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*Te Whare Wānanga  
o te Ūpoko o te Ika a Māui*



## **Youth suicide, subjective well-being and the role of place in New Zealand**

**Anne-Marie Snider**

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School of Geography, Environment and Earth Sciences,

Victoria University of Wellington

New Zealand

# Abstract

One of the major shifts in our social structure over the last 50 years has been a switch in the relative well-being positions of young and old. This is reflected in their suicide rates where, in contrast to the gradual decline in the propensity of older populations to take their own lives, that of the young has risen dramatically.

Not confined to New Zealand, this 'generational switch' raises important questions about the changing relative distribution of incentives and rewards for living across the age domain. The purpose of my thesis is to document this change and explore its implications. I do so by analysing the current distribution of subjective well-being across contemporary age groups including differences between men and women and Māori and non-Māori.

Of particular interest is the link between suicide, subjective well-being and social capital – the levels of social connectedness that prevail in the lives of the young adults relative to their parents' generation. As a geographer I'm particularly concerned with the role of local capital (community connectedness and trust) in nurturing well-being, and hence the variation that well-being exhibits across places within a country. While thoroughly investigated between nations, relatively few studies document geographical variations in *subjective* well-being *within* countries, particularly in terms of how these statistics differ by age.

I find that not only does dissatisfaction with life (unhappiness and other measures of subjective well-being) rise as teenagers approach adulthood, but that it peaks in the 30s and declines slowly thereafter in a pattern reflective of the prevailing pattern of suicide. Moreover I find that, in addition to partnership, income, employment status and housing tenure, satisfaction with life among young adults in particular also varies across local communities, and cities. As such, the young exhibit a heightened sensitivity to place in ways that raise important questions about the nature of communities in which children are raised. It is this new information which I bring to a discussion of current initiatives dealing with mental health and the prevailing strategies advocated in New Zealand.

## Acknowledgements

It is with this personal note that I send out a heartfelt thank you to Professor Philip Morrison for guidance, suggestions and the willingness to discuss all things that make us unhappy. Hopefully knowing more about what affects our subjective outlook on life will help us process the loss of those who take their own lives, which is a very different sort of loss.

I'd also like to acknowledge and thank Chris Bowden, Wellington suicide grieving group director and lecturer in the School of Education, Psychology and Pedagogy; Mary Strang, the Wellington District Health Board Public Health Advisor, for her helpful connections; Hon Jim Anderton, the M.P for Wigram and Leader of the Progressive Party, for sharing the story of his daughter death as well as his thoughts on suicide prevention; Sally Griffin, his executive assistant, for setting up the meeting with Jim Anderton; Tofa Suafole Gush, the National Manager of the Pacific Peoples Service Department for sharing her story, as well as the story of Pacific peoples in New Zealand; Dr. Paul Oestricher, Episcopal priest and founding member of Amnesty International, for meeting with me to discuss the nature of God and thoughts on suicide and faith; and Merryn Statham, director of the (SPINZ) Suicide Prevention in New Zealand, for her encouragement and conclusions on suicide postvention and prevention in New Zealand.

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# Prologue

My dad took his own life while I read Harry Potter on December 9<sup>th</sup>, 2001. He told us, “I’m going to go fix something in the garage” and quietly disappeared. I remember feeling concerned. He had not been well. Twenty minutes later my brother discovered him hanging from the rafters, and (poor Reed) screamed, “dad committed suicide!” It was surreal. My mother and I rushed downstairs and untied him in a panic. After failing to revive him, my mom rocked his body back and forth as I told him, ‘we love you’. We didn’t say good-bye.

It was only a year ago that I thought this story was common among suicides. Internationally hanging is the most common method of suicide, and men, especially in their mid-to-upper forties, are more likely to be depressed than women. Like many who commit suicide, my dad had a difficult past. As kids Reed and I used to *beg* him to tell one of his wild childhood adventures – stories he used to make light of the fact that my six uncles and two aunts grew up without money or care.

And this poverty haunted him throughout his adult life. For instance when my dad, Rod, married into my mother’s wealthy, religious family some negative aspects from his upbringing became burdensome. He was bad with money. He lied to avoid being punished. He made promises he couldn’t keep.

