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# Māori **and the [potential] Demographic Dividend**

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# Contents



## Abstract

This paper outlines a recently articulated concept in the demographic literature known as the 'demographic dividend', and connects it with key features of Māori and non- Māori demography. The dividend arises – or has the potential to arise - as each population passes through a particular point in its demographic transition. During these years, the maximum proportion of the population moves into the key working and income-earning age groups, and the minimum (comprised of youth and the elderly) is notionally dependent. With proactive and timely investment in the youthful base of the population, there is potential to convert the demographic dividend into two economic windfalls, the first arising as fertility decline causes youthful dependency to fall and the last large waves of young adults flood into the working age population, the second as the latter age and move on into the higher income earning age groups. However the window of opportunity to invest in the first dividend is fleeting, while failure to invest in that stage seriously compromises the second. This paper shows that for the Māori population, despite its relative youth, the first opportunity is already coming to an end and with it the potential gains of the second. But it also argues that there is a third window of opportunity which holds particular promise for Māori. This period will also be fleeting, but is arising in both absolute and relative terms as the relatively youthful Māori population co-exists alongside its structurally older counterpart, and together (with other New Zealanders) comprise an 'economic dividend system' that produces the potential for a 'collateral dividend'.

## Introduction

Differences in the timing and speed of demographic transition between New Zealand's Māori and European-origin populations have led to significant differences in age structure. In 2006 the median age of the Māori population was just 23 years; that is, 50 per cent of the Māori population was aged less than 23 years. By comparison the median age for the European/New Zealander/Other population (hereafter European) was 38 years. These disparities, which have been evident for many years (Pool 1991), have been argued to have many negative implications for Māori, for example disproportionately exposing young Māori to the risk of unemployment (Jackson 2002; Pool 2003).

However the same demographic disparities have potentially positive implications. For example, a far greater proportion of the Māori population is now located at the ages at which most educational qualifications are gained. Not only does this situation proffer well for Māori in absolute terms, but long-standing gaps in educational attainment between Māori and European have the potential to reduce simply because of the underlying differences in age structure (Jackson 2002, 2008.

Similarly, a much greater proportion of the Māori population is presently located at or approaching labour market entry age. At 15-24 years for example, Māori comprise 18 per cent of the population, compared with 14 per cent in total, and at 0-14 years, 21 per cent. As the total New Zealand labour supply dwindles due to projected population ageing, there is significant potential for Māori to enjoy increased employment and prosperity in both absolute and relative terms (Jackson 2011).

Converting this opportunity to reality, however, requires foresight, strategic planning, and investment: it will not happen of its own accord. Central to the argument is the increasingly acknowledged concept of the 'demographic dividend' (sometimes referred to as the demographic 'bonus' or 'gift') (Higgins and Williamson 1997; Bloom and Williamson 1998; Birdsall, Kelly and Sinding 2001; Mason 2003; Bloom, Canning and Sevilla 2003; Bloom and Canning 2003; Jackson and Felmingham 2004; Pool 2003, 2007a, 2007b; Ogawa, Chawla and Matsukura 2010).

In its present formulation the demographic dividend refers to two consecutive windows of opportunity which occur during demographic transition (the journey from high to low mortality and fertility rates). The first potential dividend arises as the proportion of the population in the younger working ages rises *vis-à-vis* the proportion that is notionally dependent (0-14 and 65+ years); the second as increasing proportions of older workers pass through the (potentially) higher income earning and saving age groups.

This paper will argue that a third interpretation, not previously spelled out in existing literature, may also exist for Māori, and thus for New Zealand. This is a **collateral demographic dividend** which has

the potential to emerge from opportunities arising where a structurally younger population (Māori) co-exists alongside a much older population (European). However, it acknowledged that the dividend concept has thus far been conceptualised and examined as occurring at national level only, because it is primarily concerned with national level labour forces and economies. Challenging this notion, the paper will argue that, if it is legitimate to see adjacent older and younger populations within (for example) Asia as collectively comprising an overall economic dividend *system* (Ogawa et al. 2010: 115), it is equally relevant to apply the concept to a relatively large sub population such as Māori, which is at a markedly different stage of its demographic transition to the national population of which it is part (Pool 1991, 2003, 2007a; see also Jackson 2008: 9 on Australia).

**Two other caveats** to the arguments exist. The first is that currently several approaches are being used to explore the tempo and quantum of the dividend and none is yet considered definitive; here I also use more than one approach. The second is that the classification 'Māori' has been subject to many changes over New Zealand's history and is presently based on a multiple ethnic origin count (Statistics New Zealand 2010). The classification means that a sizeable proportion of the current and projected Māori population is enumerated in both the Māori and non- Māori populations – and vice versa.[2] This does not greatly affect the relative age structures of each population, nor the arguments presented herein, but it does to some extent compromise its rigour (see Pool 1991: 11-25).

The structure of the paper is as follows. First the demographic dividend concept is outlined in a little more detail. Māori demographic trends are then considered in that context, and in the context of overall demographic trends unfolding across New Zealand. The argument for a collateral dividend is then outlined. The paper concludes by echoing comments made by most scholars investigating the dividend's opportunities. All are emphatic that just having the demographic dividend present does not ensure it will result in an economic divided. The economic gains of the first dividend can be realised only if employment opportunities expand as rapidly as the number of persons seeking new jobs (Ogawa et al 2010: 114) and there is *a priori* investment in human capital, particularly education and related institutions. Those of the second dividend are founded on a successfully managed first dividend, and similarly require a pro-active policy environment which facilitates productivity and saving – and not least, adequate incomes from which to save. The proposed third dividend (Jackson, herein) requires elements of both. In sum, as Pool (2003, 2007a, 2007b), Ogawa et al. (2010) and many others have argued, the demographic dividend period defines a number of possibilities, but their outcome is heavily dependent on non-demographic factors, most pertinently the creation of an appropriate policy environment via which to capitalise on the opportunities.

[2] Of the 565,329 people identifying with Māori ethnicity at the 2006 Census, 47 per cent (266,934) also identified with non-Māori ethnicities (Statistics New Zealand 2010: 19).

## The Demographic Dividend

The demographic dividend first appeared in the literature during the 1990s when economic demographers looking at developing countries began to use the term 'demographic bonus' (Ogawa et al. 2010: 97). Its appearance occurred as most such scholars came to realise that the correlation between economic growth and population growth in these countries was not as strong as that between economic growth and changes in the age structure; specifically, changes in the ratio of the working age population to those at younger and older ages, being driven by demographic transition (beginning with Chesnais 1990).

At first only one dividend was identified – essentially that now understood as the first. Initially it was understood to be present when the maximum proportion of the population was at the working ages (15-64 years) and the minimum proportion was thereby notionally dependent (Higgins and Williamson 1997; Bloom and Williamson 1998; Fink and Findlay 2007; Bloom, Canning and Sevilla 2003). It is now considered to comprise two distinct, consecutive phases – the first of which arises as the proportion of the total population in the working ages increases, thereby increasing the Potential Support Ratio (PSR – the ratio of people at working age to those notionally dependent); the second of which arises as the proportion in the working age population passes its peak, and the support ratio begins to decline.

During the first dividend years – which may last two or three decades - the working age / primary income-earning population grows at a faster rate than the total population. The growth is pronounced at the younger working ages which receive the increased waves of labour market entrants. The second dividend begins – or has the potential to begin - when prime working age adults, who now anticipate longer life expectancy, save more to provide for their retirement (Ogawa, et al. 2010: 103, 114). This stage is characterised by an increase in the share of individuals who are reaching the end of their income-generating years – and also the years when they have completed most of their childrearing responsibilities. During this phase, a greater proportion of the working age population moves through the (potentially) higher income earning and/or saving age groups. It occurs approximately from the point that the maximum proportion of the population in the working ages is reached, but significant proportions have not yet arrived at the oldest ages where they are notionally dependent – and/or begin to use their accumulated savings.

Of critical importance, the period of the first dividend is argued to be finite, because it is primarily demographically-driven, while that of the second dividend is potentially permanent, *if* the first dividend has been appropriately invested in and the policy environment appropriately facilitates increased productivity and the savings potential of older workers (Ogawa et al. 2010: 103):

> *… Unlike the first demographic dividend, the second demographic dividend is not transitory, and may lead to a permanent increase in capital deepening and income per effective customer. The second dividend, however, does not occur spontaneously but can [only] be bought about if consumers and policy makers are sufficiently forward-looking and respond effectively to forthcoming demographic changes – in particular by encouraging the old-age support system that substitutes capital for transfer wealth* [my insertion].

Indeed Ogawa et al. (2010: 115) caution that the magnitude (monetary value) of the second demographic dividend may be compromised in a pay-as-you-go form of welfare state, such as New Zealand's. They show that its magnitude differs markedly among the Asian countries they examine, because the choice of financing method [for income support in old age] affects the accumulation of capital available to be utilized.

The argument for a second demographic dividend must also be read alongside the development of a relatively new system of intergenerational accounting: the National Transfer Accounts System (NTA) which is now used widely across Asia and Latin America (see Lee and Mason 2011). The NTA is a system for measuring economic flows across age groups and generations and within families; flows which arise as those who consume more than they produce are supported by those who produce more than they consume[3]. This conceptually appealing model is, however, rendered analytically challenging, when cohorts of different sizes move through the age structure (Pool 2003, 2005; 2007a, 2007b). These 'disordered cohort flows' will play a significant role in the realisation of a collateral dividend for Māori – and for New Zealand, and are returned to below.

Finally it has been proposed that both developing and developed countries can mutually benefit from their bifurcated demography:

> '*people from … countries where the first demographic dividend has already disappeared can invest their assets accumulated in the form of the second demographic dividend in dynamically growing economies … that are enjoying the first demographic dividend and, by doing so, bring a sizeable amount of financial gain back to their home countries*' (Ogawa et al. 2010: 115).

