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The Generation Gap: Age and Well-being in New Zealand

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Abstract

This paper explores the way subjective well-being varies with age. It is motivated by the relatively high level of suicide among young adults in New Zealand compared to other new settler countries like Australia, Canada and the USA. Since the Second World War age specific suicide rates of the young have increased in many countries while those of the old have fallen. This generational switch in age-specific suicide rates is believed to reflect an underlying shift in the distribution of subjective well-being away from the young towards the old. The time series measures of well-being necessary to test such a proposition are unavailable, however we can compare the size of the generation gap in New Zealand to that prevailing in comparable countries. Evidence from two World Values Surveys offers empirical support for the presence of a wider gap in well-being between the younger and older age groups in New Zealand

Geoffrey Rose (1995) argued that there is a link between the way measures of health are distributed across the population and the thresholds used to define ill health. "The essential determinants of the health of society", he argued, "are to be found in its mass characteristics" and "the deviant minority can only be understood when seen in its societal context". Effective prevention, therefore, "requires changes which involve the population as a whole" (Rose, 1995, p. vii).

The need to see rare events like suicide in their social context is a major motivation for our positioning of age-specific suicide rates within the distribution of well-being across the population as a whole.[1] We believe, like Rose, that to separate suicide as something that only concerns people

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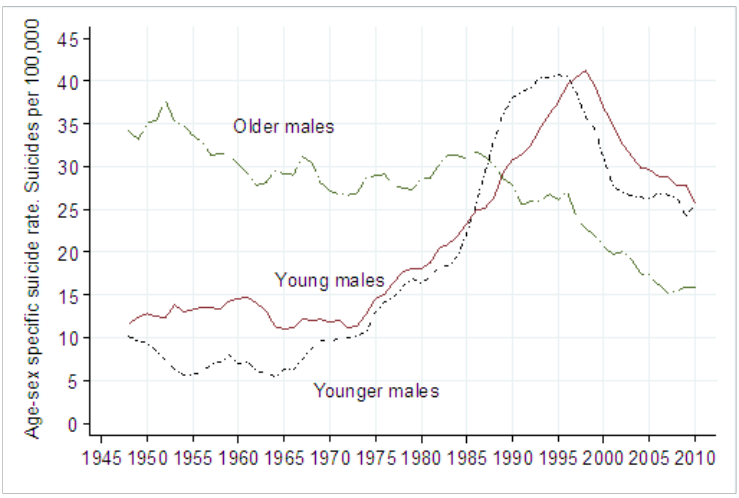
with mental illnesses is a mistake, since it stigmatises suicide as "their problem", not ours. For the same reason, there is a role for social scientists in interpreting contemporary patterns of suicide beyond the individual and the purely clinical.

The persistently high rates of suicide by the young stand in sharp contrast to those of the old, as observed in Britain (Gunnell, Middleton, Whitley, Dorling & Frankel, 2003), several European countries (Baudelot &Establet, 2008) and also New Zealand (Snider, 2011). Figure 1 tracks the New Zealand experience over the period 1948 to 2010.[2] Suicide rates of the older (male) population (as defined) have been declining throughout the post-war period, whereas those of young males have been rising since the 1970s, even acknowledging their more recent decline from an unusually high peak in the late 1990s.[3]

Figure 1. Age-specific suicide rates of younger (15–25), young (25–35) and older (60 plus) males in New Zealand, 1948–2010 (annual smoothed series)



Source: Annual Smoothed Series from Ministry of Health data collection

Under the circumstances depicted in Figure 1, we want to test whether young men as a whole exhibit lower levels of subjective well-being relative to the older generation.[4] Ideally, we would track the two groups using measures of well-being over time to see if they matched the suicide series; however, such a well-being series is not available over this period.[5] Since age-specific suicide rates of young adults in New Zealand are typically higher than those found in otherwise comparable countries, the

approach we have adopted is to compare the intergenerational difference in subjective well-being in New Zealand with those prevailing in Australia, Canada and the USA over the same period.

Subjective Well-being and Age

Subjective well-being is a broad category of phenomena that includes people's emotional responses, domain satisfactions, and global judgements of life satisfaction. The measure has become popular because it has also been shown to possess adequate psychometric properties, and exhibit good internal consistency and appropriate sensitivity to changing life circumstances (Diener, Eunkook, Lucas, & Smith, 1999, pp. 277-78). If modelled appropriately, responses to survey questions on subjective well-being can identify consistent correlations with respondent attributes such as gender, age, income (Blanchflower & Oswald, 2011; Kahneman & Krueger, 2006).[6]

Over the last 50 years, there has been an impressive growth in research into personal well-being within the social sciences (Diener et al., 1999). Early USA surveys undertaken in the 1950s through to the 1980s showed that it was possible to gauge a society's overall level of well-being as well as its well-being in specific domains of work, family life, housing and community (Bradburn & Caplovitz, 1965; Campbell, 1981; Campbell, Converse, & Rodgers, 1976; Gurin, Veroff, & Feld, 1960). Buoyed by insights from positive psychology and a now extensive literature on the economics of happiness, contemporary governments, both national and local, are beginning to realise they can now measure the level of subjective well-being of their populations with some confidence (Bok, 2010).