But he always tried. Rodney Snider was a positivist. He was also the corniest, loudest, most selfless person I know. He taught me how to put others first. He loved big ideas, organizing parties, and dancing. Goodness, he was an *incredible* dancer. As they often say, “he was the last person I thought would commit suicide”.

I don’t know how my dad managed to kill himself with his family moving about upstairs, and it seemed strange that he didn’t leave a note. Now, I have learned from reading hundreds of suicide testimonies that this is not a typical suicide scenario. At the time it felt impossible.



When it happened our community ignored the event by way of uneducated shame - how could we not know Rod was suicidal?

Our internal inquests to name his manic tendencies came and went, but these causal questions were not half as intimidating as talking to each other. I mean, what exactly do you say to a 'suicide survivor'?<sup>1</sup> Sorry you lost your Dad? He didn't mean it? He was selfish? He was brave? He was acting on impulse? It was his right? We miss him?

Nearly 600 people were at my dad's funeral. It, it was a very emotional and important time. But like many post suicide stories, relations between family and friends never felt or looked the same. As time passed my mother became an avoided entity (yet constantly discussed), and my brother and I were swept up into friendships and schoolwork.

Feeling the need to 'figure out' what happened to my dad, I dabbled with counseling methods, but overall I enjoyed life and was not encouraged to think or talk about the darker things. I had a very loving four-year relationship and multiple friendships nearing a decade of closeness that kept me entertained and loved. Then suicide happened again. A good friend's father, and a friend of my dad's, hung himself after his business collapsed leaving a note behind to his wife and adult children to explain his irrational choice, and how he loved them.

It was strange how ill prepared we were to face suicide again. I felt deeply responsible, ashamed, angry and scared. How could we let this happen again? What killed them? Was this going to kill me too? Was this going to kill my brother? Why didn't we stop it, and *why is suicide so hard to talk about?* This brought me to the conclusion that there is still much we don't know about suicide. But I wanted to try to understand this incredibly sad thing so I don't have to live in the anxiety of assumptions. And I miss my Dad.

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<sup>1</sup> Surviving loved ones of a suicided individual.

In part, I intended this thesis to be read by my whānau, so they may know more about the contextual issues associated with suicide such as poverty, child abuse (verbal, physical and sexual), the pressure to perform, isolation, lack of trust, poor connections with community members and place. I also wrote this in hopes that non-academic suicide survivors and national and international policy advisors alike note the evidence that younger populations in New Zealand are more likely to commit suicide, and less satisfied with life in general than older populations - and question why this may be.

This thesis was tough going. However, I have gained the ability to theorize why particular groups and individuals are more vulnerable to suicide. As Durkheim pointed out 100 years ago there is connection between society and the act of suicide. Perhaps those who commit suicide do so to protect others from the burden of care?

## Dedication and inspiration

“Sorrow which is never spoken is the heaviest load to bear.”

- Frances Ridley Havergal

I wish to dedicate this work to God's work in my friends, for joy is not possible without you. You listened and you lightened my load. Thank you.

Dad this work was inspired by you, and others who didn't survive, as well as the I AM. We do more than exist, we thrive.

This thesis was also written for my family members seen below. Sometimes it's hard to believe this happened - you are so important to me.



# Chapter 1

## Introduction

One of the most fascinating relationships between mental health, age, and place is reflected in the international evidence and a history of New Zealand's suicide rates (Weaver and Munro, 2010, Eckersley and Dear, 2002). At the beginning of the 1950s a dramatic change in age rates of suicide took place here in New Zealand and worldwide. Suicide rates of people over the age of 65 miraculously dropped, while youth suicides slowly ticked upwards; by the 1970s they had tripled. Recent statistics published by the Ministry of Health show that for the past ten years New Zealand has held the second highest youth suicide rate for males and females in the world - while being in one of the lowest percentiles for suicide rates in the 65+ age range.

Why are youth around the world as well as in New Zealand so vulnerable now compared to the past, and what has caused the relative suicide rates of old and young to reverse? How did youth rates triple over the course of 50 years? Does this increase relate to the rapid modernization that occurred over the past century?

