

The Determinants of Subjective Wellbeing in New Zealand: An Empirical Look at New Zealand's Social Welfare Function

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Abstract

A primary concern of any government is the wellbeing of its citizens. This raises the issue of measurement: if wellbeing is the goal of social policy, then evidence-based social policy requires a metric for wellbeing against which the success or failure of social policy initiatives can be assessed. Recently, cardinal notions of utility have gained an increasing level of credibility following convincing evidence that notions of subjective wellbeing can be empirically measured through relatively straightforward questions carried in sample surveys. This paper analyses the determinants of subjective wellbeing using data from the 2008 New Zealand General Social Survey.

Introduction

Democratic governments have always been concerned with actions that promote a better life for their citizens. This link between wellbeing and policy is not new. Since Aristotle's time many thinkers have considered that wellbeing is an appropriate goal for society. Utilitarian philosophers in the 18th and 19th centuries identified the pursuit of pleasure and the avoidance of pain as the only intrinsic values in the world. Jeremy Bentham argued that actions that gave the maximum happiness to the maximum number were of greatest value. John Stuart Mill, writing later, also argued that actions should be judged against how effectively they promote happiness.

In modern societies, progress has tended to be gauged by using economic indicators such as GDP and per capita income. In the absence of broader measures, these indicators of economic health have been treated as if they were complete measures of national wellbeing. However, while economic outcomes are clearly important for human wellbeing, there is a growing body of evidence that GDP and per capita income are inadequate metrics to gauge wellbeing. This evidence includes President Sarkozy's commission into Measuring Social and Economic Progress, the Organisation for Economic and Social Development's Global Project on Measuring the Progress of Societies, and the European Commission's Communication on GDP and Beyond.

An alternative approach to measuring wellbeing that is gaining credibility internationally is self-reported happiness or life satisfaction. There is a large body of international happiness research, drawing on psychology, sociology, and economics. The weight of evidence from this research shows that subjective ratings of happiness and life satisfaction provide valid and consistent measures of real phenomenon.

If we accept that an important goal of public policy should be to maximise people's wellbeing, and that self-reports of individual happiness and life satisfaction provide valid measures of wellbeing, then we need to understand what makes people happy. Governments cannot make people happy, but they can develop the conditions and select the interventions that are most likely to make people happy. In order to do this, they must know the main determinants of happiness.

This paper uses data from the New Zealand General Social Survey 2008 (NZGSS) to investigate the determinants of self-assessed life satisfaction. The NZGSS is explicitly designed to cover the full range of factors that affect wellbeing. The paper is structured as follows. It begins by summarising the main conclusions about factors that affect wellbeing from the literature on life satisfaction. The next section describes the dataset used in the empirical analysis of life satisfaction and sets out the hypothesised model of wellbeing. This is followed by a discussion of the results from the analysis. The results section begins with a brief discussion of the results of the bi-variate correlations followed by an analysis of the results of a weighted least squares regression on the dataset. An ordered probit model is also estimated to validate the results of the weighted least squares regression. The concluding section of the paper discusses the implications of the empirical analysis.

Background

Happiness or life satisfaction is a subjective open measure of wellbeing. It is subjective because in surveys people are simply asked whether they are satisfied with their life as a whole and open because researchers do not pre-define the components of wellbeing – it is up to each individual respondent to judge whether they are satisfied.

A typical question is, ‘On the whole are you satisfied, fairly satisfied, not very satisfied, or not all satisfied with the life you lead?’ or ‘Taken all together, how happy would you say you are: very happy, quite happy, happy, not very happy, not at all happy?’

Concerns have been expressed about this approach. These stem from its subjectivity and whether answers to the survey questions actually provide us with useful information. However, extensive research has shown that responses to questions about life satisfaction do correspond with people’s actual states of mind. First, considerable comfort can be taken from the fact that friends and family members judge the subject’s life satisfaction to be similar to the self-reported measure. Second, changes in reported happiness have been shown to have measurable objective effects, such as changes in brain electrical activity and heart rate. And third, it has been found that people reporting themselves to be happy or satisfied with their lives also display this in their other behaviour, such as smiling more.

Given that happiness or life satisfaction provides a valid measurement tool, what are the social and economic determinants of happiness? Researchers have conducted a wide variety of studies into the relationship between life satisfaction and a range of other factors. The findings are summarised under six headings:

- personality and genetic factors
- demographic factors
- health and education factors
- economic and work factors
- social life and community relationships
- safety and security factors.