There are several distinct approaches to relating subjective well-being to chronological age, largely reflecting four different types of data: the cross section, cross section with controls, longitudinal, and cohort. The first (cross section) allows a description of the way that subjective well-being varies by age group at a point in time. The second (cross section with controls) involves analysing the same relationship after controlling for the influence of income, marital status and other life cycle events that are correlated with age. The third approach (longitudinal) involves tracing the same panel of individuals over time and recording their subjective well-being as they age.[7]

Proponents of the fourth approach argue that, even if the same relationship between well-being and age applies in both cross-sectional and longitudinal (panel) data, there may still be cohort (year of birth) effects present (Easterlin, 2010: p. 155). The accumulated evidence, however, suggests that cohort membership is relatively unimportant when it comes to explaining the relationship between subjective well-being and age. Yang's comprehensive work in the USA, for example, has demonstrated that while cohort effects can be detected in the context of the well-being age relationship, they are very small and the dominant effect remains cross sectional (Yang, 2008) .

All four approaches to studying how subjective well-being varies with age identify the same convex pattern over the age domain. "For most people, apparently, well-being declines slightly from their youth until they are about 40 and then improves very gradually until they reach their early 70s (assuming one controls for variations in health)." (Bok, 2010, p. 16).[8]

In order to realise the convex or U shape when people's subjective well-being is graphed against their age, it is necessary to control for intervening influences. As Easterlin notes,

> The U-shaped generalisation derives from the multivariate regression of happiness on age controlling for *a number of life circumstances that can vary systematically over the life cycle*. Hence, these studies are in effect asking, if one compares young, midlife, and older persons who are in the same circumstances with regard to income, employment, marital status, and health, how does their happiness differ? (Easterlin, 2010, p. 154) (our italics).[9]

While the U shape is now widely accepted as a stylised fact, the reasons advanced for *why* well-being changes with age are less well developed, certainly in the economics literature.[10] A great deal of theorising now addresses this relationship, but our own focus is confined to using the parameters governing the U shape across countries to test the thesis that New Zealand's generation gap in levels of subjective well-being is wider and therefore consistent with the country's wider gap in age-specific suicide rates.

In a telling discovery, Blanchflower and Oswald were unable to identify a U-shape relationship between well-being and age in New Zealand (Blanchflower & Oswald, 2008).[11] Among the set of all U shapes those authors fitted to the countries covered by the World Values Survey,

New Zealand sat as an outlier, exhibiting instead a positive linear relationship with age. While Blanchflower and Oswald paid no further attention to this particular exception, New Zealand's outlier status remains relevant for our thesis. Our first step, therefore, has been to return to the same World Values Survey they used. The following question is asked of respondents in all four countries:

> All things considered, how satisfied are you with your life as a whole these days? Using this card on which 1 means you are "completely dissatisfied" and 10 means you are "completely satisfied", where would you put your satisfaction with your life as a whole? (Question V22).[12]

The resulting distribution of responses across the ten categories of well-being is shown in Table 1. It reflects a skewed pattern that is remarkably common in most Western countries. The New Zealand results for 1998 returned a sample mean of 7.0 and a median of 8 from 1135 observations. Two-thirds of respondents returned scores of 7 or more.

Table 1. The distribution of responses to the life-satisfaction question: New Zealand, 1998

Satisfaction rating	Frequency	Percentage	Cumulative
1 (low)	16	1.41	1.41
2	7	0.62	2.03
3	32	2.82	4.85
4	27	2.38	7.22
5	94	8.28	15.51
6	75	6.61	22.11
7	162	14.27	36.39
8	282	24.85	61.23
9	199	17.53	78.77
10 (high)	241	21.23	100.00
Total	1,135	100.00	

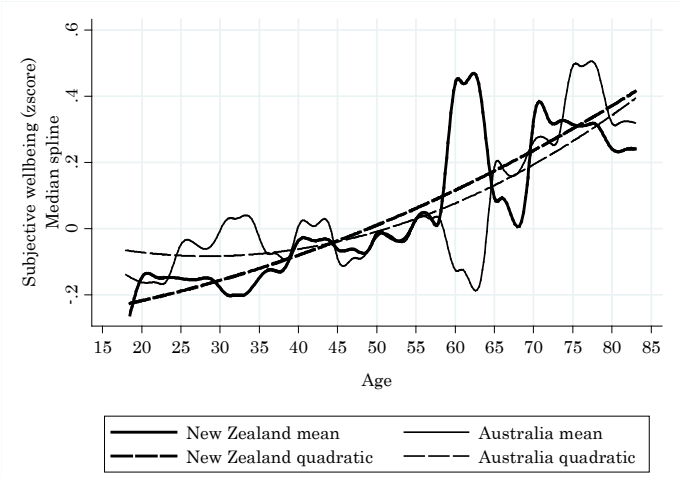
Source: World Values Survey, Wave 1.