Both the changes over time and the geographic variation in suicide rates raise important questions about correlations with mental ill health, and the nature of socialization in the modern area. While mood disorders are closely linked with suicide, not all who take their own lives represent people who are suffering from clinical depression (Collings and Beautrais, 2005b). Therefore, our social connections must play a part in suicidal behavior.

Theories distinguishing suicide as a social disease were used most widely by French sociologist Emile Durkheim, who linked suicide with social bonds in the late 1800s using demographic information (Gunnell et al., 2003). Durkheim's inter-country comparisons lead him to recognize the importance of religion, sex and ethnicity and

cultural patterns as confounding and contributing contextual factors of suicide (Alexander and Smith, 2005).

Other groundbreaking research on the sociological correlates of suicidal behaviour include Morselli's demographic work 100 years ago in Europe (1881), and that of historian Halbwach in the 1930s (Halbwach, 1930 (English Translation 1978)). Both Morselli and Halbwach also mapped patterns of suicide rates.

Suicide research therefore has long established roots in sociology and demographic work. While there is a vast body of research that illustrates individual-level factors, such as poor mental health, negative life events, drug usage, and ill perceived social support as important predictors of suicide, few studies have attempted to explain the apparent paradox of decreased suicide rates in the 65+ group relative to youths over the last century (Gunnell et al., 2003), particularly within the context of evolving social conditions distinct to different regions.

However, there is plenty of evidence from testimonies and case studies of youth suicide from the 1980s and 90s that the suicidal conclusion is in part a reaction to how youth perceive they are valued by others. Take Kevin's story for example, "Kevin was a 17-year old male who intentionally ended his life when he drove his automobile at high speed into a truck that was parked on the shoulder of a freeway" (Peck et al., 1985; p. 63). Reading over Kevin's coroner report authors Peck, Farberow, and Litman (1985) found that life was difficult for Kevin after his mother, unhappy with her marriage and the low socioeconomic status of Kevin's father, left with the children, and told Kevin and his sister not to let their father know where they were. Once established, Kevin's mother began dating and ignored the family. This may have left Kevin feeling out of control, and unimportant (Peck et al., 1985).

Or consider Tom's story. Tom, a 17-year-old America Indian who hung himself, had been diagnosed with learning disabilities during his school years, and "never allowed himself to become fully involved there" (Peck et al., 1985; p. 65). Although he excelled in art pertaining to his heritage, his parents "assimilated and adhered to white society values...and did not sustain pride or identification with their Indian

heritage” (Peck et al., 1985; p. 65). This may have left Tom feeling undervalued and misunderstood.

In response to increases in youth suicide numbers ‘experts’ have frequently cited stress and anxiety or drugs and alcohol abuse as the main reasons to ‘why young people take their own lives.’ For instance, retired New Zealand author, Lewis Rivers (1995, p. 20) wrote in the mid-1990s that, “Youth experience the most environmental stress out of any age group”. Rivers concluded that this stressful environment was linked to the observation that “what was a very simple way of life [in New Zealand] has become very complex. Our young people want for things that were not part of *our* childhood” (Rivers, 1995; p. 25).

While some experts cite the changing times, others refer to the media for influencing negative attitudes and desires as the primary causal factor in suicidal youth mentality, as illustrated by Australian author Donaghy in *Leaving Early*,

“The media heighten youthful anxieties by depicting the world outside their personal experience as one of turmoil, exploitation and violence. Discontent is fueled and self-worth eroded by promoting superficial materialistic lifestyles and selling a way of life that is beyond the reach of most adolescents” (Donaghy, 1997; p. 272).

New Zealand health professional Dr. David Bennett went so far as to conclude that suicide was, “at the core of what is going wrong with our society. It’s proof if we need it that we have failed to provide our young people with a sense of optimism and a life that has some meaning” (Donaghy, 1997; p. 278).

A sobering statement from one New Zealand Policeman echoed similar feelings of a hopeless, careless social climate, noting that, “living is harder these days. Kids want to be successful but they can’t. It’s too hard. It’s a lot more work. Drugs and alcohol are so easily accessible. There is more pressure academically and socially” (Stevenson, 1995; p. 127).