Personality and genetic factors

Personality has been shown to be an important factor influencing wellbeing. Traits such as optimism, self-esteem, extroversion, intelligence, ability to organise and plan and low neuroticism, have all been found to be strongly associated with life satisfaction. Genetic factors are strongly implied in some of these personality factors, such as extroversion, neuroticism, and intelligence, but others appear to be more strongly affected by upbringing and the social environment, such as self-esteem.

There is strong evidence regarding genetic influences on life satisfaction. Studies of twins have found that genetically identical twins report similar levels of wellbeing. The result is found even when the twins are raised apart. Researchers have suggested that 40 to 50 percent of any single individual’s wellbeing is genetically determined.

Demographic factors

Levels of life satisfaction are generally found to be marginally higher among women than men. For example, one study of 16 nations averaged over six years found that 24 percent of women reported being 'very happy' compared with 21 percent of men. One explanation of these sex differences, with growing evidence to back it, is that women are more socially connected and involved than men.

The relationship between age and wellbeing appears modest. Studies averaging large sample sizes have found that on average, life satisfaction is highest among younger and older age groups. The lowest levels of satisfaction are recorded among the middle age groups (45-55 years). It is not known whether the dip in wellbeing in middle age is caused by thwarted ambition, the stress of raising children, caring for ageing parents, the realisation of mortality, or other reasons.

Studies looking at the relationship between parenthood and life satisfaction have generated mixed findings, which have led to the overall conclusion that children do not necessarily make us happier.

Health and education factors

In many studies health has been found to be one of the strongest drivers of overall life satisfaction. Life satisfaction is greater among people who are in good physical and mental health. Inversely, happy people are less likely to fall ill and die than unhappy people. From their review of the international literature, Diener et al concluded that subjective evaluations of health status matter more than objective measures. The relationship is less strong when measures of actual health or a third party assessment of health is used, but remains significant. This is an instance of the more general issue that subjective measures correlate with other subjective measures.

In contrast to health, a variety of studies have failed to find evidence of a strong independent relationship between education and wellbeing. A variety of studies have found a bi-variate correlation between education and life satisfaction. However, it appears that most of the relation can be explained by the fact that the more highly educated tend to have higher incomes, better health and more social capital. Once these factors are controlled for the relationship often drops or disappears.

Economic and work factors

A large body of research examining the relationship between income and life satisfaction suggests that the relationship is complex. Cross-national studies show that citizens of wealthier countries tend to be significantly more satisfied with their lives than those of poorer nations. Similarly, when examining income and life satisfaction within a country, studies have consistently shown that richer people are happier than those on lower incomes. The evidence supports a log-linear relationship between income and life satisfaction. However, life satisfaction does not seem to rise over time as income rises within a particular country. This suggests that it is relative income that matters for life satisfaction rather than absolute income. Richard Layard has described the notion of 'rivalry', in which happiness increases when an individual's income increases relative to their peers and 'habituation' as they adjust to their most recent state. Both responses explain the effects of diminishing marginal gains in income. Layard concludes that efforts to become richer are largely self-defeating in terms of overall happiness of society.

It is worth noting that most time series information on the relationship between aggregate income and life satisfaction is from countries with very high incomes by global standards. Until there are significant time series data for developing countries with significant income growth, the precise impact of income on wellbeing remains open.

Evidence from the literature shows that unemployment has a strong negative effect on life satisfaction, after controlling for other factors associated with employment. The impact of unemployment on life satisfaction is one of the strongest findings from the literature. It has been suggested that it is the loss of social relationships and social esteem associated with work that is especially hard hit. Not surprisingly, there is a strong positive association between job satisfaction and life satisfaction. Tait, Padgett and Baldwin performed a meta-analysis of 34 studies and determined an average correlation of 0.44 between job satisfaction and life satisfaction.

Social life and community relationships

In the international literature, studies have consistently found that being married has a strong positive effect on subjective wellbeing, while being divorced, widowed, or separated has a negative effect. This relationship holds across cultures even after controlling for income and age.

Many studies have also highlighted the importance of relationships with family, friends, and others in the community on subjective wellbeing. For example, Tom Healy found that having strong bonds of social support through close friends, the frequency of socialisation (visiting or being visited), not feeling socially isolated, and trusting others were strong predictors of life satisfaction. Formal aspects of social life and community relationships, such as volunteering, were less predictive of subjective wellbeing.

The available evidence suggests a weak but significant relationship between participation in civil society and subjective wellbeing.

Safety and security

There is little evidence of a relationship between safety and security and subjective wellbeing. Studies that have looked at the impact of crime victimisation on life satisfaction have produced mixed results, suggesting the need for further work.

