 27 per cent of the Maori ethnic group in the HLFS into non-Maori (and 41 percent of the Maori ethnic group in the 1996 census).

The likelihood of changing ethnic attribution of the New Zealand population and the existence of a substantial share of the Maori ethnic group who also identify with another ethnic group emphasises ethnic fluidity in the New Zealand ethnic data context rather than the rigid either/or distinction which is implied by a simple focus on differences in HLFS and other socio-economic outcomes between the Maori ethnic group and non-Maori.

Systematic labour market differences between sole and mixed Maori

We think that Statistics New Zealand's hierarchical classification of all who identify in whole or part as Maori would be an acceptable approximation for labour market analysis purposes if sole Maori and mixed Maori have similar labour market profiles. Do the two sub-groups of the official Maori population indeed have similar profiles? The answer is strongly no. There is firm evidence that there are systematic differences in profiles between these two groups. On average the sole Maori group faces substantially greater labour market disadvantage than the mixed Maori group. The table below shows that on average the mixed Maori group has a higher employment rate, higher participation rate and lower unemployment rate than the sole Maori group.

Table 1. Systematic disparity by ethnic attribution within the Maori ethnic group (averages 1985.4-1998.2)

	<i>sole Maori</i>	<i>mixed Maori</i>	<i>non Maori</i>
Employment rate	48.2	56.6	61.1
Participation rate	59.6	65.9	65.0
Unemployment rate	19.3	14.2	6.1

Figure 1. Employment rates of mixed and sole Maori

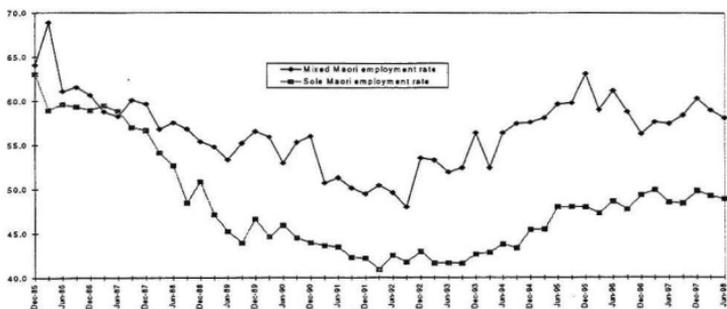


Figure 2. Unemployment rates of mixed and sole Maori

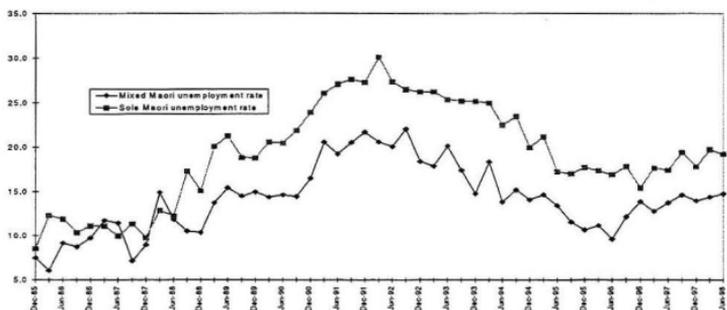
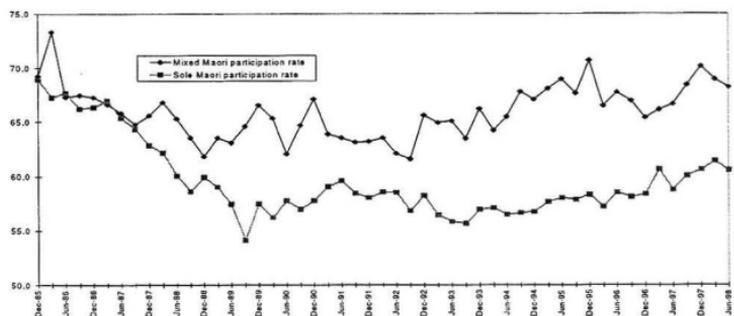


Figure 3. Participation rates of mixed and sole Maori



However when the three series are considered over time (see Figures 1-3), it is interesting to observe that this greater disadvantage of the sole Maori group was not evident in the mid-1980's. A disparity in outcomes between the sole and mixed Maori groups only really emerged after about 1987/88.