To explore these social impacts on suicide rates and age demographics, this work investigates the close connection between suicide and subjective well-being. I

emphasise that the causes of low life satisfaction and happiness are closely linked to suicidal behaviour and, in turn, are intimately linked to feelings of community, connectedness and trust. Therefore, my aim in this thesis is to document and understand the gap between the propensity of young and old to take their own lives, using measurements of subjective well-being from the Quality of Life Survey, and suicide statistics from the Ministry of Health. As a geographer I focus on how each of these dimensions varies from place to place, and illustrate how the geography of suicide and subjective well-being is particularly relevant to young adults.

I will also show how contemporary age patterning of suicides and the related issue of self-harm parallels the well documented relationship between age and subjective well-being. I use this parallel to demonstrate how the chances of experiencing low satisfaction with life increase from late teens into early adulthood, and how residence is related to well-being and, by extension, suicide and self-harm.

### *Methodology*

I must acknowledge that the work in this thesis sits firmly within Western studies and theoretical social quantitative models by drawing from the literature of Western countries, and comparing New Zealand to countries with similar values and economic policy.

To put some parameters around my use of place, my quantitative research operates on the level of city as informed by the Quality of Life Survey, thus refining the focus to New Zealand municipalities. However, place in my thesis is also defined more broadly by socioeconomic areas and regions in New Zealand provided by Quality of Life Survey, as well as Crampton, Salmond and Kirkpatrick's levels of deprivation provided by the Ministry of Health, to assist connections between subjective well-being and suicide rates in young and old populations of New Zealand as well as other OECD countries. Therefore, in the chapters to follow I address place on two levels: New Zealand versus other countries in general, and differences between places within New Zealand. At both levels I explore links between suicide,

subjective well-being, youth and place. I argue that social conditions such as trust and social capital of a place do not only have an effect on subjective well-being, but that suicide is an expression of well-being, and a powerful tool for revealing the nature of society.

In recognition of the close connection between subjective well-being and suicide, my approach employs quantitative analysis of unit records from large national surveys to establish patterns from place-based communities and people's subjective well-being,

### *Theories of subjective well-being*

To date there no single accepted measure of subjective well-being. Alternatively, there is a growing realization that well-being is multidimensional and requires several different questions to elicit a well rounded response (Bramston et al., 2002, p. 261-262). The main measures in use include life satisfaction (Cummins, 1999, Diener and Lucas, 2000), happiness (Shin and Johnson, 1978), and others such as quality of life (Andrews and Withey, 1976).

The social sciences have yet to agree what constitutes subjective well-being. While philosophers Nussbaum, Doyal, and Gough have all envisioned dimensions in well-being as universally applicable, others, including White, reject subjective well-being as a general state, claiming that subjective responses are restricted to cultural influences and personality (Redmond et al., 2010, Nussbaum, 1992, Doyal and Gough, 1992). I, however, disagree. Surveys that provide multiple measures of subjective well-being such as quality of life, life satisfaction, and happiness capture different dimensions of self-reported well-being with consistent definitions of meaning. For instance, happiness is best thought of as a short-term emotive state, while life satisfaction is widely believed to refer to a longer term state of mind. By contrast the concept 'quality of life' is typically thought to be outside the realm of emotional responses and related more to a material state.



Not only can we agree upon the general meaning of most subjective measurements, but they have proven useful at both the individual and national level. For example, there is growing evidence from epidemiological studies that report competitive societies with large gaps in wealth make us positively unhappy and unhealthy (Wilkinson and Pickett, 2009, Stiglitz et al., 2008). Quantitative research has also provided evidence that, at the individual level, dimensions of subjective well-being are empirically correlated with suicide rates, suggesting that mental distress may be inferred from scales of well-being (Daly and Wilson, 2009, Helliwell, 2007).

### *Youth suicide and subjective well-being*

In the established literature on subjective well-being, discussion of the issue is often based on ideals of atomism and autonomy - that is, whether external factors control our happiness and life satisfaction, or if we are in 'control' of our happiness or life satisfaction. Subsequently, there are two paradigm theories of happiness that have dominated research into this area, namely hedonic adaption and set point theory. I argue against the value of these notions, emphasizing instead the relevance of suicide to subjective well-being theory.