Note: The age of respondent is constrained to a lower bound of 18 years and an upper bound of 85, a restriction which removes less than 2 percent of the country sample.

To illustrate the way we undertake our international comparisons we compare New Zealand with Australia. Figure 2 shows how the mean well-being score rises irregularly with each five-year age group. Departures from a steady increase are marked at several ages, most notably among respondents in their 60s (which is unusually high in the New Zealand case

and unusually low in the Australian case).[13] Both countries exhibit a decline in well-being among respondents who enter their 80s.[14]

Figure 2. Mean and predicted standardised subjective well-being of men by age. New Zealand (1998) and Australia (1995)



Source: World Values Survey

In order to generate a higher-order summary of the relationship between the respondents well-being and their age, we estimate the following quadratic equation for each country:

$$(1) \qquad zS_i = \alpha + \beta\, Age_i + \gamma\, Age_i^2 + \varepsilon_i$$

where S is a cardinal measure of satisfaction recorded by the i^{th} respondent bounded from 1= Very Dissatisfied to 10= Very Satisfied.[15] Since the focus of this study is on the way well-being varies with age, rather than the way average well-being varies between countries or over time, we remove the level effects by standardising. The z score (zS) results in a mean satisfaction of 0 and a standard deviation of 1.

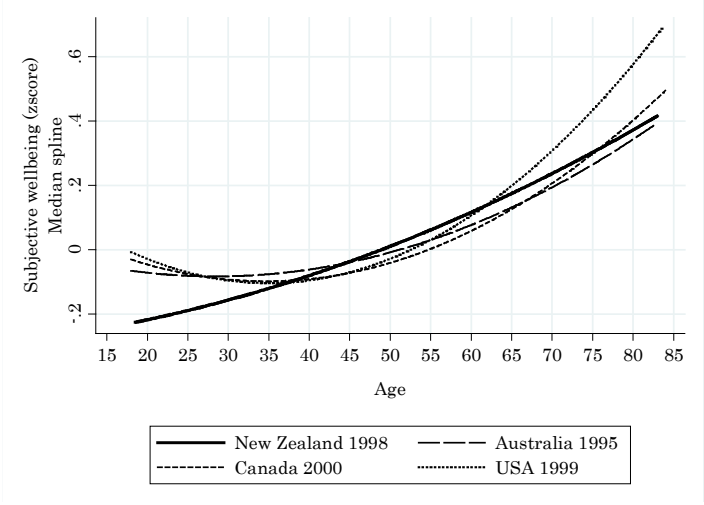
Finally, in order to limit the multicollinearity associated with the use of quadratics, age is entered in its centred form.[16] The estimated parameters from equation 1 are then used to predict the standard deviations from the average level of life satisfaction. These predictions are

smoothed by fitting median splines, which are then plotted as the two continuously upward sloping lines in Figure 2.[17]

Two salient points emerge from the fitted splines in Figure 2. The first is the more linear and steeper relationship between subjective well-being and age apparent in the New Zealand sample. Hence the young in Australia reported higher average levels of well-being relative to their middle and older age respondents than was the case in New Zealand.

We extend the comparison to include the two fitted curves from Figure 2 plus the fitted splines from Canada and the USA to create Figure 3. The results further confirm the unusual nature of the New Zealand case. Unlike the non-linear relationship assumed by the three larger countries, well-being in New Zealand rises approximately *linearly* with age, just as Blanchflower and Oswald originally observed (2008).

Figure 3. Predicted standardised subjective well-being of men by age: New Zealand (1998), Australia (1995), Canada (2000), and USA (1999)



Source: World Values Survey

One way of appreciating the differences in the fitted slopes of the four countries in Figure 3 is to compare their implied generation gaps – the difference between the predicted satisfaction of say, a 25-year-old with that of a 65-year-old. The results in Table 2 confirm the wider generation gap apparent in the New Zealand sample. In terms of the raw scores (S rather than *z*S), 25-year-old New Zealanders recorded an average satisfaction of 7.29, compared to the average of 8.05 reported by 65-year-olds in the same

year. This difference of 0.757 was more than double the gap apparent in Australia and Canada and noticeably greater than the USA's.

Table 2. Predicted levels of average satisfaction of men by age: New Zealand and comparison countries in the 1990s

	25 years	65 years	Difference
New Zealand (1998)	7.29	8.05	0.76
Australia (1995)	7.41	7.77	0.37
Canada (2000)	7.69	8.03	0.34
USA (1999)	7.50	8.02	0.49

Source: World Values Survey. Estimated from the equation under Figure 2.