There are a number of possible explanations of the emergence of a gap between sole and mixed Maori. Neither racial discrimination in employment nor differences in tastes and preferences seem to be strong candidates for the emerging gap, since during the mid-1980's the two groups had very similar outcomes. It seems implausible to argue that discrimination could have so rapidly worsened or tastes and preferences so drastically alter as to induce the post-1988 difference between the two populations.

Another possibility we have considered is an "attributional" shock. People who previously identified as non-Maori with more successful labour market characteristics may have changed their identification from non-Maori to mixed Maori, hence resulting in a growth in disparity within the Maori ethnic group. A priori the observed changes appear rather too large and too sudden for an attributional shock to explain the difference. There is some possible evidence for an attributional shock in the rising share of mixed Maori in the Maori ethnic group - perhaps people migrated into the Maori ethnic group by continuing to tick a non-Maori ethnic group but also ticking Maori. However, the timing is not quite right: much of the rise in the share of the mixed group took place during the time the two populations had very similar labour market outcomes. In addition, for the observed change in disparity to be accounted for, those changing attribution would have had to have been both numerous and with radically different labour market outcomes from those already identifying as part of the Maori ethnic group.² Our feeling is that the most likely explanation for the emergence of a gap in outcomes for the mixed and sole Maori groups is that each group suffered a different labour market demand shock. For the demand shock to have different impacts on the sole and mixed Maori groups, they must be - at least to some significant degree - in different labour markets. Whether the two Maori groups are in fact in different labour markets will be considered below.

Profiling the sole and mixed Maori groups

Do the two Maori groups differ simply on labour market states? Or are other socio-demographic differences also important? If other characteristics do differ, this supports the hypothesis that the two groups are in different labour markets and also provides an indication of the defining dimensions of the different labour markets.

The evidence (shown in Tables 2-4) is that mixed Maori are younger, educationally better qualified, and live in different areas to sole Maori.³ Location is the dimension where the gap between sole and mixed Maori socio-demographics is greatest. The mixed Maori group are more likely to be found in Auckland and the South Island. 21.6 percent of

them live in the South Island compared to only 7.6 percent of the sole Maori group. Sole Maori are more likely to be found in depressed rural heartland areas like Northland, Bay of Plenty and Gisborne/Hawkes Bay. 34.5 percent of the sole Maori group live in these three areas, compared to only 18.1 percent of mixed Maori. Finally, the mixed Maori group works in different occupations and different industries compared to sole Maori (see Tables 5 & 6).

Table 2. Mixed Maori are younger than sole Maori

Age band	sole Maori (%)	mixed Maori (%)
15-24	27.8	42.1
25-34	28.0	26.3
35-44	22.4	19.7
45-54	12.0	8.0
55-64	9.9	3.9

Table 3. Mixed Maori are better qualified than sole Maori

Education	sole Maori (%)	mixed Maori (%)
No Qualifications	50.2	34.9
School Qualifications	19.6	30.7
Vocational	28.2	31.0
Degree	2.0	3.4

Table 4. Mixed Maori live in different areas to sole Maori

Regional council area	sole Maori (%)	mixed Maori (%)
Northland	10.5	4.7
Auckland	4.1	31.4
Waikato	14.5	9.9
Bay of Plenty	15.5	8.9
Gisborne/Hawkes Bay	8.9	4.5
Taranaki	2.1	3.1
Manawatu/Wanganui	6.4	3.8
Wellington	10.2	12.2
Nelson/Tasman/West Coast/Marlborough	2.1	3.2
Canterbury	4.0	10.9
Otago	1.0	4.0
Southland	0.6	3.5