According to the concept of hedonic adaption, people completely adapt following an external 'shock' (Headey, 2010) or dramatic event, and always return to their inborn set point of happiness. The central argument of the set-point theory is that individuals have differing but stable levels of happiness; these levels are mainly due to personality traits as well as other factors that are partly hereditary or determined early in life. Accordingly, therefore, subjective well-being cannot be altered because people will always return to their inborn set-point of happiness through the processes of hedonic adaption. I reject the validity of such paradigms, simply because suicide exists. It is a powerful counter-example to the notion that everyone adapts, cyclically returning to the same point. When someone takes their life they do not return to a genetically determined base or set point of happiness after experiencing an external shock.

Illustrating this point that change in social environmental can affect both subjective well-being and the probability of suicide is the recent empirical work from political scientists Helliwell and Putnam (2004). They show that subjective well-being and its correlates such as trust and social capital, are highly correlated with suicide rates (Helliwell, 2007, Helliwell and Putnam, 2004). Specifically, Helliwell (2007) considers the effects of trust, religion, and divorce on suicide by drawing on gender specific national suicide data from 50 countries covered by the World Values Survey, as well as the European Values Survey (Inglehart, 2000). From these international comparisons, Helliwell found that the effects of trust on suicide rates are significant. Furthermore, according to Helliwell's suicide equation, which considers demographic factors as well as questions pertaining to subjective well-being, more trust would result in a significant decrease in the annual suicide rate for males, and a smaller, but significant drop for females (Helliwell, 2007).

Daly and Wilson's empirical work also provide additional evidence that the same factors increasing suicide risk also decrease levels of happiness (Daly and Wilson, 2009). While controlling for a number of demographic variables using individual level, multivariate regressions, Daly and Wilson (2009) found a strong and consistent relationship between the determinants of subjective well-being and suicide rates. They concluded that, "the same factors that increase suicide risk also shift people down the happiness continuum" (Daly and Wilson, 2009; 547). The work of Daly and Wilson is thus consistent with a close relationship between suicide and subjective well-being.

Later in this thesis, on the basis of these strong empirical associations, I use patterns of life satisfaction in youth and subsequent age groups to show how subjective well-being varies across cities in New Zealand. This is grounded in subjective well-being measurements from the Quality of Life Survey, and shows that low satisfaction with life and happiness rises as youths age into young adulthood (years 18-30), peaks in middle age (years 30 and 40), then declines with advancing years (years 50 onwards).

I model my discussion of subjective well-being after economists Blanchflower and Oswald's (2008) efforts, which compiled the first strong set of observations that supported this curvilinear life satisfaction relationship. Their work drew on a random sample of more than 500,000 Americans and Europeans pooled together from the General Social Survey of the United States, and the Eurobarometer to show empirically that happiness is U-shape in age or, as I show in chapter four, that unhappiness and dissatisfaction have an inverse U-shape over the age domain (Blanchflower and Oswald, 2008).

Blanchflower and Oswald did note, however, that there were exceptions to the U-shape relationship, and New Zealand appears as one of the exceptions. Subjective well-being in New Zealand comes in the form of a J, reflecting *lower* levels of subjective well-being measurements for youth in data collected by the World Values Survey 1998 and 2005, and the 2004, 2006, and 2008 Quality of Life Surveys. The same data also reveal that older adults in New Zealand are much more satisfied and happy than in the other countries, while younger people are more likely to report being less satisfied. In other words, the gap between the generations in subjective well-being in New Zealand appear to be greater than other countries.

The dramatic peak of New Zealand youth suicides in the 1990s was regarded by the first New Zealand suicide prevention and postvention report as a lack in the government's ability to provide sufficient health care for an unexpected spike in mental illnesses (Ministry of Youth Affairs, 1998). This response was based on the lack of significant time series correlations between social environmental factors such as females in the labour force, unemployment, fertility rates, and geographies of unequal health care provision and suicide, leaving clinical studies as the only research capable of defining the correlates of suicide owing to their ability to detect associations across individuals (Blakely et al., 2003, Collings et al. 2005).