It is the central proposition of this paper that precisely the same 'dividend system' argument can be made for New Zealand. Specifically, proactive investment in a sub population that remains relatively

[3] In addition to unravelling the first and second demographic dividends, it is proposed that the NTA system will provide important new information relevant to intergenerational equity and poverty, ageing policy, and childbearing incentives (Ogawa et al. 2010: 99).

youthful (Māori) by its co-existing sub population, which is significantly older and for which the first dividend has definitely ended (European-origin New Zealanders), will be mutually beneficial.

Indeed, as each successively larger cohort from the [European-origin] Baby Boom generation retires, it will be replaced by a successively smaller cohort at labour market entry age (outlined below). This situation will usher in a demographically-tight labour market, in which youthful cohorts will be in short supply and great demand – prominent among them Māori youth.

A further characteristic of the total New Zealand age structure that will ensure this tightness is the existence of a largely migration-driven 'bite' out of the age structure across ages 25-39 (Jackson 2011). Located between the two broad age groups at either end of the age structure, the three dynamics are together creating a vacuum in the labour market which can be expected to draw in younger and older workers alike.

Given this situation, the importance of recognising and proactively investing in the dividend years for Māori in order to convert them to economic windfalls cannot be over-emphasised. As Pool (2007a, 2007b) and others argue, the dividend years are more appropriately termed 'windows of opportunity'. The phenomenon was not at all well understood by the developed countries at the time they entered their first dividend phase, despite it delivering to them empirically verifiable economic benefits (Mason 2003). As a result many, such as New Zealand, 'squandered' their first dividend by not assisting their large 'baby boom echo' cohorts into the labour market – for example during the high structural unemployment of the early 1990s (Pool 2003, 2007a, 2007b). Ironically, it appears to be only with the emergence of the first dividend in the developing countries and its simultaneous loss in the developed countries that the phenomenon is being afforded the recognition it deserves (Jackson 2003).

## The Demographic Transition and Māori

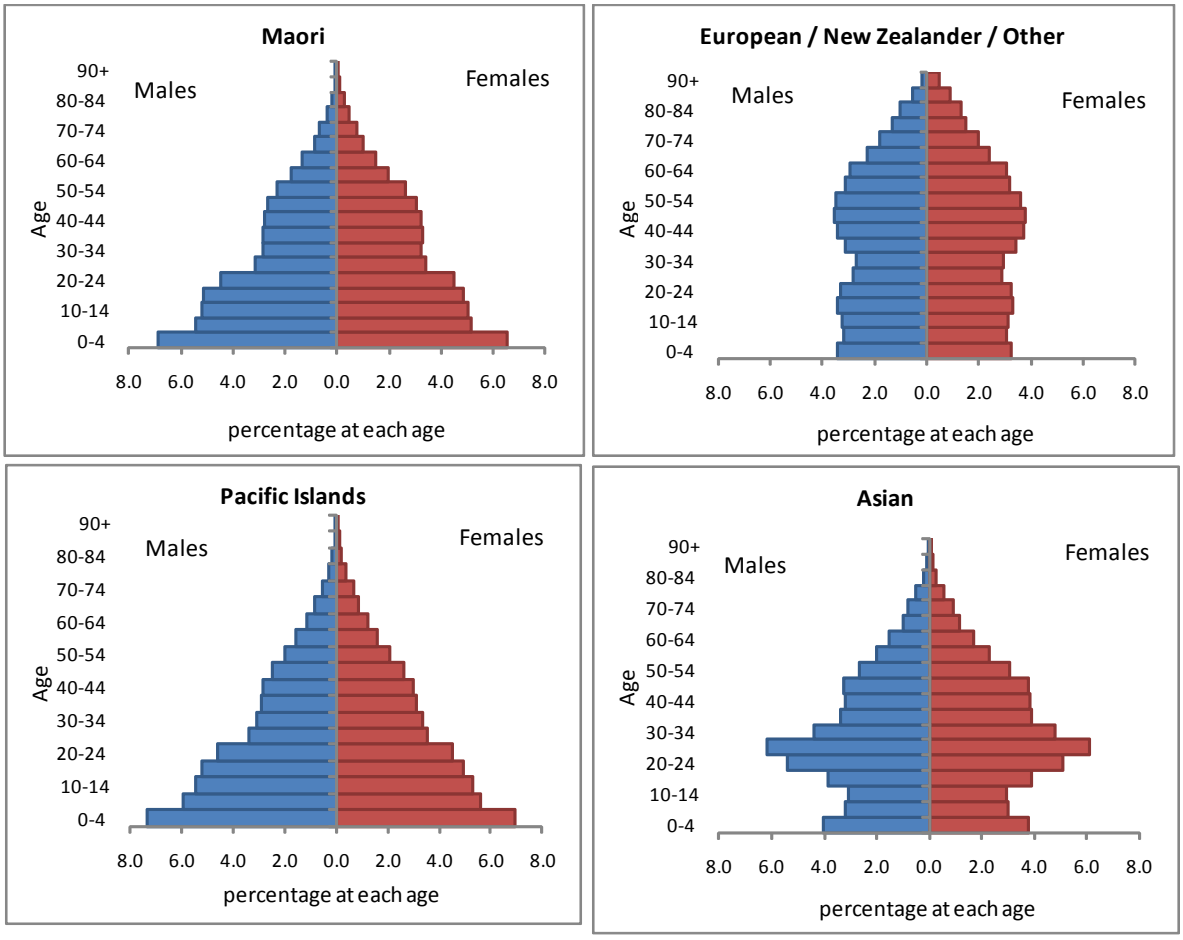
As noted above, differences in the timing and speed of demographic transition[4] between Māori and European have led to significant differences in age structure (see Appendix A for underlying trends in fertility and life expectancy). Projected data for 2011 illustrate these disparities (Figure 1), along with those for the Pacific Island and Asian populations. The relative youth of the Māori population means that the proportion in the key working age groups 15-64 years (61 per cent in 2011) is somewhat lower than for European (65 per cent), because a greater proportion of Māori has yet to reach that age. As Figure 1 also shows, the disparity continues throughout the working age groups because the bulk of working age Māori are also younger than their European counterparts.

[4] Alongside the historical factors that have caused these differences (Pool 1991; Pool, Dharmalingam, and Sceats 2007).

These disparities also convert into significantly different proportions of the total population accounted for by Māori at different ages, compared with their 14 per cent national share (Table 1). Māori account for approximately 21 per cent of all 0-14 year olds, and for 18 per cent of all 15-24 year olds. By comparison, they account for less than 5 per cent of the nation's elderly. Due to their relative youth, Māori also comprise a smaller proportion of the total working age population (13 per cent) than their total population share.

Of related importance is the relatively youthful age of the Pacific Island population, which, while only half the size of the present Māori population, closely resembles the latter in structure; and the predominantly 'young adult' structure of the Asian population, which is closer in size to the Māori population but like European has a relative deficit of children. As is suggested below, these differences are likely to generate a sizeable element of competition in the future labour market.

Figure 1: Age-sex structure by major ethnic group* (2011 on 2006 Base)




*Source: Statistics New Zealand (2006) Projected Ethnic Population of New Zealand, by Age and Sex, 2006 base - 2026 Update*

*Based on multiple count ethnicity (Series 6 – see Appendix B)

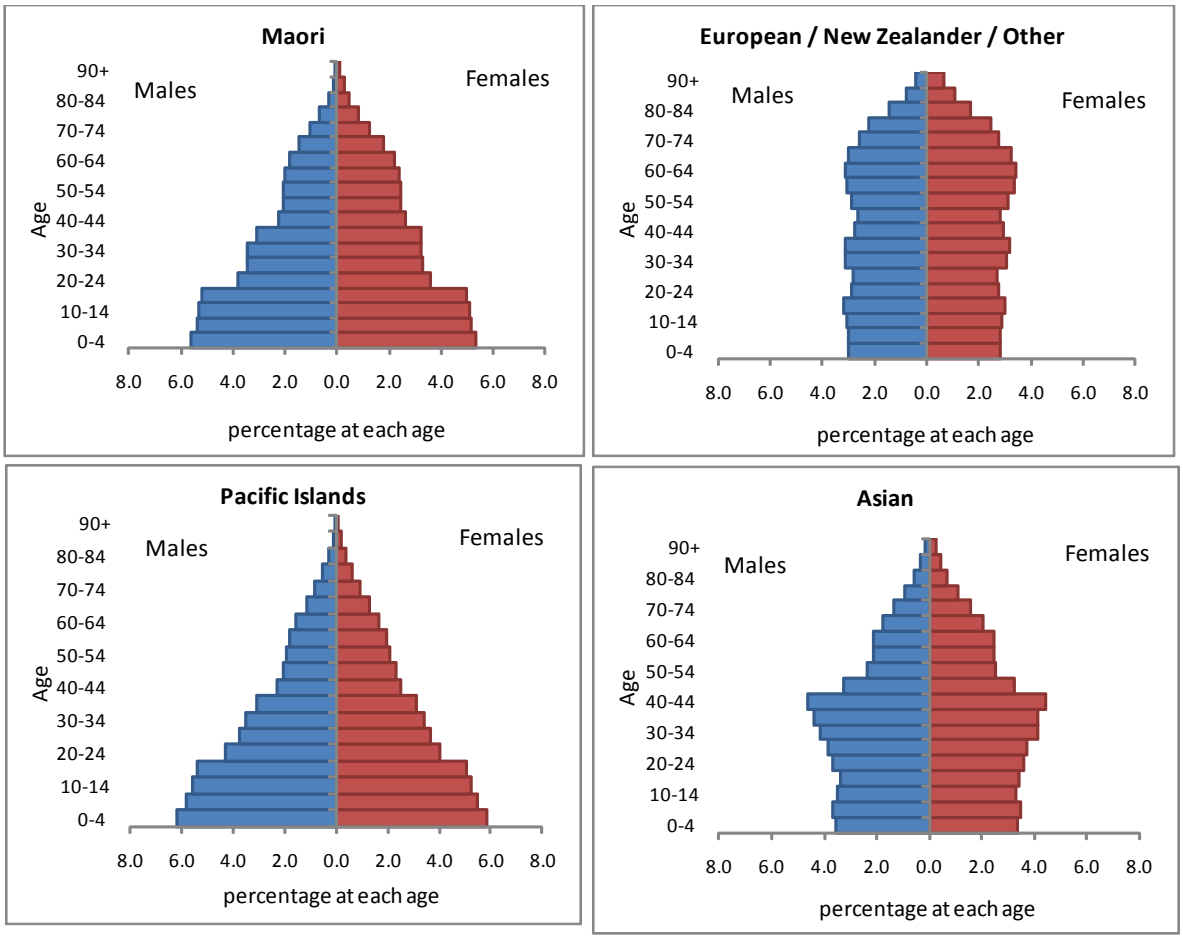
Table 1: Population share (%) by major ethnic group* and broad age group, projected 2011