Table 5. Mixed Maori are in different occupations than sole Maori

Occupation	sole Maori (%)	mixed Maori (%)
Administrators & Managers	6.3	5.2
Professionals	9.2	7.7
Technicians & Associate Professionals	8.0	9.5
Clerks	9.9	16.7
Service, Sales	13.9	18.1
Agriculture, Fishery	6.6	6.1
Trades	8.6	14.5
Plant & Machine Operators	20.8	11.4
Elementary	16.6	10.8

Table 6. Mixed Maori are in different industries than sole Maori

Industry	sole Maori (%)	mixed Maori (%)
Agriculture etc.	7.9	6.9
Mining	0.5	0.2
Manufacturing	21.5	21.2
Electricity, gas	0.2	0.5
Construction	7.9	11.7
Trade, restaurants, hotels	16.8	24.3
Transport, communications	9.3	5.9
Business Services	5.4	8.6
Community Services	30.5	20.8

Our conclusion is that some of the Maori ethnic group are more disadvantaged than others. This disadvantage differs systematically by degree of attachment to the Maori ethnic group. At least some of this inter-Maori ethnic group difference is due to the fact that the two groups occupy substantially different labour markets. Researchers using multivariate analysis and including dummy variables for ethnicity might wish to take into account differences within the Maori ethnic group as well as between that group and other groups. In a world where a substantial and growing minority of the Maori ethnic group also identify with another ethnic group, policy makers and researchers should also be wary about continuing to draw a strong either/or dichotomy between Maori and non-Maori.

Measuring disparity in labour market status

We now move from consideration of the populations in question to issues of measuring disparity. There are two popular measures of disparity which are commonly used in examining relative Maori and non-Maori labour market performance. The first measure is the percentage point difference between the proportions of the two populations represented by a certain labour market state (the percentage disparity). By this measure absolute equality is represented by a disparity index of zero. The second is the ratio of the proportions of the two populations represented by a certain labour market state (the disparity ratio). By this measure absolute equality is represented by a disparity index of unity.

The percentage disparity between Maori and non-Maori labour market outcomes is the percentage point differences in labour market states:

$$PP_i = m_i - nm_i$$

for various states i , where m is the Maori rate in a particular labour market state and nm is the corresponding non-Maori rate.

The second common measure of disparity between Maori and non-Maori labour market outcomes is the ratio of various labour market states:

$$R_i = m_i / nm_i$$

for various states i .

These two measures are clearly linked. A little algebraic manipulation gives:

$$PP_i = nm_i (R_i - 1)$$

The manipulation shows that it is possible for one measure to change whilst the other measure of disparity remains constant. The temptation exists for researchers to report only the particular measure of disparity which agrees with their prior views on where disparity is going over time.

The problem with the ratio measure as a partial indicator of labour market disparity is that it can be inherently ambiguous. To illustrate our point and without loss of generality suppose there are two labour market states X (a "good" outcome) and Y (a "bad" outcome) and two groups, A and B . In this case there are two measures of disparity, where A_x is the proportion of group A in labour market state X and so on. Suppose we have the following matrix of outcomes:

	Time 1	Time 2
A_x	90	85
A_y	10	15
B_x	80	74
B_y	20	26
R_1 ("good")	1.13	1.15
R_2 ("bad")	0.50	0.58

By the ratio of "good" outcomes, group A is becoming less like group B in time 2. However, by the ratio of "bad" outcomes A is becoming more like B . If we had strong priors and wanted to show disparity increasing, we could pick indicator R_1 . If we wanted to show disparity falling on the other hand, we might trumpet R_2 .

In a two state case the percentage gap works well, since one gap is the mirror image of the other. However, interpretive problems arise where there are three (or more) labour market states, X , Y , and Z . In the example below, interpretive problems arise since by good X state, disparity is rising, by bad Y state disparity is falling and by bad Z state disparity is rising. Again, it is possible to pick an indicator to tell a pre-determined story.