As a result of current data collection on the subjective experience, social contextual factors and their role in suicide can now be considered more systematically (Collings et al, 2005). Different dimensions of subjective well-being are now being explored in order to uncover important contributing factors of life satisfaction, happiness, quality of life (Trzcinski and Holst, 2008, Fortune et al., 2010). This has been highlighted in New Zealand by Croft and Lawson using psychometric testing, finding, for example, that New Zealanders with Māori heritage show lower values of personal well-being and national well-being than New Zealanders with European heritage (Croft and Lawson, 2008).

The correlates of youth subjective well-being has received international attention in efforts to gain a clearer understanding of optimal human functioning (Proctor et al., 2009), and this has been done most extensively in the field of positive psychology. Some of the predictors explored in youth subjective well-being include positive relationships with mothers and fathers, non-materialistic values (Froh et al., 2010), exposure to community violence (Cooley-Strickland et al., 2009) and trusting protective relationships (Cornwell, 2003). However, the age group 'youth' has only been acknowledged as an inherently different time of human development by the field of psychology for the past 100 years - and is only loosely defined by stages of transition, self-discovery, and dynamic physical and emotive change. As a result, the pathways in which youth develop healthy mentalities and deal with distress are not yet clearly defined, nor is the role of place and community in contributing to suicidal behaviour.

Testing whether specific social environments have an effect on youth life satisfaction is of great importance given the generational switch in suicide rates. For instance, studies show that youth who spend more time alone are, in general, less happy than those who spend time with relatives during the week (Meliks, 2009, Csikszentmihalyi and Hunter, 2003), providing evidence that the frequency and intensity of connections between family and peers are most salient in a young person's life. Also, time spent connecting with others can either further isolate those who are different, or as act as a buffer for life difficulties. Furthermore,

empirical findings by Farrell support the idea that psychological benefits arise from experiencing higher sense of community (Farrell, 2004). There is even considerable biological evidence that isolation can be detrimental, highlighting that social support promotes physical health (Berkman and Glass, 2000).

Other empirical studies that focus on aspects of place, instead of age, such as levels of deprivation, also reveal important associations with subjective responses. For example, epidemiologist Richard Wilkinson's research in *Unhealthy societies* and more recent work with Kate Pickett, *Spirit level: why more equal societies almost always do better*, show that societies with growing economic disparities usually exhibit lower levels of health, providing a vital link between social environments that facilitate poor mental health (Wilkinson and Pickett, 2009, Wilkinson, 1996).

Current research shows that within OECD countries, geographical inequalities in health have reached historically high levels, with, for example, New Zealand suicide rates doubling in places with high levels of disparities (Ministry of Health, 2006, 2008, 2009, 2010, Ministry of Social Development, 2009). Although there is evidence over 20 years that shows depression has been found to be most prevalent among those with low socioeconomic status (Beardslee, 2003), and that those with economically disadvantaged backgrounds are at increased risk of suicidal behaviour (Gunnell et al., 1995, Chuang and Huang, 1997, Platt and Keitman, 1985, Trzcinski and Holst, 2008, Ministry of Health, 2006, 2008a, 2008b, 2009, 2010, Ministry of Social Development, 2009), the causal link to suicide cannot be made through studies of deprivation alone.

That is why I turn to the research on subjective well-being and social capital, as both literatures stress the importance of strong communal bonds in understanding youth suicide. This is especially true for youth who are labeled 'losers' and/or 'troublemakers'. Coroners often note deviant behavior as self-destructive acts, and these are found in many male youth suicide cases. For example, in the last year of Bill's life he "provoked fights but fled when fights were imminent. His older brother had to handle the situation on more than one occasion" (Peck et al., 1985; p. 56).

This behavior may have later manifested in Bill's self-deprecating behavior, which included comments to his girlfriend about how he didn't feel 'manly enough' (Peck et al., 1985; p. 56).

Youth suicide researchers Peck, Farberow and Litman wrote of social bonds quite eloquently before discussing Kevin, Tom and Bills stories,

“The lives of young persons seem to us, on the whole, to have become less stable and less hopeful. The stabilizing influences of family, church, and school have diminished...Young people are less connected with older persons who could serve as role models and less sure of their futures” (Peck et al., 1985; p. 53).