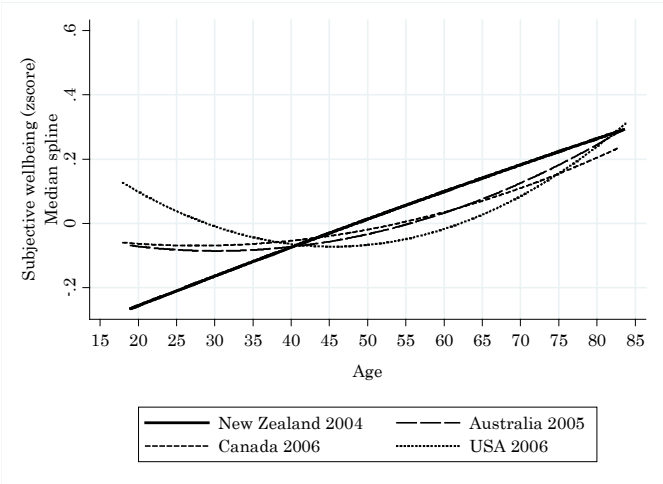
Note: These generation gaps are calculated using the post-estimation 'margins' command in Stata 12, which also yields standard errors around each estimate. These standard errors are available from the author on request.

In a subjective well-being scale that runs from 1 to 10, a gap of less than one may not seem high but the distribution of well-being scores is highly concentrated (as shown in Table 1). A visual comparison of the *z* scores corresponding to 25 and 65 year olds in Figure 3 shows the 25–65 generation gap in New Zealand at four standard deviations (-2 to 2) compared to only two (-1 to 1) in the Australian case. In other words, while older age groups were at least as satisfied with their life in New Zealand in the 1990s as they were elsewhere, the young certainly were not.

By reanalysing the World Values Survey data, we have been able to confirm the wider gap in well-being between the generations which Blanchflower and Oswald's original exploration implied. However, their own conclusions were based only on those surveys administered in the 1990s.[18] Since then, a further wave of the survey has been released and this allows us to test whether New Zealand's wider generational gap in subjective well-being was sustained into the 2000s.

The median-spline-based predictions from equation 1 estimated from the World Values Survey administered in the 2000s are shown in Figure 4. The graph shows quite clearly how the gap between young and old in New Zealand continued to exceed that of the other three countries a decade later.[19] By comparison, Australia and Canada retained their narrower difference between the old and young men which was apparent in the 1990s and in the USA the young appeared to return relatively higher rates of well-being.[20]

Figure 4. Predicted standardised subjective well-being of males by age: New Zealand (2004), Australia (2005), Canada (2006), and USA (2006)



Source: World Values Survey

Estimates of well-being at 25 and 65 years of age from the 2000 wave of the World Values Survey confirm the persistence of the wider gap between the generations in New Zealand (Table 3). The predicted versus average satisfaction between the two age groups yielded a difference of 0.65; this compares with figures of about half that gap in the other three countries.

Table 3. Predicted levels of average satisfaction by age: comparing age differences in New Zealand with other countries in the 2000s

	25 years	65 years	Difference
New Zealand (2004)	7.50	8.15	0.65
Australia (2005)	7.06	7.43	0.37
Canada (2006)	7.59	7.86	0.27
USA (2006)	7.21	7.28	0.07

Source: World Values Survey.

While expressing subjective well-being as a function of age does confirm that young people in New Zealand returned a relatively lower level of well-being than prevailed in the comparison countries, age itself acts as a proxy for many of those life events that can affect well-being (marriage, children, employment, etc.). One of the possible reasons for the above difference between the four countries could therefore be the way such life

events interact locally with age over the life course. Could these compositional differences be responsible for the much wider generation gap in well-being observed in New Zealand?

Do Controls Make a Difference?

Equation 2 adds a matrix of controls (X) to equation 1. These allow us to estimate the relative effect of gender, workforce status, marital status, employment, income and health on subjective well-being in each of the four countries over the two time periods. The dependent variable remains the standardised satisfaction with life, *z*S.

(2) $$zS_i = \alpha + \beta\, Age_i + \gamma\, Age_i^2 + \lambda\, X_\iota + \varepsilon_i$$

Table 4. Variables used as controls in regressing subjective well-being on age: New Zealand, 1998

Variable	Mean	Standard Deviation	Minimum	Maximum
Satisfaction	7.65	2.02	1	10
AgeNZ98	-1.27	15.60	-28.92	37.07
AgeNZ98sq	244.82	265.62	.006	1374.85
Male	.464	.498	0	1
Married	.707	.454	0	1
Ft employed	.488	.500	0	1
Unemployed	.081	.273	0	1
Income	5.97	2.76	1	10
Poor health	.195	.396	0	1

Source: World Values Survey

Note: Satisfaction with life (*Satisfaction*) is an ordinal variable, the centred measure of age *(ageNZ98)* and its square are covariates, *male, married,* fulltime employment *(Ft employed)* and unemployment (*Unemployed*) and poor health (*Poor health*) are dummy variables. *Income* is expressed in tenths, so 1 refers to an income in the bottom 10th and to an income in the top ten percent of the (gross) income distribution. Number of observations is 1020. Running income as a series of dummy variables reveals a fairly linear increase in satisfaction in both surveys in each country, a feature which further justifies the use of the single income variable above.

The descriptive statistics for new covariates as they apply to New Zealand in 1998 are shown in Table 4. The estimates are quite typical of those obtained for the other three countries. They remind us that males are in a slight minority in the sample. About 70 percent of respondents are married, nearly half are employed fulltime, and fewer than 10 percent are unemployed. The distribution-over-income deciles are slightly weighted

towards the higher incomes. Nearly 20 percent of respondents declared they were not in good health, that is, in fair, poor or very poor health.