Data and methodology

While there is a large and growing body of international research on life satisfaction and the correlates of life satisfaction, little empirical research has been done on this topic in New Zealand. This reflects the general dearth of good data sources on life satisfaction. The New Zealand General Social Survey 2008 (NZGSS) is a new source of information on life satisfaction. It provides data on a wide range of social and economic outcomes, making it suitable for investigating the determinants of life satisfaction in New Zealand.

The NZGSS was carried out between April 2008 and March 2009. A total of 8,721 people aged 15 years and over were interviewed about how they were faring in different areas of their lives, such as education, health, paid work, income, and social relationships. The survey includes both objective and subjective measures. Respondents were selected at random using a multi-stage sample design and interviewed face-to-face using computer assisted personal interview (CAPI). The survey achieved a response rate of 83 percent.

The NZGSS measured life satisfaction using a five-point scale. This scale provides a subjective measure of an individual's satisfaction with their life in all its aspects at a point in time. In this paper, we are concerned with the social determinants of life satisfaction, as expressed in the following wellbeing function:

$$W = \beta_1 D + \beta_2 X + \beta_3 E + \epsilon$$

Where,

W is individual wellbeing or life satisfaction

D is a vector capturing variation in individual wellbeing along demographic lines

X is a vector of social variables that affect individual wellbeing

E is a vector containing individually specific factors (eg genetic and environmental)

ϵ is error term.

In examining subjective wellbeing we are primarily concerned with identifying the impact of X on W. Ideally we would estimate the whole function to identify the coefficients for X. However, to estimate E would require panel data with multiple observations for each person. Without this we are only able to model the impact of D and X on W. The exclusion of E from the estimation will only be of concern to the extent that it biases the estimates of D and X. This will be the case so long as the error terms of D, E and X are not correlated with each other. Generally speaking this is a safe assumption to make.

In the model β_1 tests whether, controlling for variables that might vary along demographic lines, wellbeing varies significantly between demographic groups. A significant correlation would be interpreted as evidence of either a propensity to respond to life satisfaction questions more or less negatively for the demographic group in question, or evidence of omitted variables in X that impact on life satisfaction and which are not distributed independently of D.

The coefficient on X, β_2 provides an estimate of the size and direction of the relationship between X and life satisfaction. Underpinning this is an assumption of causality: that elements of wellbeing in different life domains (X) affect overall life satisfaction (W).

The methodology that we used to identify the determinants of life satisfaction in this study involved firstly producing correlation coefficients of life satisfaction for key social and economic outcomes included in the NZGSS. This showed us which variables were significantly correlated with life satisfaction and the direction of the correlation. Next we used weighted least squares analysis to investigate the independent effect of the variables on life satisfaction, controlling for the other variables in the model. Finally, ordered probit analysis was used to confirm the results of the weighted least squares analysis.

Table 1 lists the variables included in the analysis. Following evidence from the literature a variable for age squared is used to capture the commonly found 'u-shaped' relationship between age and life satisfaction. A log-linear form is hypothesised for household equivalised income, capturing a decreasing marginal utility from additional income. Equivalised income takes into account the effect of family size on the standard of living supplied by a given level of income.

Results

The results of the analysis are shown in table 2. The correlation coefficients presented in the first column of the table generally support the findings of international literature. Mental and physical health, income, unemployment, degree qualification, household ownership, and the variables associated with social life/relationships and safety/security are all correlated with life satisfaction.

Mental health and physical health both show the expected relationship of an increase in life satisfaction with an increase in health status, but the relationship is stronger for mental health. Unemployment and not owning one's home both have a negative coefficient, while equivalised household income has a positive coefficient. The social/community relationship and safety/security variables all have significant negative coefficients. However, the size of the coefficients is small for several variables, including not enough family contact, didn't vote in national elections, and experienced a violent crime.

The picture for education is mixed. Neither the school nor vocational qualifications measures have a significant relationship with life satisfaction. Although the degree variable shows a significant correlation in the expected direction, the relationship is not strong.

The results for the demographic variables generally show the anticipated relationship with life satisfaction. Sex, being female, is positively correlated with life satisfaction, although the coefficient is small. The correlation coefficients for Maori, Pacific, and Asian people are negative and significant, reinforcing the findings from other sources that these groups have poorer outcomes on average than the European group. Having a dependent child also has a significant negative correlation with life satisfaction. The size of the coefficients for the demographic variables is relatively small, suggesting a weak relationship with life satisfaction.