Emile Durkheim would find these observations interesting, for he also argued that societies with strong social connections had lower suicide rates. Based on his readings of coroner's inquests of French suicided individuals his work suggests a number of important correlations between the social environment and suicide. These include sex, race, socioeconomic status, religion as well as many other demographic factors that I will explore in the next chapter. However, Durkheim never considered age as a changing factor in suicidal behavior as I do, using life satisfaction measurements. And although Durkheim disagreed that there are genetic determinates of suicide, suicide research *still* reflects many of Durkheim's sociological connections made 100 years ago (Baudelot and Establet, 2008). For example, contemporary research continues to emphasise social capital as an important consideration in suicidal behaviour for its power to buffer suicidal desire and capability (Joiner et al., 2007, Joiner et al., 2003).

This thesis also shows that different levels of trust can be identified in communities (referred to as local capital) and entire societies, indicating that populations with higher levels of trust typically exhibit higher levels of social capital and life satisfaction, and in turn, lower suicide rates and suicidal behaviour. The extent as well as caliber of our relational connections is clearly linked to life satisfaction, and 'trust', and this has been shown repeatedly to capture the quality of connection

(Helliwell and Putnam, 2004). Therefore, identifying perceived levels of trust may contribute to an understanding of suicide risks, especially for youth.

### *Theories of suicide*

Although there are pronounced differences in suicidal behaviour by age, in general the suicidal conclusion derives from the idea that, “my death will be worth more to my loved ones than will my life” (Joiner et al., 2007). Strong contributors to suicidal desire are associated with intense feelings of loss, hopelessness and helplessness, and feeling trapped and alone, (Curran, 1987), as is if there is no alternative to escape pain, and most definitively, “perceiving oneself as a burden to others” (Joiner et al., 2007).

There are several theories as to why youth (15-24 years old) are more vulnerable to suicide than older populations. These include misconstrued feelings of importance making small embarrassments feel like traumas (Elkind, 1991). Preoccupation with appearance as a result of an imaginary audience (Everall et al., 2005), as well as feelings of self-consciousness lead to low self worth (Stillion and McDowell, 1991). Furthermore, low levels of trust in parents (Kaplan and Worth, 1993), pressures to perform (Heled and Read, 2005) and poor coping skills (Beautrais, 2005) have been cited as contributing factors to youth suicide.

Although there are few documented stories from surviving family members of young New Zealanders who took their lives in the 1990s, those testimonies echo a sense of uncertainty (Stevenson, 1995). For example, New Zealand author and suicide survivor, Rick Stevenson, whose son Mike took his life at 27, sensed that his son was deeply stressed and divided before his death,

“There was a pendulum which was swinging inside Mike’s head. While outwardly he was just another family member, inside he was trying to reconcile widely different value systems, as expressed by, for example, the drive towards commercial gain in Western life...and the ideals of slower-moving meditative philosophy of yoga” (Stevenson, 1995; p. 137).

And while visiting his son during an overseas experience, Stevenson also noted Mike's deep anxiety over becoming a successful adult,

"A particular question cropped up a number of times, 'What would I do when I came back to New Zealand? I'm not equipped for anything' I told him, 'Relax, don't jump your fences before you come to them. You're learning more here and on your travels than you'd ever learn at home. This experience will equip you for anything you want to do in later life in New Zealand or anywhere else'" (Stevenson, 1995; p. 123).