Previous applications, such as found in Stone, Schwartz, Brokerick and Deaton (2010) and Frijters and Beatton (2012), show that the imposition of controls creates the U in the well-being by age curve because of their age-specific impacts. When factors that bolster well-being at particular ages, such as marriage and employment, are statistically controlled, well-being sags, thus deepening the U shape. At the same time, controlling for poor health, which otherwise lowers satisfaction with life, raises estimates of well-being at older ages. In the same way, controlling for unemployment removes one factor associated with lower levels of well-being of the young thus raising well-being at younger ages in the controlled regression.

The results of applying the uncontrolled and controlled regressions are given in Table 5 for the 1990s and 2000s, respectively. The coefficient of determination (R^2), the root mean square error (rmse) and the number of cases appear below the coefficients. Age effects are consistently significant in all eight models, but the relative influence of marriage and unemployment show notable variation.

Table 5. Regression of standardised satisfaction on age with controls in four countries, 1990s and 2000s.

1990s

	New Zealand		Australia	
	model1NZ98	**model2NZ98**	**model1A95**	**model2A95**
Agenz98	.00937***	.0122***		
Agenz98^2	.000007	.00036**		
AgeA95			.0049***	.00534***
Age A95^2			.00016*	.00057***
Age c00				
Age c00^2				
Ageu99				
Ageu99^2				
Male		-.0441		-.132**
Married		.144*		.44***
Ft employ.		.0605		.102
Unemploy.		-.221		(omitted)
Income		.0368**		.0281**
Pr health		-.902***		-.632***
Cons	-.0188	-.232*	-0.454	-.431***
R2_a	.0239	.19	.0119	.147
Rmse	.988	.901	.994	.904
N	1135	1020	1924	1735

Note: * p<0.05; ** p<0.01; *** p<0.001

1990s (cont'd)

	Canada		USA	
	model1c00	**model2c00**	**model1u99**	**model2u99**
Agenz98				
Agenz98^2				
AgeA95				
Age A95^2				
Age c00	.00533***	.00418**		
Age c00^2	.00024**	.00041***		
Ageu99			.00494*	.0035
Ageu99^2			.00034**	.00058***
Male		-.101*		-.0723
Married		.359***		.222***
Ft employ.		-.0753		.0549
Unemploy.		-.501***		.0978
Income		.0282**		.0625***
Pr health		-.557***		-.512***
Cons	-0.689*	-.257***	-.0858*	-.524***
R^2_a	.0165	.137	.0207	.111
Rmse	.992	.928	.99	.933
N	1898	1663	1199	1127

Note: * p<0.05; ** p<0.01; *** p<0.001

2000s

	New Zealand		Australia	
	model1NZ04	**model2nz04**	**model1A05**	**model2A05**
Agenz04	.00869***	.0172***		
Agenz04^2	.000005	.00054*		
ageA05			.00524***	.00917***
Age A05^2			.00013	.00038***
Age c06				
Age c06^2				
Ageu06				
Ageu06^2				
Male		-.0733		-.0371
Married		.609***		.337***
Ft employ		(omitted)		.0393
Unemploy		(omitted)		-.0119
Income		.0658**		.0418***
Pr health		-1.35***		-.817***
Cons	.00388	7.16***	-0.346	-.334***
R^2_a	.0172	.131	.00696	.182
Rmse	.991	1.67	.997	.897
N	895	779	1376	1253

Note: * p<0.05; ** p<0.01; *** p<0.001

2000s (cont'd)

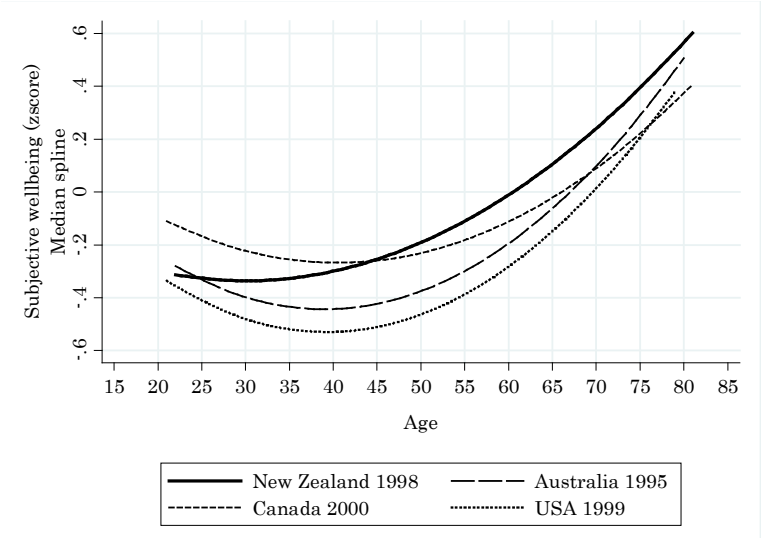
	Canada		USA	
	model1c06	model2c06	model1u06	model2u06
Agenz04				
Agenz04^2				
ageA05				
Age A05^2				
Age c06	.00402**	.00643***		
Age c06^2	.0001	.0003***		
Ageu06			.00101	.00107
Ageu06^2			.00026**	.00032**
Male		-.0988*		-.0317
Married		.371***		.192***
Ft employ		.0315		-.104
Unemploy		-.136		-.206
Income		-.0308***		.115***
Pr health		-.62***		-.745***
Cons	-.029	-.347***	-.0716	-.556***
R^2_a	.0052	.137	.00479	.175
Rmse	.997	.939	.998	.906
N	2085	1760	1225	1140