| | Māori | European/ New Zealander | | Pacific Island | Asian | Total |
|---|---|---|---|---|---|---|
| **0-14 years** | 21 | 58 | | 11 | 9 | 100 |
| **15-24 years** | 18 | 61 | | 9 | 13 | 100 |
| **25-54 years** | 13 | 68 | | 6 | 13 | 100 |
| **55-64 years** | 9 | 80 | | 4 | 7 | 100 |
| **65+ years** | 5 | 87 | | 2 | 5 | 100 |
| **Total** | **14** | **69** | | **7** | **10** | **100** |
| **Working Age** | 13 | 69 | | 7 | 12 | 100 |

*Source: Statistics New Zealand (2006) Projected Ethnic Population of New Zealand, by Age and Sex, 2006 base - 2026 Update;*
**Based on multiple count ethnicity (Series 6 – see Appendix B)*

Figure 2 and Table 2 show projected changes by 2026. As for all populations, the Māori age structure will have 'aged', but not significantly, due to the assumption of the birth rate continuing at a relatively high level (2.5 births per woman, compared with 1.9 for European), combined with a large proportion of the population in the key reproductive age groups. Under the accompanying medium assumption of life expectancy at birth increasing to approximately 75.4 years for males and 79.2 years for females (from 70.8 and 75.6 years respectively in 2007), the proportion of Māori aged 65+ years will have almost doubled, to 8.5 per cent. Reflecting this increase at older ages, the proportion at the youngest ages (0-14 years) will have fallen from its present 34.2 per cent, to 31.9 per cent, and in the key working age groups, from 61.0 to 60.0 per cent – a proportion which will by then be identical for the Māori, European, and Pacific Island populations. However as Figure 2 clearly shows, the similarity is superficial only, with the bulk of Māori still to enter the working age population, while for European the largest proportion of workers will by then be close to retirement.

Figure 2: Age-sex structure by major ethnic group (2026 on 2006 Base)




*Source: Statistics New Zealand (2006) Projected Ethnic Population of New Zealand, by Age and Sex, 2006 base - 2026 Update*

**Based on multiple count ethnicity (Series 6 – see Appendix B)*

Table 2: Population share (%) by major ethnic group* and broad age group, projected 2026

| | **Māori** | **European/ New Zealander** | | **Pacific Island** | **Asian** | **Total** |
|---|---|---|---|---|---|---|
| **0-14 years** | 22 | 51 | | 14 | 14 | 100 |
| **15-24 years** | 19 | 54 | | 12 | 15 | 100 |
| **25-54 years** | 14 | 61 | | 8 | 18 | 100 |
| **55-64 years** | 11 | 72 | | 5 | 12 | 100 |
| **65+ years** | 7 | 81 | | 3 | 9 | 100 |
| **Total** | **15** | **62** | | **9** | **14** | **100** |
| **Working Age** | 14 | 61 | | 8 | 16 | 100 |

*Source: Statistics New Zealand (2006) Projected Ethnic Population of New Zealand, by Age and Sex, 2006 base - 2026 Update*
**Based on multiple count ethnicity (Series 6 – see Appendix B)*

By 2026 (under these projection assumptions) the median age for Māori is projected to be 25.4 years, compared with the current 23.0 years. The difference portends well for the opportunities indicated above, as the European population ages and the Māori population retains its relative youth. However before developing this point further it should be noted that concomitant changes (projected) for the New Zealand Asian population will, as indicated above, present an element of competition. At the 2006 Census those of Asian origin aged 20-24 years already outnumbered young Māori of the same age (53,700 compared with 50,100). By 2026 – under the medium projection assumptions - the Māori population will account for 15 per cent of the total population and 14 per cent of the working age population, while the Asian population will account for 14 per cent of the total and 16 per cent of the working age population. At all ages 25 years and above, people of Asian origin are projected to outnumber Māori of the same age, significantly so at 40-44 and 85+ years. The proportion of the population that is of Pacific Island origin will have changed very little – increasing from 7 to 9 per cent of the total, and from 7 to 8 per cent of the working age population.

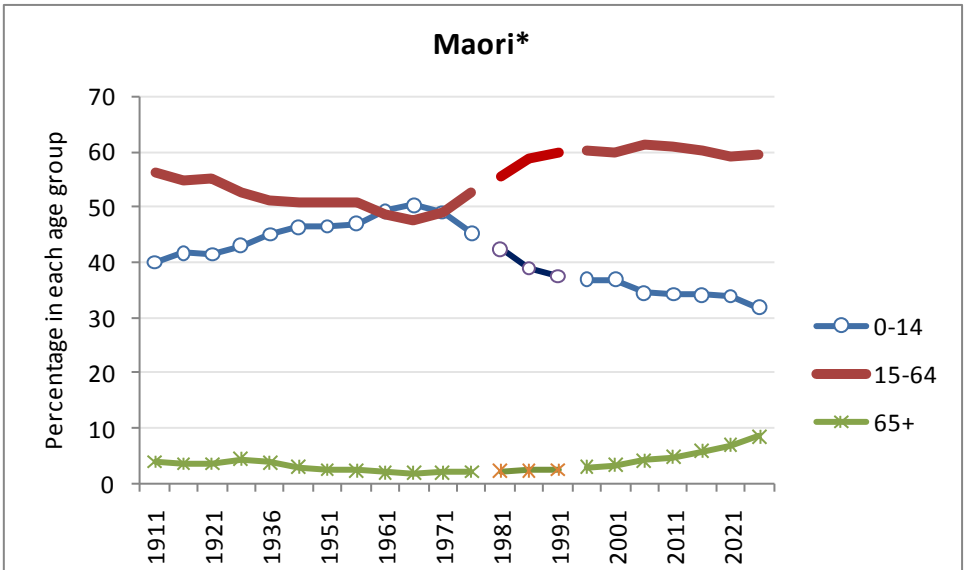
The following section focuses on how the trends for Māori relate to the demographic dividend *per se*.

## The Demographic Dividend and Māori

Figure 3 shows changes for the three broad age groups on which the demographic dividend argument is premised (0-14, 15-64, and 65+ years). It should be noted that changes in the classification of Māori over the period depicted (1911-2026) introduce an unknown but unavoidable element of error. Broken trends lines are shown for the period 1981-1991 during which a number of classificatory changes were introduced. What is important is that the trends follow an extremely similar trajectory; thus any error will be in terms of quantum rather than direction.

The data in Figure 3 show the proportion of the population in each of these age groups. Most spectacularly, the proportions aged 0-14 and 15-64 years diverge from the early 1960s, when Māori fertility rates began to fall and did so dramatically, as Māori experienced one of the fastest fertility declines ever recorded (Pool 1991: 166-175). By the turn of the (21$^{st}$) Century the 0-14 year old population had declined from 49 per cent of the total, to 37 per cent, while the working age population had increased from 49 to 60 per cent. As is typical at that stage of demographic transition, the divergence did not yet involve any notable increase in the proportion of the population aged 65+ years, while such movement clearly began soon after. In 2006, the proportion aged 15-64 years shows as peaking at around 61 per cent, followed by modest (projected) decline. The data indicate that this drop off in the working age population will remain modest throughout the projection period, due to the proportion aged 0-14 years remaining above 30 per cent.