	Time 1	Time 2
A_x	70	70
A_y	20	12
A_z	10	18
B_x	65	60
B_y	15	10
B_z	20	30
$A_x - B_x$ ("good")	5	10
$A_y - B_y$ ("bad")	5	2
$A_z - B_z$ ("bad")	-10	-12

Another problem of the two simple measures, already implicitly alluded to, is that it is possible for the percentage point disparity measure of any labour market state to move in the opposite direction of the ratio measure. Again, this ambiguity makes it possible for those with strongly driven research priors to simply use the measurement that supports a pre-determined viewpoint.

A further criticism of the simple percentage point and ratio measures is that they fail to provide an overall index of

labour market disparity, since a separate measure of disparity needs to be calculated for every possible labour market state.

To provide such a general index of labour market states we must turn to marginally more complex measurement methods. A common method of measuring disparity in outcomes is the Duncan index, developed by Duncan and Duncan (1955) to consider residential segregation in the US housing market. In the case of labour market states the index is:

$$I_D = 0.5 \times \sum_i \frac{NM_i}{NM} / M_i / M$$

where NM_i is the numbers of the non-Maori working age population in labour market state i and M_i is the corresponding Maori number. The index takes on a value of 1 for complete labour market segregation and 0 for no differences between the two populations.

A second index has been suggested by Karmel and MacLachlan (1988) to consider occupational segregation of males and females. In the labour market case the index measures the proportion of people (as opposed to Maori or non-Maori) who must change their employment state to ensure that the distribution of Maori and non-Maori across labour market states is identical while keeping the total labour market structure constant, i.e.:

$$I_{KM} = 1 / WAP \times \sum_i (1 - M / WAP) M_i + (M / WAP) NM_i$$

Karmel and MacLachlan show that their index and the Duncan index are related as follows:

$$I_{KM} = 2 \times (1 - M / WAP) \times (M / WAP) \times I_D$$

Thus the two indexes will vary if the underlying Maori share of the population changes.⁴

Compared to the percentage point and ratio measures, the indexes have the advantage of summarising information from a variety of labour market states into one dimension that has a ready interpretive meaning. However, a major limitation of the Duncan and Karmel and MacLachlan indexes is that they simply measure disparity between the labour market states of the populations in question. If there are two or more "bad" states, the Duncan index could improve (or worsen) as the shares of the respective populations shuffle between bad states, with no change in proportions in "good" states.

Furthermore, the index tells us nothing about the ease with which one population may become more like another. To take a hypothetical example, suppose there are two states in which a Duncan index takes on an identical value but in the first case the difference is driven off different unemployment rates (as a share of the working age population) and in the second case it is driven off different not in the labour force rates (as a share of the working age population), with identical differences in employment rates. Suppose it is easier to become employed from the state of unemployment than from being not in the labour force. Thus in the first case the two populations are more similar than in the second case and the indexes miss taking into account this dimension.⁵

The indexes will take on different levels and possibly also show different time series patterns according to the number of labour market states which are incorporated into the index. In addition, we might wish to place a greater positive weight on some "good" outcomes and a greater negative weight on some "bad" outcomes. The disparity indexes do not allow this.

In terms of choosing between the two indexes, it can be argued that a priori the Karmel and MacLachlan index is superior since it keeps the overall balance of the labour market constant while constraining the probabilities of various labour market states between Maori and non-Maori to be constant.

Applying the percentage disparity and the disparity ratio to the Maori ethnic group

This section considers the percentage disparity and disparity ratio in three key labour market states - employment, unemployment and not in the labour force - as shares of the working age population (Figures 4-6). In considering disparity, we focus on the Maori ethnic group here relative to non-Maori, again for illustrative brevity.

For presentational purposes, the employment percentage disparity is measured as the non-Maori less the Maori rates and the disparity ratio as non-Maori over Maori rates. For unemployment and not in the labour force measures, calculations of the percentage disparity are Maori less non-Maori rates and calculations of the disparity ratio are Maori divided by non-Maori rates.