Note: * p<0.05; ** p<0.01; *** p<0.001
Source: World Values Survey

With two minor exceptions, the same models are estimated for each country and year and they produce consistent signs on each of the controls: males typically return lower levels of satisfaction with their lives than do females, and marriage and income raise well-being while poor health reduces it. With one exception, employment and unemployment fall short of being statistically significant, although the signs and magnitudes of effect are consistent with previous studies.[21]

Returning to the question at hand, does controlling for the population composition of the sample in each country and decade reduce any of the difference between New Zealand and comparison countries? The answer is no. A comparison of Figure 5 with Figure 3 shows that although the application of the controls does generate a U-shape in each country in the 1990s, it does little to reduce the inter-country differences in the way New Zealand compares.

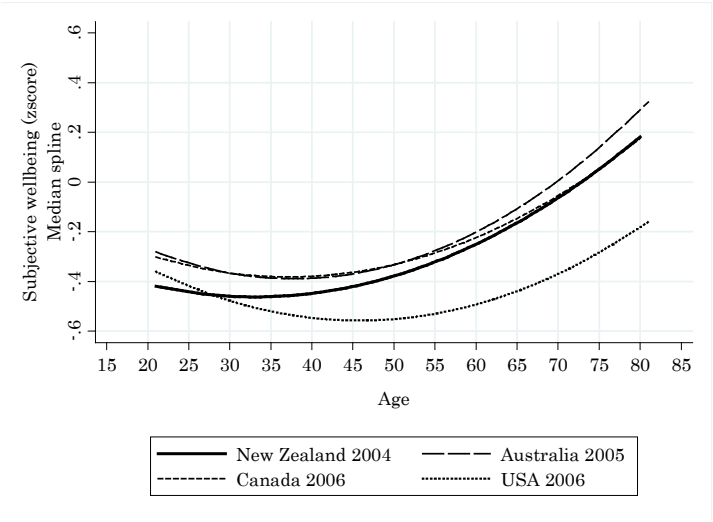
Figure 5. Predicted standardised subjective well-being by age in four countries after controlling for population composition, 1990s



Source: World Values Survey

The results of applying equation 2 to the 2000s are plotted in Figure 6. Three changes in the relationship between well-being and age are observable. Firstly, the standardised well-being distribution is less skewed towards positive well-being in the 2000s, moving the curves down the y-axis. Secondly, there is a slight flattening out of these well-being curves implying a reduction in the magnitude of the generation gap in all four countries. And in a third and related point, by the 2000s each of the curves had tilted downwards to the right, indicating that absolutely and relatively the main reduction in well-being occurred among the older age groups.

Figure 6. Predicted standardised subjective well-being by age in four countries after controlling for population composition, 2000s



Source: World Values Survey

In summary, controlling for the composition of the population widened the difference between the generation gap in New Zealand and the three other countries. This gap appeared to have diminished slightly in the 2000s, a result which is also consistent with the slight reduction apparent in the suicide rates in Figure 1 over approximately the same period.

Table 6. Predicted levels of average satisfaction by age based on the controlled regressions: New Zealand and comparison countries

	25 years	65 years	Difference
1990s			
New Zealand	7.14	8.13	0.99
Australia	7.40	7.81	0.41
Canada	7.38	7.79	0.41
USA	7.42	7.82	0.40
2000s			
New Zealand	7.49	8.18	0.69
Australia	7.35	7.75	0.40
Canada	7.36	7.77	0.41
USA	7.37	7.77	0.40

Source: World Values Survey

Discussion

Are the generational differences that are so marked in New Zealand's suicide statistics also reflected in their differences in their levels of subjective well-being?

The answer from the data at hand is yes. Not only do age differences in suicide and well-being tell a similar story in New Zealand but the same intergenerational differences stand out when New Zealand is compared to Australia, Canada and the USA. In both the 1990s and 2000s, there was a wider generation gap in the subjective well-being levels apparent in the New Zealand data than in the data from the three comparison countries.[22]

Our reanalysis of the World Values Survey country samples reported above reconfirmed the relatively linear pattern of well-being by age originally identified in the New Zealand sample by Blanchflower and Oswald for the 1990s. Our extension of this analysis, using the same surveys in the 2000s, showed New Zealand 25-year-olds were continuing to exhibit relatively lower levels of satisfaction with life than their 65-year-old contemporaries.