Figure 3: Changes by broad age group, 1911-2006 and projected 2006-2026, Māori*




*Source: Statistics New Zealand (various years) Census Populations*, Projected Ethnic Populations (2006 base) Series 6*

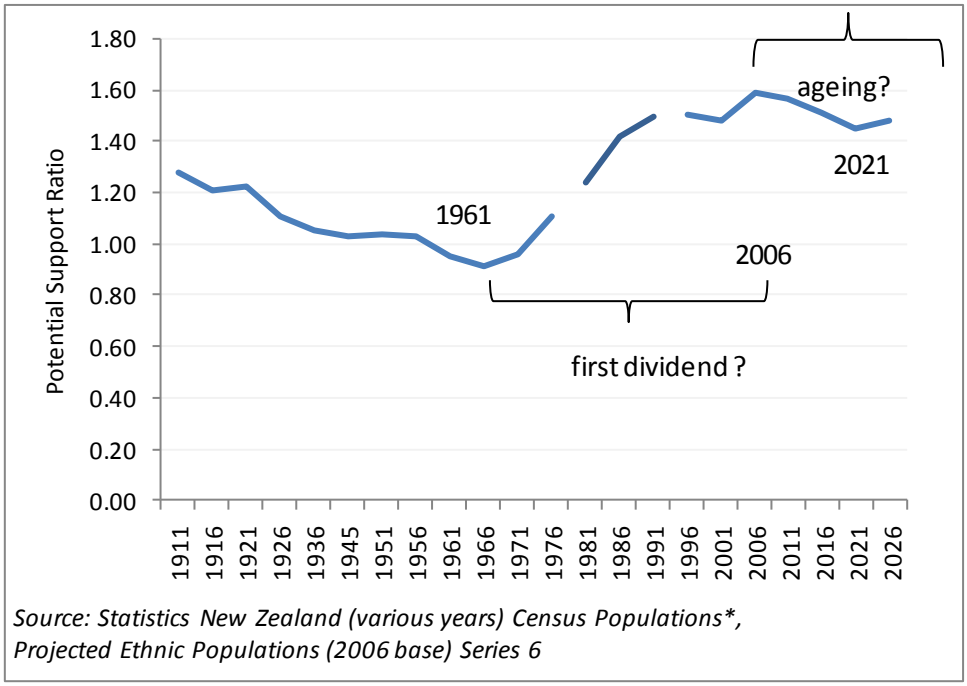
*Notes: * Māori classification has been subject to many changes over time. These compromise the rigor of longitudinal analysis (see Pool 1991: 11-25). In Figure 3, data until 1986 are based on various measures of 'blood fraction'. Significant changes were introduced between 1976 and 1986, following which the present multiple count classification was introduced.*

In order to relate these changes more directly to the way in which the demographic dividend is measured from an economic perspective, we turn to the Potential Support Ratio (PRSR), an index which expresses the population at the working ages as a ratio to the population which is notionally dependent (0-14 and 65+ years). That is, it converts the three trend lines in Figure 3 to a single index:

PSR = Population aged 15-64 years / (Population 0-14 years + Population 65+ years).

Figure 4 shows the PSR for the observed period 1991-2006 and projected to 2026. Following the argument of Ogawa et al. (2007) the initial decline in the PSR ending in 1961 can be interpreted as reflecting the substantially increasing proportions at 0-14 years shown across the same period in Figure 3. Those increases were driven by both rapidly improving childhood mortality and sustained high pre-transition birth rates (Pool 1991: 112-121, 140-152; Pool and Cheung 2003), while the improvements in life expectancy were many years off showing up at older ages. By mid-Century, the significantly increased proportions at the younger ages reduced the proportions at *both* working age and older age.

Figure 4: Potential Support Ratio, 1911-2006 and projected 2006-2026, Māori*




*Source: Statistics New Zealand (various years) Census Populations*, Projected Ethnic Populations (2006 base) Series 6*

The subsequent rise in the PSR from 1961 through to 2006 correlates with the declining proportion at younger ages as fertility rates fell and increasing proportions moved into the working age groups, while life expectancy-related increases at older ages (65+ years) were still having a limited impact. This illustrates the classic (one dividend) version of the demographic dividend, which is held to begin as the working age population begins to increase, *vis-à-vis* those 'notionally dependent'.

Before considering the subsequent decline in the PSR beginning in 2006 it is worth reflecting for a moment on the almost identical PSRs occurring around 1911 and 1981. The *direction* of the trends aside, the data indicate that at both observations there were between 1.2 and 1.3 people of working age per person notionally dependent. Indeed for the entire period 1911 to 1956 there were more people at working age than totally dependent, so why might those years not have translated into a dividend for Māori? The answer is well recorded: an impoverished population at the time living at subsistence level, largely outside the mainstream economy (e.g., Pool 1991). Clearly the fact that today's middle-aged and older Māori are relatively disadvantaged (Pool 2003: 35) shows a continued failure on the part of successive governments to invest in that opportunity while it existed, while at the same time the European-origin population was benefitting greatly from its own dividend years.

As we see from Figure 4, the PSR for Māori begins to fall from 2006, driven now by the increasing proportions at older ages shown previously in Figure 3. The situation is projected to continue until 2021, when the PSR again indicates a small increase, this time seemingly because of accelerated decline at 0-14 years, or posed alternatively, a corresponding inflow into the working age population.

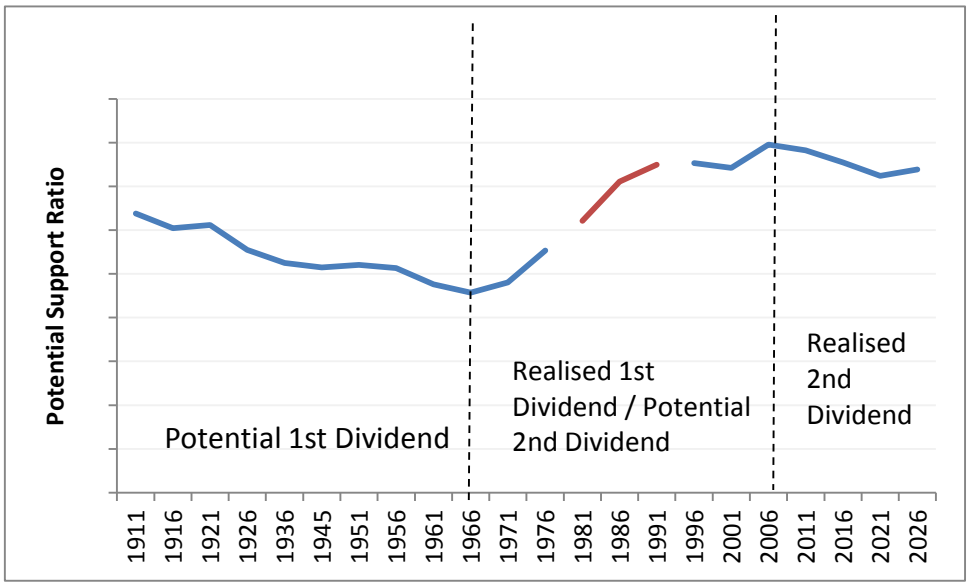
It could be argued that the anticipated increase in the PSR between 2021 and 2026 might represent a second bite at the 'first' dividend. However as will be outlined below, the underlying data indicate otherwise, suggesting that that Māori age dependency will quickly inhabit the space left by its youth, and the increase in the PSR will be short-lived, a proposition supported by continuing improvements in life expectancy (Appendices A4-A5).

From this perspective then, the 'classic' first demographic dividend for Māori began around 1961, when the proportion at younger ages began to fall and the working age population (and PSR) began to increase, and ended around 2006, when the PSR began to decline as age dependency began to increase. Such a brief window of opportunity would correlate with the rapidity with which the Māori fertility rate declined during the 1970s (Pool 1991 and Appendix A1): the more rapid the decline, the more rapid the pace of structural ageing, and the more rapid the loss of the first dividend years.

However, Figures 1-3 also show very clearly that the Māori population will remain extremely youthful for the foreseeable future, and that very large cohorts will continue to enter the working ages for many years yet, thus the indices illustrated here do not tell the whole story. Indeed, Pool (2007b, 2007c) proposes that a more relevant indicator for the first dividend period is the period that the proportion aged less than 15 years remains above 30 per cent, since it is timely investment in that *youthful* population that has the potential to bring about the dividend. By contrast, the dividend is *realised* during what is presently observed as the dividend period. As Figure 3 above shows, the proportion of Māori aged less than 15 years may have fallen significantly from its 1961 peak of almost 50 per cent, but is still above one-third (34.2 per cent in 2011), and will remain above 30 per cent for the foreseeable future (31.8 per cent in 2026).

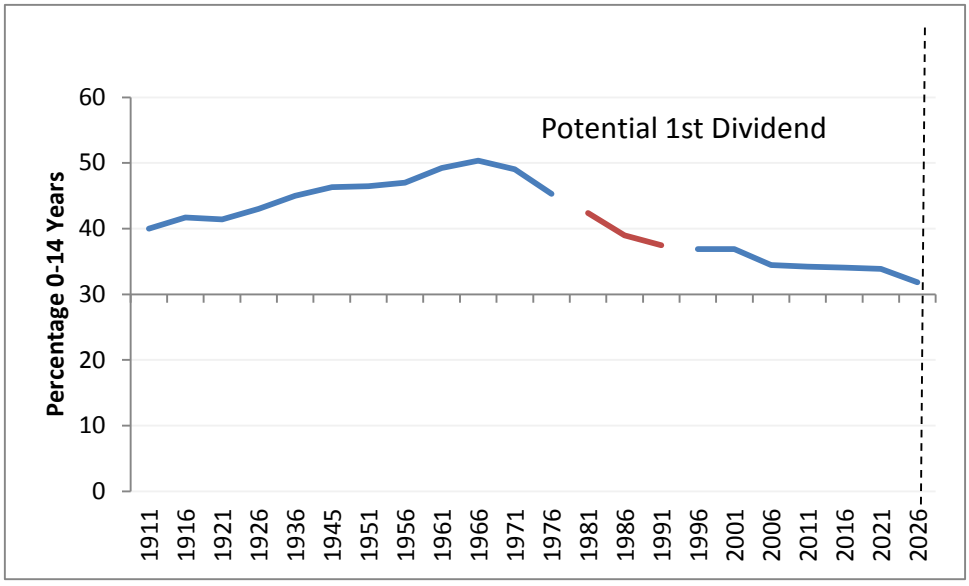
With these methodological limitations and conundrums in mind, Figure 5 uses the above data for Māori to again depict the classic demographic dividend model, but in a way that emphasises the all-important need to ensure timely investment in the youthful bulge before it reaches labour market entry age. It posits a 'first dividend *potential*' stage, followed by a stage in which the dividend is realised (assuming successful management of the first stage) - and during which the potential second dividend also emerges. Finally (with the same caveat as the second stage) it depicts a third stage during which the second dividend may be realised (Demographers will note the similarity to Notestein's three-stage model of Demographic Transition). What makes this index useful is that the declining PSR across the first stage, as the proportion aged 0-14 declines, can also be interpreted as 'time running out' for investment in those youth. However, from that perspective, it could also be thought that it is already 'too late' to invest in young Māori in order to capitalise on the dividend.