Since the employment rate is a linear combination of the conventional participation rate and the unemployment rate data (employment rate = (1 - unemployment rate) x participation rate outcomes. By looking at employment rates (see Figure 4), the measure of disparity allows for hidden unemployment, which otherwise shows up as non-participation.⁶ Both ratio and percentage measures of disparity show similarly rising disparity to 1992. Disparity declined thereafter. There is no indication as of mid-1998 of any reversal in the improving post-1992 trend. However both measures of disparity remain substantially wider than in 1985.⁷

Now consider the unemployment disparity.⁸ The disparity ratio of Maori to non-Maori unemployment seems to fluctuate randomly around a fairly stable average (see Figure 5). Over the period Maori unemployment is on average 2.8 times higher than that of non-Maori. There do not appear to be obvious systematic trends in this disparity measure. The other measure of the gap - the percentage disparity between Maori and non-Maori unemployment rates - behaves quite differently. Having risen markedly between 1985 and 1992 and fallen between 1992 and 1996 to levels of the late 1980s, percentage point unemployment disparity has increased somewhat in the last year and a half.

Finally consider labour force participation (see Figure 6). Behaviour of both series, like that of employment rates, is

Figure 4. Two measures of employment disparity

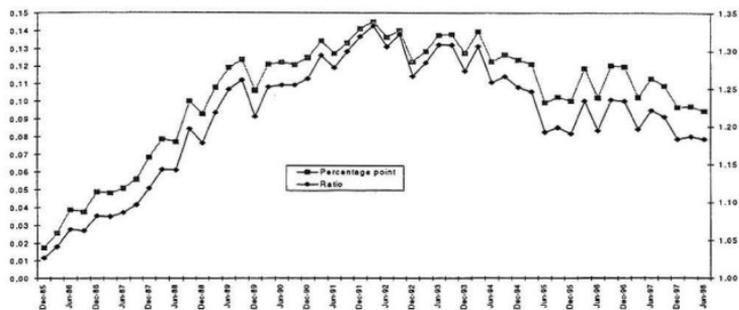


Figure 5. Two measures of unemployment disparity

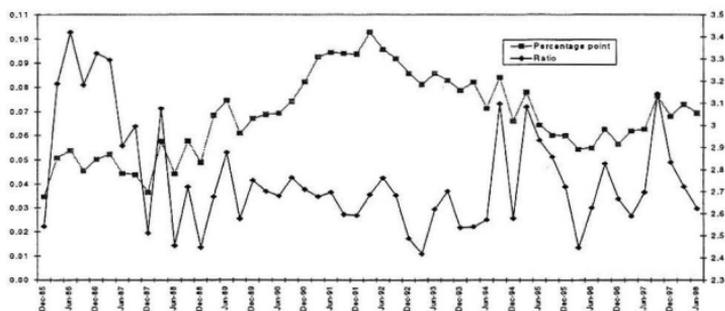
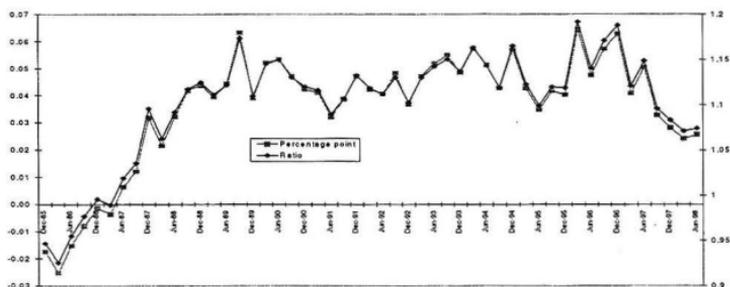


Figure 6. Two measures of disparity in not in the labour force



very similar. Disparity widened markedly between 1985 and 1988 as Maori participation plummeted. Disparity was remarkably stable between 1988 and 1996. There is some suggestion that from 1996 that disparity has recently improved. However, again by both measures relative Maori outcomes in 1998 are worse than in 1985.