While these results are challenging and raise a number of questions about the nature of New Zealand society, the above examination remains quite exploratory and is limited in several respects.[23] New Zealand lacks the comprehensive longitudinal data sets required to demonstrate causal relationship between subjective well-being and suicide such as has been possible in Finland for example (Koivumaa-Honkanen et al., 2001). The local data has also made it difficult to establish the relative importance of external events such as unemployment (Beautrais, Joyce & Mulder, 1998), notwithstanding the evidence gleaned from linking suicide, along with other forms of mortality, back to census records of the deceased individuals (Blakely, 2002). Many of the same difficulties hinder attempts by New Zealand authorities on suicide to identify more precisely the role of wider social conditions on changes in the country's suicide rates (Ferguson, Blakely, Allan, & Collings., 2002; Maskill, McClellan, & Collings, 2005). A similar connection was also raised in Bray and Gunnell (2006).

When it comes to subjective well-being the generational differences identified in the World Values Survey also appear in the much larger New Zealand General Social Survey (see Statistics New Zealand, 2010). This

survey has been administrated biennially since 2008 by Statistics New Zealand and may prove to be a more robust source for future extensions of this work (Brown, Wolf, & Smith, 2010). Unfortunately, comparisons with similar surveys in Australia, Canada and the USA would still be hampered by the lack of harmonisation of both questions and definitions.

Another relatively unexplored source of well-being data in New Zealand is the New Zealand Health Survey, which has the advantage of also carrying a comprehensive set of questions on mental health, including suicide ideation. However, this survey lacks a question on subjective well-being per se. The more specific Quality of Life survey, undertaken every two years by Councils of New Zealand's largest urban areas, is another source which has been used to track geographic differences in subjective well-being across the country (Morrison, 2007; 2011), although it has yet to be applied to the intergenerational well-being question.

In summary, our search for a reason why New Zealand exhibits higher suicide rates among the young than countries that are comparable in many other respects has involved comparing their age-specific levels of subjective well-being. The evidence presented above points to a consistently wider gap in subjective well-being between the generations in New Zealand, a result consistent with the generational switch in the country's suicide rates.

Acknowledgements

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Notes

1 A strong case for positive temporal correlations between suicide rates and levels of subjective well-being has been made at the country level (Helliwell, 2007, Bray & Gunnell, 2006) as well as at the level of the individual using longitudinal data (Koivumaa-Honkanen et al., 2001).

2 New Zealand age-specific rates are high internationally in all younger age groups. For example they were the second highest in the 'youth' age group (15–25 years) for the period 2002 to 2006 at 27.6 per 100,000; this figure was exceeded only by Finland (33.1). Due retrieved from http://www.youthstats.myd.govt.nz/indicator/healthy/suicide/international.html. Note that due caution applies to all international comparisons because collection standards and reporting procedures vary by country.

3 Although we only plot male rates here, similar intergenerational differences can be found in the, albeit much lower, rates characteristic of female suicide.

4 For similar graphs depicting generational differences for European countries, see Baudelot & Establet (2008) and, more generally, the discussion by McCall (1991) and Preston (1984) as well as the thesis linking older New Zealanders with the "selfish" generation (Thomson, 1991)

5 Several surveys including the World Values Survey and the New Zealand General Social Survey do ask relevant well-being questions but only for the

more recent period (1998 and 2004 in the former, and biennially from 2008 in the latter). Correlations between these population-wide measures and more specific age-specific suicide rates may prove useful in future years.

6 Despite the widespread use of subjective measures of well-being, there is no single agreed measure. The main measures include life satisfaction (Cummins, 1999; Diener & Lucas, 2000) and happiness (Shin & Johnson, 1978) but some surveys now collect responses to questions on stress, worry, anger and sadness (Stone, Schwartz, Brokerick, & Deaton, 2010), eudaimonia (Clark & Senik, 2011; Huppert & So, 2011) as well as well-being indicators on specific domains such as work, family, leisure, etc. (Rojas, 2007). Although often referred to collectively as well-being measures (Bramston, Pretty, & Chipuer, 2002, pp. 261–262), each of these measures tap different dimensions of well-being. Most studies (outside positive psychology) simply use "life satisfaction", mainly because it captures the same sort of evaluations that people use to make decisions about their lives (Kahneman, Diener, & Schwarz, 1999) and because, to date, most of the major databases have included this as their main or only measure of well-being.

7 Temporal patterns traced from longitudinal surveys yield very similar results to the cross-sectional results. Evidence from 14 waves of the British Household Panel survey (1991–2004), for example, showed that subjective well-being follows a similar pattern over the life course as suggested by the cross-sectional evidence (Clark & Oswald, 2006). Similar findings come from the German Socio-Economic Panel Study (Baird, Lucas, & Bonnellan, 2010).

8 Although the notion that well-being rises with age may seem counter-intuitive in the face of the gradual decline in physical health (Stone et al., 2010, p. 9985), it is possible to cite a large number of references in support of the U shape; see Blanchflower and Oswald (2008, p. 1734), and Clark and Oswald (2006, p. 4), as well as the additions in Frijters and Beatton (2011, p. 4).