Figure 5: PSR-Based Schematic Model of Potential and Realised Demographic Dividend



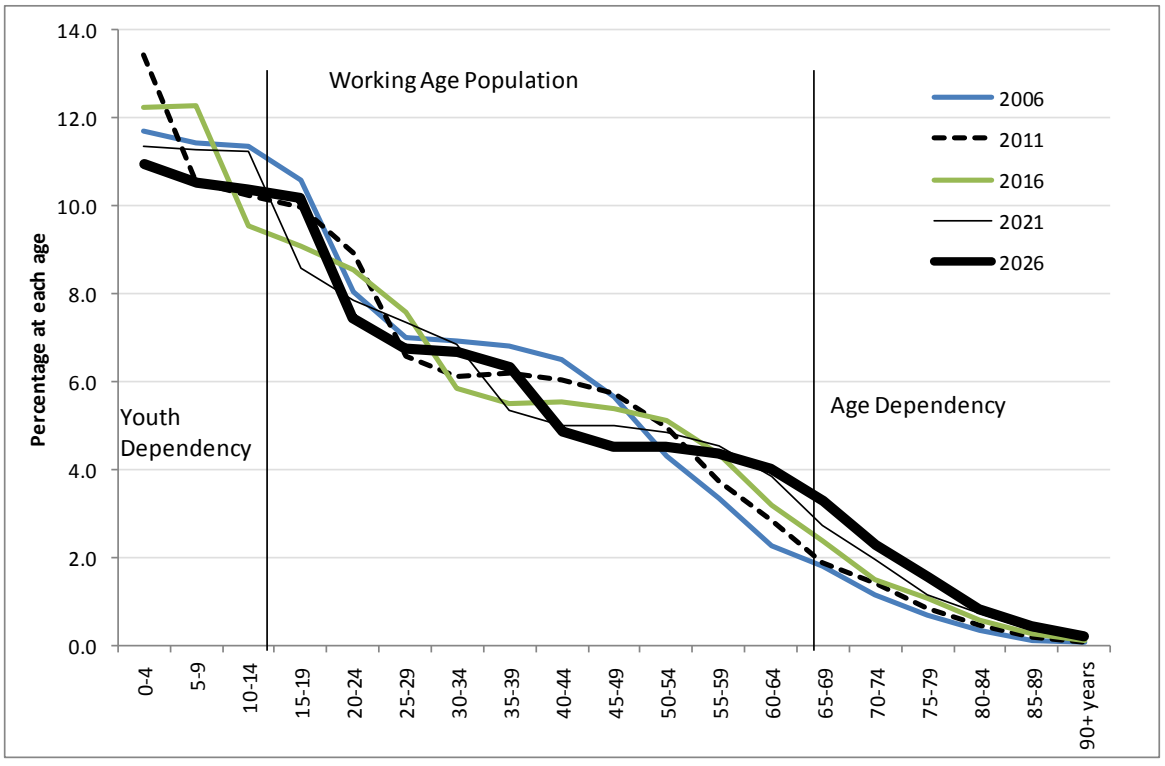

By comparison, Figure 6 shows what the model would look like if the 'potential first dividend' stage was understood to span the period during which the proportion aged 0-14 years remained above 30 per cent. Under these conditions, the peak has also passed, but the potential clearly remains viable, although its declining trajectory should evoke the same sense of urgency: the remaining period in which to invest, so that the first dividend – and ultimately the second - can be realised, is rapidly running out, ending in a little over a decade. As Pool and others have long argued, this is a one-off, finite opportunity. To squander it now that we understand the phenomenon would be untenable.

Figure 6: Youth-Based Schematic Model of Potential Demographic Dividend



It can also be argued that a youth-based index is more appropriate for anticipating the dividend period than changes in the proportion at working age, because of other equally dramatic changes which occur as the demographic transition draws towards its end, namely the development of age structural transitions (ASTs) (Pool 2003, 2005, 2007a, 2007b; Tuljapurkar, Pool and Prachuabmoh 2005). As these 'disordered cohort waves' flow through the age structure (see Figure 7) they will cause the working age population to wax and wane in size, as, for example, a large wave enters and a small one leaves, and vice versa. Such a wave is present in Figure 4 above and explains why the proportion of Māori at working age (and thus the PSR) is projected to shift from decline to increase between 2021 and 2026: the period marks the arrival at labour market entry age of the large cohort born since 2003 (shown in Figure 1). But as Figure 7 indicates, the related increase in the PSR is likely to be short-term, because of the distended wave which will by then be at 50-64 years and about to move into the 'age dependency' population.

Figure 7: Disordered Cohort Waves, Māori Population (Percentage at Each Age 2006-2026).




*Source: Statistics New Zealand (2006) Projected Ethnic Population of New Zealand, by Age and Sex, 2006 base - 2026 Update*

These disordered waves become especially important when the focus shifts to the potential second demographic dividend, when cohorts of different size pass through each income-earning age group. They make it clear that anticipating the quantum and tempo of the second dividend can no longer be based on the relative size of the working age population *per se*, but must instead take into account these changes in cohort size.

For Māori to be in a position to reap the second dividend, however, depends on the extent to which the remaining first dividend *potential* is invested in, here illustrated as the period during which the proportion of Māori aged less than 15 years remains above 30 per cent. For this reason, further discussion of the second dividend and its potential is left to a future paper. In the interim, the third or potential 'collateral' dividend alluded to earlier holds equally – if not more - certain opportunities.

## Māori, the New Zealand Labour Market and the 'Collateral' Demographic Dividend

The 'third' potential dividend awaiting the Māori population – and thereby all New Zealand - arises from the coincidence of living alongside the larger predominantly European population which is substantially further advanced in the structural ageing process. To illustrate this argument I briefly outline some unique features of New Zealand's current experience of population ageing, and then return to the coincidence of the two differently unfolding transitions for Māori and European.

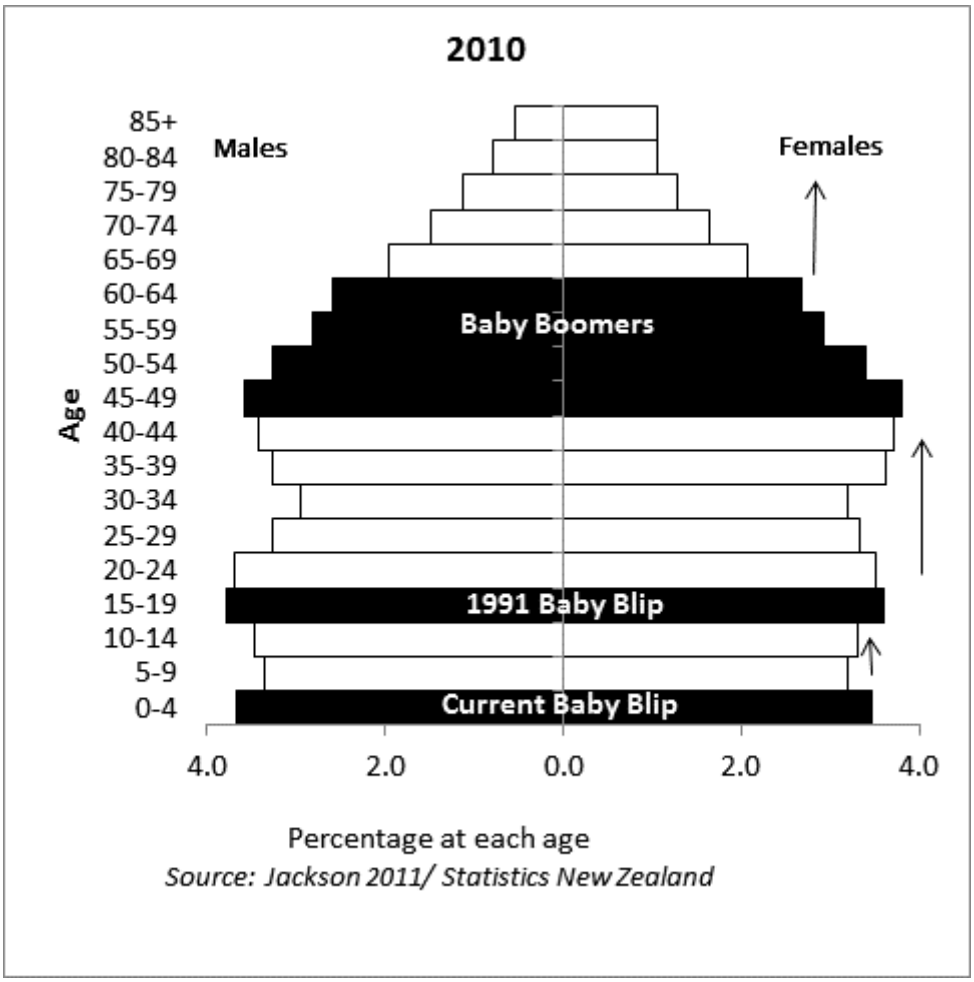
New Zealand's structural ageing is not [only] of the conventional kind (Jackson 2011). Rather, it is being accelerated through a largely migration-driven bite in the age structure at young adult ages which is causing the median age to increase at a faster rate than would otherwise be expected given New Zealand's relatively high birth rate. This bite – which in many sub-national areas is resulting in a pronounced hour-glass structure - ushers in a very profound problem for the labour market. As the nation's Baby Boomers start entering the retirement zone *en masse* this year: who will replace them?