To further investigate the relationship of these variables with life satisfaction, we used weighted least squares regression analysis. This allowed us to estimate the relationship between each of the variables and life satisfaction, while controlling for the effects of the other variables in the model.

The results from the weighted least squares analysis support the 'u-shaped' relationship described in the literature, whereby life satisfaction declines with age until around 45 years of age, before rising again with increasing age.

Sex shows a positive coefficient, suggesting that women report higher levels of satisfaction than men, controlling for all other factors. Again this supports the findings in the international literature. One explanation for this difference between the sexes is that women experience or report positive and negative emotions more strongly than men.

Ethnicity does not show any significant effect on life satisfaction, after holding all other factors constant. The same is true for the presence of a dependent child. These findings suggest that these variables affect life satisfaction through other variables, such as income, rather than having a direct effect.

As in the international literature, mental health and physical health both have a strong independent effect on life satisfaction. Although the coefficients are small, this represents the scalar (0-100) nature of the SF-12 variables. A one standard deviation change in health status gives an impact on life satisfaction of 0.33 for mental health and 0.11 for physical health. The coefficient for mental health is larger than that for physical health, suggesting that the impact of mental health on life satisfaction is greater. In many of studies in the international literature, health is found to be one of the strongest determinants of overall life satisfaction; however we are not aware of any studies that have been able to use a continuous scalar measure of health in the context of good measures of other outcomes.

Interestingly, the weighted least squares analysis shows that having a degree has a significant positive impact on life satisfaction, when other variables are taken into account. A similar relationship does not exist for a school qualification or a vocational qualification. The evidence in the international literature suggests that education affects life satisfaction through other variables such as income, employment and economic resources.

Equivalised household income has an independent effect on life satisfaction and has the expected positive coefficient. This is in keeping with the international literature. Also in keeping with the international literature, the size of the coefficient is not large.

Further affirming the findings in the international literature, unemployment has a strong negative impact on life satisfaction, after holding all other factors constant. Not owning one's home also has a negative effect, although the size of the coefficient is relatively small.

The weighted least squares analysis confirms the importance of factors associated with social life and community relationships on subjective wellbeing. Not having a partner and not having access to help in a crisis both contribute negatively to life satisfaction. Similarly, not participating in voluntary work, feeling isolated most of the time, difficulty expressing one's identity and feelings of not belonging to New Zealand all had negative coefficients. The size of the coefficient was particularly high for unavailability of help in a crisis.

The picture for safety and security is less clear. On the one hand, dissatisfaction with the quality of local facilities does have an impact on life satisfaction in the expected direction. On the other hand, being the victim of a violent crime does not have a significant independent impact on life satisfaction. Interestingly, when the subjective variables are excluded from the model, victimisation does have a significant impact, although the size of the coefficient is small. The interpretation of the results for crime victimisation thus requires some care. They may reflect the fact that the impact of victimisation on life satisfaction diminishes over time. The data used in our analysis is victimisation over the last 12 months.

Weighted least squares analysis produces results that are relatively intuitive and easy to interpret. The coefficient is the expected change in life satisfaction of a one-unit change in the relevant variable. However, a number of the assumptions underpinning the use of weighed least squares regression analysis do not hold for life satisfaction data. In particular, it assumes that the independent variable is continuous, is not bounded at the upper and lower ends, and that the score can be interpreted in cardinal terms. None of these assumptions hold for the data under consideration. This means that the weighted least squares is not an efficient estimator of the dependent variable and the independent variables. To test whether this has had an impact on the results, the model was re-estimated using ordered probit. Probit estimation does not produce coefficient estimates with a straight-forward intuitive explanation, but is an efficient estimator when there is a categorical dependent variable. Columns 3 and 5 of table 2 present the results of the ordered probit analysis.

The probit results confirm the results of the weighted least squares analysis. The coefficients for the social and economic factors all remain unchanged both in terms of sign and significance.

Discussion

The analysis presented here verifies the main findings from the international literature on life satisfaction. In particular, it shows strong support for the importance of health status, particularly mental health status, unemployment, income and social relationships. Each of these factors has a strong significant impact on life satisfaction, when other factors are held constant.

Three further findings stand out as important. The fact that a degree qualification was found to have an independent significant impact on life satisfaction is of interest, particularly in light of the fact that international evidence is ambivalent on the relationship between education and wellbeing.

The significance of the variables ‘didn’t feel they belonged to New Zealand’ and ‘difficult to express identity’ is of interest as there is no precedent for these variables in the international literature. They lend support to the inclusion of cultural identity as a separate domain in its own right in the Social Report. The Social Report monitors the wellbeing of New Zealanders on an annual basis.