9 At this level of generalisation, the responses to the question on happiness and satisfaction with life are often used interchangeably even though they are not perfectly correlated.

10 Frijters and Beatton offer a sophisticated technical discussion of this relationship and associated literature (Frijters & Beaton, 2012).

11 A number of other countries also did not reveal subjective well-being as U-shape with age but almost all of these were developing countries (Blanchflower & Oswald., 2008, p. 1741). A reviewer suggested that a lower per capita income in New Zealand relative to the comparison countries may

therefore be part of the story. However, even if the minor differences in average income were relevant, it would not explain why or how the U shape was actually related to per capita income. That relationship was also not pursued by Blanchflower and Oswald.

12 Copies of the questionnaires are available from the World Values Survey website: http://www.worldvaluessurvey.org/

13 These fluctuations within narrow age ranges we attribute to the small sample sizes of around 1000 typical of the World Values Survey.

14 As Fischer's conference paper indicates, 30 economically well-developed countries from the World Values Survey actually follow a hyperbolic form, with life satisfaction reaching another local maximum around the age of 83, with a level identical to that of a 26-year-old and then falling from there (Fischer, 2009). Therefore, the quadratic form is more appropriate if the age distribution is truncated past 80 years old. Greater longevity will of course make such statistical adjustments less tenable in ageing economies.

15 Even though the dependent variable is an ordinal variable estimation of equation 1 is now regularly undertaken by ordinary least squares (OLS), for the assumption of cardinality makes little difference in practice and the OLS estimates considerably aid the interpretation of the coefficients (Ferrer-i-Carbonell, & Frijters, 2004; Kristoffersen, 2010).

16 Age and age are closely related,[2] and their separate effects cannot be estimated with nearly as much precision as when using either predictor alone; therefore, the age variable is "centred" before squaring (i.e. the mean is subtracted), creating a new variable centred on zero which is much less correlated with its own square values. The resulting regression has the same fit (the same R^2, overall F-test, predictions, etc.) as the uncentred version. By reducing multicollinearity, centering yields more precise coefficient estimates with lower standard errors (Hamilton, 2009, p. 226).

17 The software Stata's routine "mspline" chops a scatterplot into vertical bands, calculates bivariate medians for each, and then interpolates the median points using cubic splines. The term *spline* is derived from a flexible strip of metal commonly used by draftsmen to assist in drawing curved lines. Spline interpolation is now preferred over polynomial interpolation because the interpolation error can be made small even when using low-degree polynomials for the spline.

18 They were also based on a multivariate model which we replicate (approximately) later in this paper.

19 Average levels of well-being in both Australia and USA dropped over the decade, whereas well-being levels in Canada rose. Canada, whose

curvature was insignificant in the 1990s, approximated the New Zealand case more closely in this second wave. This decline in average subjective well-being has been documented in Australia since 2001 using the HILDA survey (Ambrey & Fleming, 2012).

20 This USA result is interesting given an earlier study covering the period 1973 through to 1992 based on comparing responses of those under and over 30 years of age in Europe and the USA (Blanchflower & Oswald, 2000). Their conclusions about the rising well-being of the young were based primarily on the falling proportion of young unmarried educated respondents, successively smaller proportions of whom reported low levels of satisfaction with life.

21 The reviewer on the second version of this paper asks whether the model is fully specified, questioning whether other potential variables such as the presence of children, financial indebtedness, location, etc. should be included. There are several issues here. Firstly whether such variables are collected (for each country) in the World Values Survey (WVS), and secondly, whether their addition to the four-country models affects the estimated intergenerational differences in subjective well-being. The influence of location is a conceptually and empirically difficult issue to assess, largely because strong selection effects sort people by location. Location for the majority of the mobile is therefore largely endogenous. Secondly, even if location was not endogenous, obtaining consistent locational areas across countries is thwart with difficulty. While internal regions are present in the World Values Survey files for New Zealand, the average count for the conventional "regions" is low, at less than 100. A third issue is the fact that when included in subjective well-being equations, area variables often register little effect (in part because areas are endogenous). For each of these reasons, location has not been included in the regressions. As for the other variables, a search of the WVS code book shows no question on financial indebtedness. The question on the number of children is asked in New Zealand, Australia and Canada but not in the USA. This variable rarely raises or lowers measures of global satisfaction in the literature. In our own experiments, dummy variables for 1, 2 and 3 or more children were included as regressors (against the base of no children). None of these "children" dummies had a statistically significant effect on the regressions reported in Table 5 and have been omitted in the final equations.

22 As such, our results echo similar concerns about the growing generation gap in well-being raised notably by Barber (2001) and earlier by Lester (1989). For a recent advocacy based on the same argument, see Fredli and Parsonage (2007).

23 Notwithstanding the value of being able to track the underlying well-being conditions across the age groups, the World Values Survey samples are relatively small and it is acknowledged that sourcing a representative sample of young people from telephone surveys is unlikely to yield fully representative samples, although there is reason to believe that similar problems prevailed in comparison countries as well.

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