Figure 8 illustrates the scenario that is unfolding. As the first significantly distended baby boom cohorts born during the early 1940s[5] retire they will be more than replaced by the cohorts currently aged 20-29 years and the even larger 15-19 year old 'blip' that was born around 1991 (1989-1993). However, unless net international migration is very strong, the deep bite *above* the baby blip will also move upwards in the age structure, creating a vacuum that will reinforce an increasingly demographically tight labour market. Thereafter, as each successively larger wave of boomers retires, it will be 'replaced' by a successively smaller cohort. There will be little excess labour supply until the large recently born baby blip[6] arrives at labour market entry age in the mid- to late- 2020s, and even that (excess) will be debateable as its arrival will coincide with the retirement of the largest boomer cohorts.

[5] It should be noted that New Zealand's Baby Boom began earlier (late 1930s), peaked higher and lasted longer than its counterparts in the United States and Europe (Pool 2007d). Here I am referring to the increasingly large cohorts born from the early 1940s.

[6] I have elsewhere termed this generation 'Gen TGYH' ('Thank God You're Here') – see Jackson 2011.

Figure 8: Age-Sex Structure, New Zealand, 2010




If realised, the assumption of a net international migration gain of 10,000 per year in Statistics New Zealand's medium case projections will to some extend offset these dynamics at the national level, the numbers of 'entrants' to 'exits' not expected to reach one for one until the mid-2020s. But it may scarcely be noticed in the non-urban areas, where 42 per cent of New Zealand's 67 Territorial Authorities (TA's) already have fewer people at labour market entry than exit age because of even deeper bites in their age structures (Jackson 2011).[7]

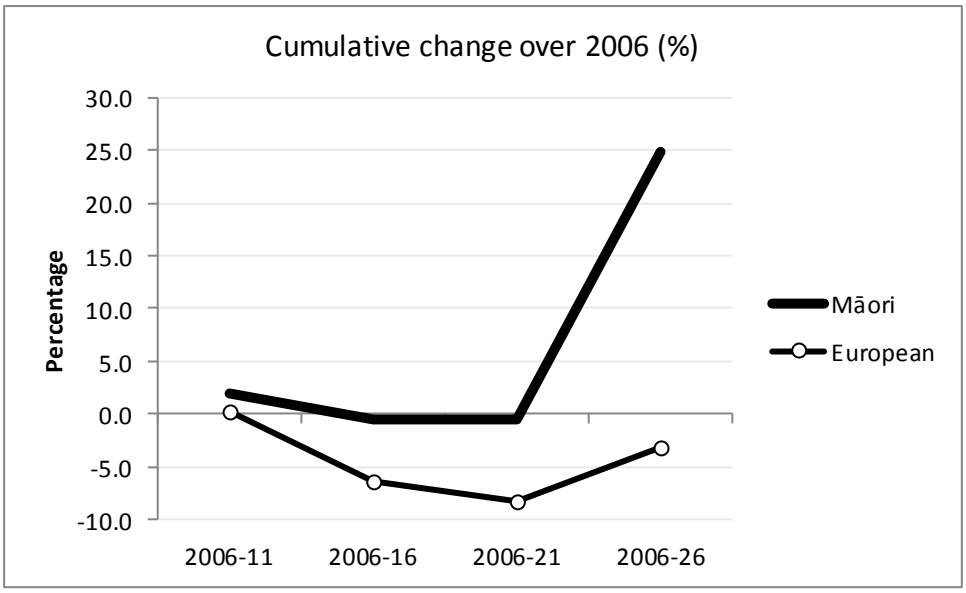
In the interim, the forthcoming youth deficit - as smaller cohorts replace the currently larger 15-19 year old cohort – has profound implications. If just a small proportion of the current 15-19 year cohort leaves New Zealand and fails to return, New Zealand employers will be faced with a labour shortage of crisis proportions. This is not an issue facing employers in 20 years time when new technology may require fewer workers, but rather, a situation that has already begun, is significant outside of the main centres, and will become painfully evident within the next five years. The

[7] Until 2010 there were 73 Territorial Authorities – the number being reduced with the recent amalgamation of Auckland and six TA's surrounding the city into one.

smaller cohorts following the large 1991 Baby Blip – the labour market entrants of 2016-2026 - can only be enlarged by strong positive family-stream migration. It is 15 years before the next large cohort (that recently born) arrives at labour market entry age.

As proposed above, for Māori this situation contains many potential opportunities, *vis-à-vis* European. For the period 2006-2011 the 15-19 year old Māori population will grow by 2.0 per cent; its European counterpart by just 0.2 per cent. Between 2011 and 2016, both groups will decline in size, but more so for European (-6.5 per cent) than Māori (-2.4 per cent). Growth will then resume the legacy of recent increases in fertility, with that for Māori between 2021 and 2026 substantially greater than for European. By 2026 the absolute size of the 15-19 year old Māori population will be around 25.0 per cent greater than in 2006; for European it will be 3.2 per cent smaller. Significant differences in absolute size will of course remain, but the 15-19 year old Māori population will by then be around 38 per cent the size of the European cohort, compared with 29 per cent in 2006.

Figure 9: Projected change in 15-19 year age group, 2006-2026, Māori and European*




*Source: Statistics New Zealand (2006) Projected Ethnic Population of New Zealand, by Age and Sex, 2006 base - 2026 Update;*
**Based on multiple count ethnicity (Series 6 – see Appendix B)*

Thus while New Zealand's young will be in ever shorter supply and ever-greater demand over the next few decades, young Māori will comprise an increasingly larger proportion of them. The relative youth deficit will almost certainly result in an increase in competition for young workers – between industries (including between the labour market and the educational institutions), and between

regions and countries – including across the Tasman where more than half of Australia's local government areas (LGA's) already have similar hour glass age structures to that for Total New Zealand and fewer labour market entrants than exits (Jackson 2009).

Indeed it should be remembered that, on a daily basis, labour supply is needed locally, not nationally. As elsewhere, New Zealand's population ageing is unfolding most unevenly across the country (Pool, Baxendine and Cochrane 2004; Pool, Baxendine, Cochrane and Lindop 2005a-f; Jackson 2011). Driving the 42 per cent of TA's with fewer labour market entrants than exits in 2011 noted earlier are deeply etched hour-glass shaped age structures, which in most cases reflect the significant net migration loss of young adults. In all cases, the differences are not random occurrences, but rather reflect a sequentially unfolding shift to the end of excess labour supply – and population growth *per se* (Jackson 2011). In 1996 for example, only five per cent of New Zealand's TA's had fewer people at labour market entry than exit age. By 2001 that had increased to 21 per cent, by 2006 to 25 per cent, and by 2010, to the 42 per cent noted above. Between 2006 and 2010 the trends resulted in 15 (22 per cent) of the country's TA's either declining in size or no longer growing (see also Poot 2005).

The end to excess labour supply in the non-urban regions is thus spreading inexorably and a growing literature indicates that it is unlikely to reverse. This is a major opportunity for Māori who have strong cultural and economic attachment to many of the regions where labour supply is short. Clearly a nation's regions comprise its labour market system, albeit one located within a global system. This paper argues that its sub-populations also comprise a labour market system, and, in New Zealand's case, come replete with collateral opportunities for economic growth.

## Summary and Discussion

This paper has outlined significant demographic differences between New Zealand's Māori and European-origin populations, and linked them to the recently articulated concept of the demographic dividend. The dividend arises – or has the potential to arise - as each population passes through a particular point in its demographic transition. During these years, the maximum proportion of the population moves into the key working and income-earning age groups, and the minimum (comprised of youth and the elderly) is notionally dependent. With proactive and timely investment in the youthful base of the population, there is potential to convert the demographic dividend into two successive economic windfalls, the first arising as fertility decline causes youthful dependency to fall and the last large waves of young adults flood into the working age population, the second as the latter age and move on into the higher income earning age groups. However the window of opportunity to invest in the first dividend is shown to be fleeting, while failure to invest in that stage seriously compromises the second.

Reflecting these theoretical propositions, this paper has shown that the first window of opportunity for Māori is all but over, and with it at least some of the potential gains of the second. It has confirmed this situation from the perspective of two different indices: the classic Potential Support Ratio (PSR - the ratio of people of working age to those notionally dependent), and the period of time that the proportion of the population aged 0-14 years remains above 30 per cent. Importantly, the latter index extends the period of opportunity for maximum return on investment (as in two potential economic windfalls) until approximately 2021. Age structural transitions accompanying the trends further reinforce the value of the youth-based index, with disordered cohort waves in some years causing the PSR to expand, and in others to contract, making it difficult to be certain when the classic first dividend period begins and ends.

But the paper also argues that there is a third window of opportunity which holds particular promise for Māori. Like that for the first dividend potential, the period will also be fleeting, but it is arising in both absolute and relative terms as the relatively youthful Māori population co-exists alongside its structurally older counterpart. Together the demographic disparities can be seen as comprising an 'economic dividend system' which contains the potential for a 'collateral dividend' for Māori.

The collateral dividend will arise as the total population ages. Young New Zealanders, disproportionately Māori, will be in ever-shorter supply and ever-greater demand, as each successively larger cohort of baby boomers retires and is replaced by a successively smaller cohort of labour market entrants. A deep, largely migration-driven 'bite' in the present New Zealand age structure across the young adult age groups will compound increasing competition for labour market participants (both nationally and globally) and will arguably result in higher wages – and also higher labour and consumption costs that will need to be factored in. This situation is argued to be already pronounced in the non-urban areas where Māori have a high level of social, cultural and economic interest, and will provide Māori with many opportunities: already 42 per cent of New Zealand Territorial Authorities have fewer people at labour market entry than exit age.