The Duncan index applied to Maori labour market data

This section discusses the Duncan index which combines information from the three labour market states considered above - employment, unemployment and not in the labour force.^{9 10 11} In addition, we disaggregate and compare the sole and mixed Maori group separately with the non-Maori group and with each other.

In the three labour market state cases examined here the Duncan index can be shown by simulations to be equal to the labour market state where the proportional absolute difference is the largest, which tends to be the employment rate for most of the period. In the four case state it is equal to the sum of the largest and smallest absolute differences.

For the Maori ethnic group the Duncan index records increasing disparity from the mid-1980's, peaking in 1992 (see Figure 7). Disparity has been falling slowly since 1992 and shows no signs of increasing. By the Duncan index in 1992 14 per cent of Maori needed to be in another labour market state (employed, unemployed or not in the labour force) to be the same as non-Maori. Today (June 1998) it is 10 per cent. The situation today remains worse than in the mid-1980's when the Duncan disparity index was only 4 per cent.

We also use the same Duncan index to examine disparity in labour market status for the sole and mixed Maori ethnic group, separately comparing them to the non-Maori group. Interestingly Figure 8 shows that almost all the variation in disparity between non-Maori and the Maori ethnic group occurred because of a deterioration in relative performance of a sub-set of the Maori ethnic group - the sole Maori group. In the period 1985-1987 both sole and mixed Maori groups needed around 5 percent of their working age populations to be in a different employment state to be the same as non-Maori. This ballooned to around 16 percent for the sole Maori group in the early 1990's and has since

Figure 7. Duncan index for the Maori ethnic group compared to non-Maori

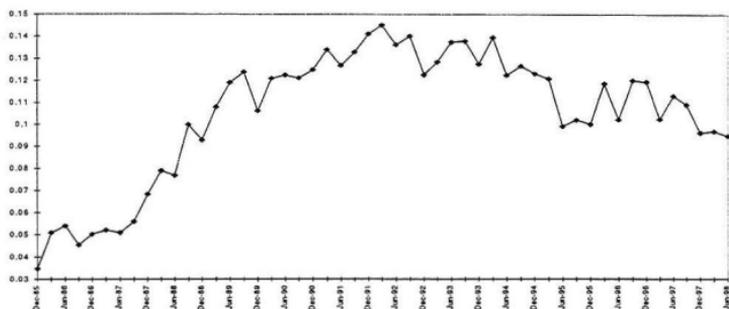


Figure 8. Duncan index for mixed and sole Maori separately

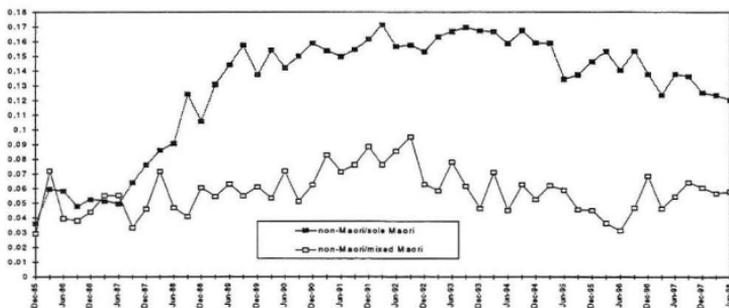
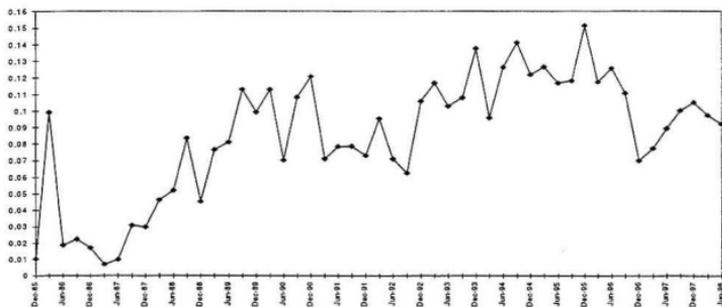


Figure 9. Duncan index for mixed versus sole Maori



fallen to under 13 percent. The disparity index for mixed Maori is much more stable, with some slight suggestion of an increase to around 8 percent in the early 1990's and current levels of disparity little different from their values in the mid-1980's.