The findings for violent crime victimisation are also noteworthy, because they provide some evidence in support of the relevance of crime victimisation to wellbeing, although it is only marginally significant at best. This signals the need for further work on the relationship between crime victimisation and wellbeing.

The empirical evidence from this study supports the international body of research that life satisfaction provides useful and valid information about the quality of peoples’ lives. It is affected by social and economic factors, and can be used as a yardstick by which the success of government actions can be judged.

It can also be used as a tool to help policy-makers make decisions regarding policy alternatives and help citizens be better educated about the choices that affect their lives. The same dollar amount invested in different areas might lead to different pay-offs in terms of wellbeing. Policy-makers might want to consider these benefits to the overall wellbeing of the population when deciding which policy to implement.

Results from the next NZGSS will be available in October 2011 and will allow further analysis of the life satisfaction of New Zealanders.

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Table 1 Analysis Variables

Outcome area and variable	Type of variable	Outcome area and variable	Type of variable
Demographics Age Age Squared Female Maori Pacific Asian Have a child	Continuous (0-120) Continuous (225-9604) Dummy Dummy Dummy Dummy Dummy	Social life and community relationships No partner No help in a crisis Not enough family contact Didn't vote in national elections Didn't do voluntary work Didn't feel they belonged to New Zealand Difficult to express identity Felt isolated some or all of the time	Dummy Dummy Dummy Dummy Dummy Ordinal (1-5) Ordinal (1-5)
Education and health Mental health Physical health School qualification Vocational qualification Degree	Continuous (0-100) Continuous (0-100) Dummy Dummy Dummy	Safety and security Experienced a violent crime Dissatisfied with quality of local facilities	Dummy Ordinal (1-5)
Economic and work Log of equivalised household income Unemployed Do not own home	Continuous (-0.4042-4.1384) Dummy Dummy		

Table 2 Results of Analysis of New Zealand General Social Survey Variables

Outcome area	Correlation Coefficient	Weighted Least Squares	Ordered Probit	Weighted Least Squares	Ordered Probit
		Full Model		Significant items (5%) only	
Demographics					
Age	0.06158***	-0.02340***	-0.0366***	-0.02813	-0.0355
Age squared		0.00024***	0.0004***	0.00029	0.0004
Female	0.01784	0.09931***	0.2006***	0.10819	0.2021
Maori	-0.05892***	-0.00158	0.0214		
Pacific	-0.02654*	-0.02304	-0.0567		
Asian	-0.02362*	-0.05701	-0.0931		
Have a child	-0.03700***	-0.01583	-0.0290		
Education and health					
Mental health	0.44544***	0.03273***	0.0437***	0.03382	0.0436
Physical health	0.10366***	0.01189***	0.0167***	0.01146	0.0167
School qualification	-0.00998	0.00661	0.0435		
Vocational qualification	0.00344	0.00244	0.1746		
Degree	0.07206***	0.09095***	0.1188***	0.08982	0.1322
Economic and work					
Log of equivalised household income	0.16868***	0.07576***	0.1188***	0.07990	0.1323
Unemployed	-0.10149***	-0.23753***	-0.3471***	-0.30006	-0.3471
Do not own home	-0.15498***	-0.05657**	-0.0685*	-0.06764	-0.0750
Social life and community relationships					
No partner	-0.15330***	-0.17481***	-0.3028***	-0.18041	-0.2951
No help in a crisis	-0.13784***	-0.26488***	-0.3628***	-0.30013	-0.3923
Not enough family contact	-0.05966***	-0.02310	-0.0384		
Didn't vote in national elections	-0.07850***	-0.03171	-0.0445		
Didn't do voluntary work	-0.10780***	-0.09792***	-0.1767***	-0.10302	-0.1782
Didn't feel that they belonged to NZ	-0.09956***	-0.14390***	-0.2004***	-0.17939	-0.2239
Difficult to express identity	-0.21697***	-0.09632***	-0.1604***	-0.09159	-0.1647
Felt isolated some or all of the time	-0.29163***	-0.06870***	-0.0872***	-0.07502	-0.0893
Safety and security					
Experienced a violent crime	-0.07644***	-0.06482	-0.0693		
Dissatisfied with quality of local facilities	-0.16829***	-0.09623***	-0.1536***	-0.09610	-0.1525

Note: *** indicates significance at the 0.01 level; ** indicates significance at the 0.05 level; and * indicates significance at the 0.1 level.