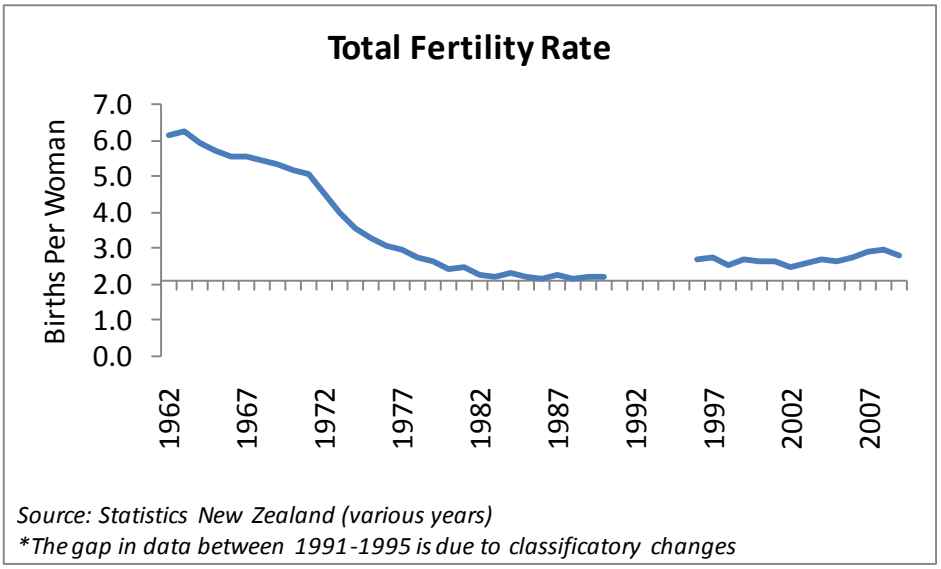
Overarching the arguments presented in this paper is one single imperative: to recognise the opportunities offered by the dividend years and to capitalise on them in a timely and proactive manner, by investing strategically in the education and training of young Māori, and in the related infrastructure. The third potential dividend – the collateral dividend - has similar characteristics to the first window of opportunity, and if successfully managed, could yet see a second economic dividend realised.

# Appendix A
## Fertility Transition:

Sitting behind the demographic disparities discussed in this paper are significant differences in the timing and magnitude of fertility transition by ethnicity (Pool 1991). In 2009 the Total Fertility Rate (TFR) for Māori was 2.8. Figure A1 indicates that this was a little higher than experienced across the past decade, particularly when compared with a trough in 2002 (TFR 2.5), but also a little lower than in 2008 when the TFR rose briefly to 2.95. However, all recent rates are substantially lower than in the 1960s when the Māori fertility transition began.[8] Between 1973 and 1978 the TFR for Māori fell from 5.0 to 2.8, making it one of the world's most rapid reproductive revolutions' (Pool 1991: 170).

The recently increased birth rates per woman, coupled with an absolute increase in the size of the reproductive age population, have resulted in a sizeable increase in Māori birth numbers, from 14,871 at the trough in 2002, to 18,027 in 2009, an increase of 21 per cent.

Figure A1: Total Fertility Rate, Māori 1962-2007*




*Source: Statistics New Zealand (various years)*
**The gap in data between 1991-1995 is due to classificatory changes*

The recent trends must be placed in context alongside those for all New Zealand women, because fertility rates and birth numbers for all New Zealand women similarly experienced a trough in 2002 and then increased, peaking in 2008.[9] Nevertheless, over the period 2002-2010, the proportion of

[8] It should be noted that the gap in the data series between 1991 and 1995 reflects a change in the way Māori births are classified; accordingly the two trends are not strictly comparable.
[9] In 2009 the TFR for the total New Zealand population was 2.14, a little higher than its recent peak which also occurred in 2008 (2.18 births per woman) but substantially higher than a trough which – as for Māori -

births classified as Māori (multiple count ethnicity) increased from 27.6 per cent of all births, to nearly 29.0 per cent (Table A2). These proportions are somewhat greater than those currently accounted for by young Māori (e.g., 21 per cent at 0-14 years as indicated earlier in Table 1), providing an indication of the future labour market entrant population that will be Māori.

Table A2: Live Births, Māori, Non-Māori and Total 1996-2010*

| | Māori* | Non-Māori | Total | % Māori* |
|---|---|---|---|---|
| 1996 | 15,804 | 41,476 | 57,280 | 27.6 |
| 1997 | 16,301 | 41,303 | 57,604 | 28.3 |
| 1998 | 15,232 | 40,117 | 55,349 | 27.5 |
| 1999 | 16,015 | 41,038 | 57,053 | 28.1 |
| 2000 | 15,851 | 40,754 | 56,605 | 28.0 |
| 2001 | 15,839 | 39,960 | 55,799 | 28.4 |
| 2002 | 14,871 | 39,150 | 54,021 | 27.5 |
| 2003 | 15,657 | 40,477 | 56,134 | 27.9 |
| 2004 | 16,259 | 41,814 | 58,073 | 28.0 |
| 2005 | 16,437 | 41,308 | 57,745 | 28.5 |
| 2006 | 17,342 | 41,851 | 59,193 | 29.3 |
| 2007 | 18,717 | 45,327 | 64,044 | 29.2 |
| 2008 | 18,844 | 45,499 | 64,343 | 29.3 |
| 2009 | 18,027 | 44,516 | 62,543 | 28.8 |
| 2010 | 18,458 | 45,439 | 63,897 | 28.9 |

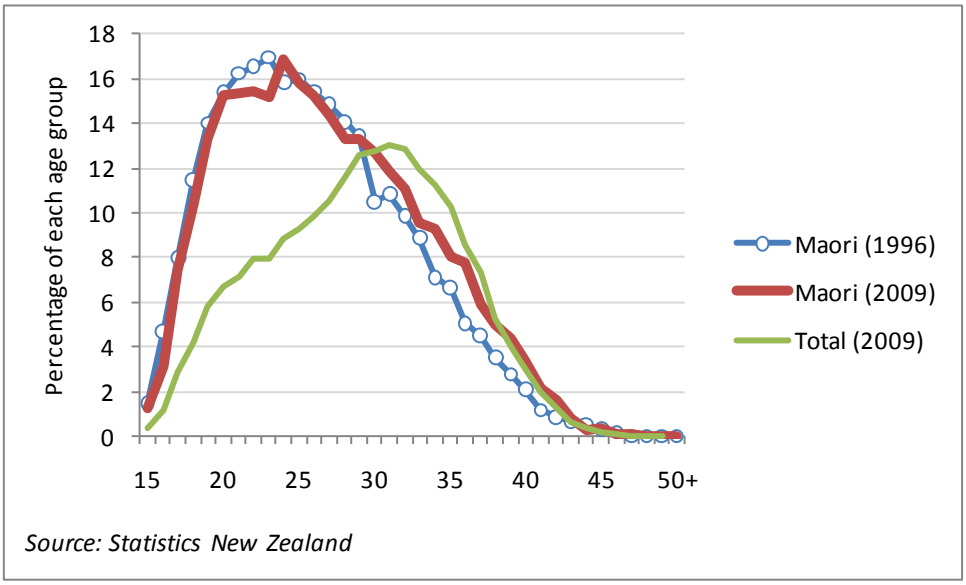
*Source: Statistics NZ (2011) Demographic Trends 2010, Table 2.01*

**Births for Māori population are based on the ethnicity of the child; Non-Māori births = Total births minus Māori births*

Of equal importance is the relatively youthful age at which Māori women have their children, and the fact that this pattern has seen relatively little change over the past 15 years. Figure A3 compares age-specific rates for Māori (1996 and 2009) and Total New Zealand (2009) converted to percentage of each age group giving birth. For Māori, the peak age at giving birth has shifted over the period from 23 to 24 years, while that for all women has shifted from 29 to 31 years (data for 1996 not shown). By 2009, the proportion of Māori women giving birth at age 24 was twice that of all women (16.9 and 8.8 per cent respectively). The pattern of an older age at childbearing for total New Zealand is very similar to that for all OECD countries, albeit New Zealand tends to have one of the youngest ages overall. However the small drop at age 20-23 years for Māori alongside general increases at 30+ years could also be indicating a shift to a slightly older pattern of childbearing.

occurred in 2002 (1.89 births per woman). Birth numbers for total New Zealand have similarly increased, but by a smaller percentage (16 per cent).

Figure A3: Age-Specific Fertility (Percentage at each age), Māori and Total



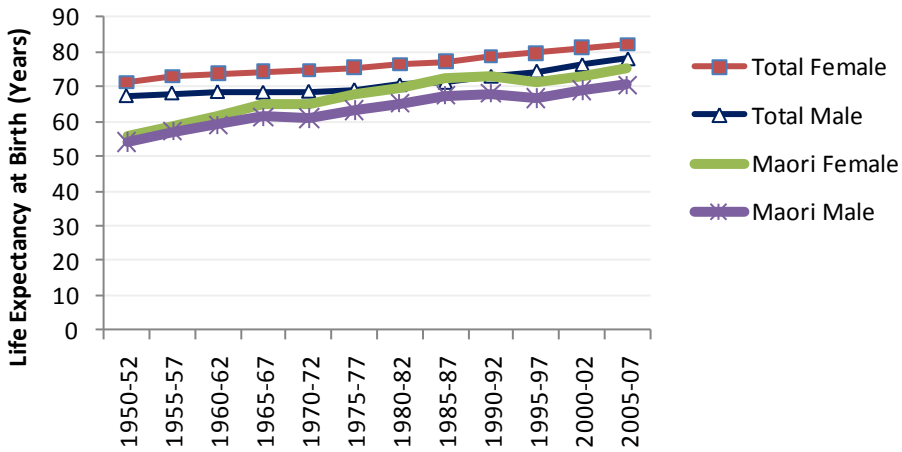

If Māori childbearing *is* shifting to slightly older ages it would have many positive implications for young Māori women, as labour force participation rates are always much lower for women with young children. Additional time in the labour force, or alternatively in higher education before having children, is universally correlated with increased skills and income. A shift to older ages would also potentially see both the Māori total fertility rate and birth numbers drop, further contributing to the demographic dividend. However over the longer term, the still substantially higher fertility rates of today's young Māori women would mean – for them - a longer relative period spent supporting children and a concomitant shortening of the potential second demographic dividend.