Now we chart the Duncan index for disparity between the two Maori groups (Figure 9). The intra-group comparison reveals that intra-Maori labour market disparity has widened over time. Unlike disparity between the sole Maori group and non-Maori, there appears to be little or no recent trend back towards convergence. Comparing the Duncan index for sole Maori versus non-Maori with that for sole Maori versus mixed Maori reveals that the mixed group has greater similarity to the non-Maori group than to its sole Maori cousins in terms of its distribution of labour market states.

Conclusion

This research note casts light on a relative Maori labour market experience over time. There is no beguilingly simple story to be told about a recent deterioration in relative Maori labour market performance. Indeed while relative Maori labour market performance in 1998 - by all measures used here - was worse than in 1985, the deterioration occurred between 1985 and 1992. By all indicators considered here, relative Maori labour market performance improved between 1992 and 1996. As the aggregate labour market has recently weakened, only one indicator (and conceptually the least informative) - the percentage disparity in unemployment - indicates a deterioration in outcomes between 1996 and 1998. Other broader based indicators indicate continued improvement rather than further deterioration. A new piece of evidence that we have uncovered is that there are systematic differences in outcomes within the Maori population emerging over time. Virtually all the time series variation in disparity between Maori and non-Maori is accounted for by variations in the sole Maori subset of the Maori ethnic group.

If we had been writing this in 1995, we would have predicted that if the aggregate labour market were again to deteriorate, as it indeed has between 1995 and 1998, that disparity between Maori and non-Maori labour market outcomes would again rise. That Maori relative labour market performance continues to hold up or even continue to improve on most indicators considered here is a positive and unexpected event.

In terms of recommending one summary measure of relative labour market disparity out of those examined above, one of the two measures of differences in employment rates is probably best. These employment rate measures are superior to both the standard data on participation and the unemployment rates since they combine information from both these sources. The two measures get also over the problem of hidden Maori unemployment and the discouraged worker effect. While conceptually the Duncan index may be superior, it may be less easy to understand and it has little advantage in information content over either of the employment rate gaps.

Future research

The research note has shown that a naive focus on a simple binary ethnic distinction fails to acknowledge the substantial fluidity evident in ethnic identity when considering Maori and non-Maori population groups. Many of the Maori ethnic group patently do not see their ethnic identity as a simple rigid "either/or" decision. However, this is the way many social scientists construct both their data and their arguments. Fluidity has implications in terms of policy: targeting assistance on the basis of ethnicity runs the risk of substantial dead-weight losses due to endogenously induced attributional changes in ethnic identity and to the fact that a substantial Maori sub-population - mixed Maori - are much less disadvantaged than sole Maori. The challenge is to find suitable background identifiers which more accurately predict disadvantage and which are less amenable to endogenous alteration than Maori ethnic identity.

We have demonstrated here that substantial socio-economic differences exist amongst the Maori ethnic group according to whether individuals identify solely as Maori or both as Maori and part of another group. It is likely that at least some of this difference reflects the fact that the two groups are in different geographical labour markets.

Finally, despite the coincidence of the introduction of mainstreaming for delivery of government services to Maori with an improvement in relative Maori outcomes in the labour market (and after very strong deterioration in relative performance before the introduction of mainstreaming) we urge caution about drawing any causative connection between changes in policy philosophy and labour market outcomes. We believe our indicators offer little contribution to this debate. Too much else important has been going on to draw any reliable conclusions regarding causes of the post-1992 reduction in disparity.

Notes

- 1 We thank Hamish Wilson of Statistics New Zealand for his valuable discussion of the process through which ethnicity information is collected in the HLFS.
- 2 Take an extreme case. Suppose all the average (calendar year) mixed Maori working age population growth between 1986 and 1989 of 17,700 was due to attributional changes from the non-Maori population. If there had been no attributional changes the mixed Maori population would have been a constant 49,100 in 1989. In the absence of attributional changes we presume the mixed group would have had the same employment rate outcomes (0.46) as the sole Maori group on average in 1989. Under the same employment rate outcome as sole Maori, employment of the mixed group would have been 22,500. However actual employment of the mixed group on average in 1989 was 36,700. Given our assumptions, this means that attributional migrants raised employment by 14,200 (=36,700-22,500). This employment rise implies that the attributional migrants must have had a very high employment rate of 0.80 in 1989 (14,200/17,700) - much higher than the non-Maori population average of 0.60 in 1989. Now suppose that 75 percent of the growth of the mixed Maori population was due to attributional changes (13,300). Again we assume mixed Maori would have had the same employment rate outcomes (0.46) as the sole Maori group on average in 1989. Under the same outcome scenario, employment of the mixed group would have been 24,600 while actual employment of the mixed group was again 36,700. Under these assumptions, attributional migrants raised employment by 12,100 (=36,700-24,600). This implies that the attributional migrants must have had an even higher employment rate of 0.91 (12,100/13,300) in 1989.
- 3 All data used in this section have been extracted by our colleague Sylvia Dixon from the 1997.2 HLFS which includes the Income Supplement data. We thank Sylvia for her help.

- 4 We thank Jane Barnett of the NZIER for providing us with references on disparity indexes.
- 5 We thank Michael Fletcher for this point and the point raised in the previous paragraph.
- 6 Easton (1994) concludes there is substantial hidden unemployment amongst Maori, implying employment rates are a better indicator of labour market outcomes than unemployment rates.
- 7 In an interesting analysis, Michael Fletcher (personal communication) has used the ratio measure of non-employment rates to show rising disparity between the Maori ethnic group and non-Maori up until the early 1990s and relative stability in the disparity ratio until very recently when there is some indication of a downward movement. His working age population data is somewhat different to ours, defining the working age population as those between 15 and 64. Using his data but calculating the employment rate ratio gives a very similar picture to that presented above - an improving post-1992 trend. At the same time a non-employment rate ratio calculated using our definition of the working age population also shows a declining post-1992 trend. Finally the percentage disparity using his definition of non-employment rates is declining post-1992. The reason for these disparate results is that the employment rate and the non-employment rate ratios are not monotonically related so it is possible for one to change while the other remains constant. Our conclusion is that broader index-based measures of disparity rather than partial measures are likely to give a better all round picture of Maori disparity. A Duncan index using Fletcher's data also indicates an improving post-1992 trend. However, the level of disparity is higher overall than one observes using the 15 years and over definition of the working age population, due to the fact that the proportion of non-Maori not in the labour force drops sharply using a narrower definition of the working age population (many more non-Maori are retired). We chose to retain the broader definition of the working age population here, partly simply because it is the official definition underpinning the data we already have obtained, but more importantly because using the narrower definition does not provide a raw gap - it partly adjusts for only one cause of disparity - age differences between the two populations.
- 8 Maré (1995, p. 120) describes unemployment data as "one of the most widely used, but least informative, indicators of Maori labour market disadvantage."
- 9 We thank Dave Maré for his discussions on this issue.
- 10 It would be valuable future research to analyse whether these indexes are sensitive - both in terms of levels and broad trends - to inclusion of a finer detailing of labour market states. For example, employment could be divided into full and part-time and those not in the labour force could be split into jobless and others. In addition, disparity indexes by gender would be of considerable interest.

- 11 We also calculated the Karmel and MacLachlan index but the time series pattern was so similar to the Duncan index that we considered it conveyed no additional information.

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