## Mortality Transition and Life expectancy

Improvements in life expectancy are similarly correlated with the onset of the first and second demographic dividends. Pool (1991: Chapters 6-8) illustrates very clearly the 1940s beginning of massive reductions in infant and childhood mortality for Māori, and the resulting significant increases in numbers at 0-4 years which sit behind the trends illustrated in Figure 3. As Figure A4 shows, life expectancy at birth has continued to increase substantially over the period 1950-2007,[10] that for Māori males increasing by 30.4 per cent and females by 34.3 per cent (by comparison with 16.1 per cent for all males and 15.3 per cent for all females). Despite these relative improvements, however, Māori life expectancy in 2005-07 remained lower than that for the total population by 7.6 years for males and 7.1 years for females (9.6 and 8.6 per cent lower respectively).

[10] The 2005-2007 period is the latest for which there are data by ethnicity

Figure A4: Life Expectancy 1950-2007, Māori and Total, By Sex

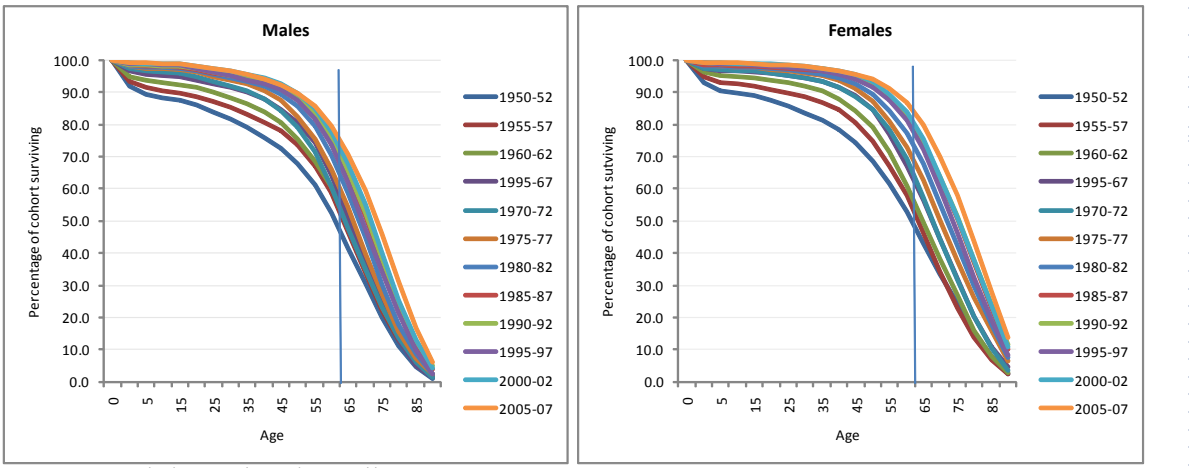



*Source: Statistics New Zealand Demographic Trends 2009: Tables 4.15 and 4.16*

At the same time, the gains have been experienced at all ages, and more or less monotonically. Survivorship data for example shows that the proportion of Māori remaining alive at each age has in almost all cases increased for each successive age at each successive observation (Figure A5). In 1950, only 52.5 per cent of Māori males born that year could expect to reach age 60, while by 2005-07 that had increased to 79.5 per cent (Statistics New Zealand 2009: Table 4.14). For females the equivalent proportions were 53.0 per cent in 1950 and 86.7 per cent in 2005-07. These proportions are still lower than for the total population, but the increases are significantly greater - in large part because survivorship to age 60 for the total population already approaches the maximum, 90 per cent for males and 93 per cent for females (Statistics New Zealand 2009: Table 4.13).

Table A2 shows that the gains in Māori survivorship at each age (since 1950) are now becoming pronounced at the older ages. At age 10, for example, the proportion surviving has increased by 10.6 percentage points for males and 9.3 percentage points for females. These are relatively low gains compared with those at older ages because 98.9 per cent of Māori male children and 99.1 per cent of Māori female children already survive to these ages (up from 88.3 and 89.8 per cent in 1950). By comparison the increases at age 60 are 27.0 and 33.7 percentage points for males and females respectively, and at age 65, even greater, 28.9 and 36.7 per cent. Table A2 also shows that there is still much (relative) improvement to look forward to, because while the gains thus far reach their maximum at age 65 for Māori (males and female alike), they do not peak for all males until age 80, and for all females until age 85.

Figure A5: proportion of each age group surviving 1950-2007, Māori Males and Females




*Source: Statistics New Zealand Demographic Trends 2009: Table 4.14*

In absolute terms then, the gains portend well for the future Māori economy, with the potential for more people living and working longer, and thereby for a potentially strong second demographic dividend when that period is reached, assuming adequate *a priori* investment.

Table A2: Percentage Point change in the proportion of each age group surviving to each age, 1950-2007

| | Maori | | Total NZ | |
|---|---|---|---|---|
| | Males | Females | Males | Females |
| 0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 1 | 7.2 | 6.4 | 2.5 | 2.1 |
| 5 | 9.7 | 8.6 | 3.2 | 2.6 |
| 10 | 10.6 | 9.3 | 3.5 | 2.8 |
| 15 | 11.2 | 10.1 | 3.8 | 3.0 |
| 20 | 12.2 | 11.2 | 4.1 | 3.2 |
| 25 | 13.6 | 12.8 | 4.5 | 3.5 |
| 30 | 15.1 | 14.5 | 4.8 | 3.9 |
| 35 | 16.7 | 16.0 | 5.3 | 4.3 |
| 40 | 18.4 | 18.2 | 5.9 | 4.8 |
| 45 | 20.0 | 21.1 | 6.6 | 5.6 |
| 50 | 21.8 | 25.3 | 7.9 | 6.9 |
| 55 | 24.6 | 29.5 | 10.1 | 8.7 |
| 60 | 27.0 | 33.7 | 13.6 | 11.2 |
| 65 | 28.9 | 36.7 | 18.1 | 14.7 |
| 70 | 28.7 | 36.7 | 23.3 | 19.1 |
| 75 | 25.8 | 33.5 | 27.5 | 24.7 |
| 80 | 20.1 | 28.1 | 28.9 | 30.4 |
| 85 | 12.1 | 20.1 | 24.6 | 31.3 |
| 90 | 5.1 | 11.1 | 14.3 | 23.3 |

*Source: Calculated from Statistics New Zealand Demographic Trends 2009: Tables 4.13 and 4.14*

## Appendix B – Projection assumptions

The ethnic concept used in the projections in this paper 'is the ethnic group or groups that people identify with or feel they belong to. Ethnicity is self-perceived and people can belong to more than one ethnic group. For example, people can identify with Māori ethnicity even though they may not be descended from a Māori ancestor. Conversely, people may choose to not identify with Māori ethnicity even though they are descended from a Māori ancestor' (Statistics New Zealand 2010).

The projections are based on the Series 6 (medium variant) assumptions; for details see http://www.stats.govt.nz/browse_for_stats/population/estimates_and_projections/NationalEthnicPopulationProjections_HOTP2006-26/Technical%20Notes.aspx. The following information is drawn from that site.

**Fertility:** The Series 6 assumptions assume that fertility rates for Māori women will vary until the year 2026 when the total fertility rate will reach 2.50 births per woman, down from 2.78 births per Māori woman in 2005-07. The corresponding total paternity rate of Māori men (with non-Māori women) is assumed to reach 0.95 in 2026, down from 0.97 births per Māori man in 2007. The assumptions also assume that Māori fertility will shift to slightly older ages. Projected births are then reduced to allow for births to Māori parent(s) that are not registered as Māori children. The medium variant assumes that 3.9 per cent of births to Māori parent(s) will be non-Māori children.

**Mortality**: The medium mortality variant assumes that mortality rates for Māori will continue to drop so that the life expectancy at birth for Māori males will increase from 70.9 years in 2007 to 75.4

**Migration:** The medium migration variant assumes long-run annual net migration of Māori people of -3,000. This is based on trends of -4,500 in 2007, -5,500 in 2008, -4,000 in 2009, -2,000 in 2010, and -2,000 in 2011. The age-sex patterns of net migration assume net outflows at all ages, with the highest net outflows at ages 19–26 years.

**Inter-ethnic mobility**: The projections make an allowance for people changing their ethnic identification over time. Comparisons of demographic estimates and census populations during 1966–2006 suggest that inter-ethnic mobility generally resulted in a loss from the Māori population of between 0.3 and 0.9 per cent per year. However, changes in census questionnaire design, ethnicity classification and coding make it difficult to measure inter-ethnic mobility, especially as there are no explicit estimates of ethnic migration. In some periods there has been greater awareness of Māori issues which may have increased the propensity of people to identify with Māori ethnicity. The 2006-base medium variant assumes inter-ethnic mobility loss from the Māori population …

The medium variant assumes a net change due to Māori people changing their ethnic identification based on an average annual rate (in 2007) of -0.3 per cent. The age pattern of inter-ethnic mobility is applied to each sex and assumes the highest net mobility at ages 12–26 years.

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