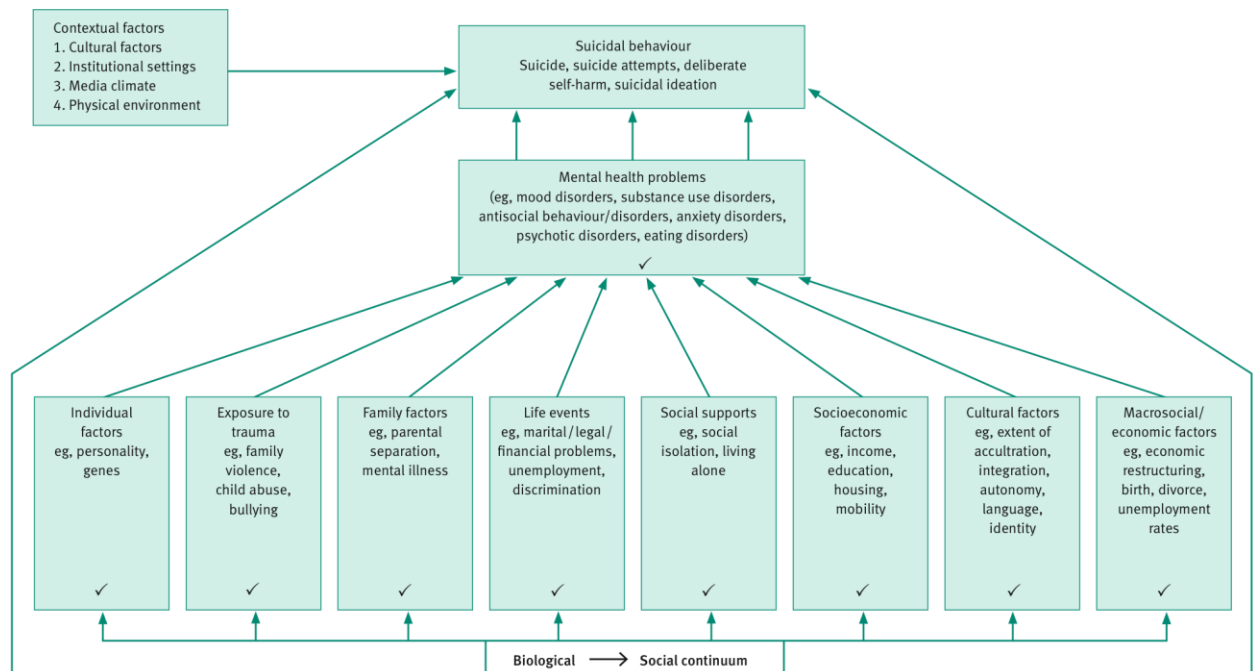
It is from Mike's story and prior postulations that two important themes in the theoretical cause of youth suicide arise: the overall lack in life experience and the importance of young people's subjective perception of strong protective entities. Therefore, looking to the literature on suicide, and reviewing models of suicidal pathways may provide a structure from which to examine the key factors governing youth suicidal behaviour and subjective well-being specifically, particularly in terms of where we live and who we are connected to in these places.

New Zealand's most frequently cited suicide expert, Annette Beautrais, believes that suicide requires, "a multi-component and multi-sectorial approach that integrates a number of approaches at both individual and population levels to reduce the factors that associated with suicidal behaviour" (Ministry of Health, 2008; p. 6). Beautrais' model of pathways to suicidal behaviour explores the contexts of suicidal behaviour with individual, familial, societal and biological influences.

The social and biological continuum located at the bottom of Figure 1.1 shows how suicidal behaviour is rooted in the combination of personality, life events, and macroeconomic and socioeconomic status factors. From these aspects, mood disorders, and a range of other mental health problems then influence suicidal behavior. However, geographical influences such as urbanity and rurality, migration, relative deprivation and social fragmentation are not represented in this model.



**Figure 1.1 Beautrais model of pathways to suicidal behaviour**



Source: Adapted from New Zealand suicide prevention action plan 2008-2012.

Overall, this pathways model can be used to display a range of important influences at the individual level and the social context of a place, but it is inconclusive as to how these work together and contribute to suicide ideation<sup>2</sup> (Ministry of Health, 2008). While a useful overview, this model cannot predict suicidal behavior with contextual factors; another model is needed to explain the cognitive process of the suicidal conclusion.

In order to understand suicide more fully, one must enter the headspace of a suicidal individual, and consider how that space is shaped by the individual's social environment and commitments. Subsequently, I have found Figure 1.2 of Taylor's theory of suicide helpful in understanding the suicidal individuals' subjective outlook on suicide. Taylor's model was heavily influenced by Durkheim's theory of social integration, which claims that two particular social forces of integration influence the outcome of suicide. Firstly, the imbalance between excessive

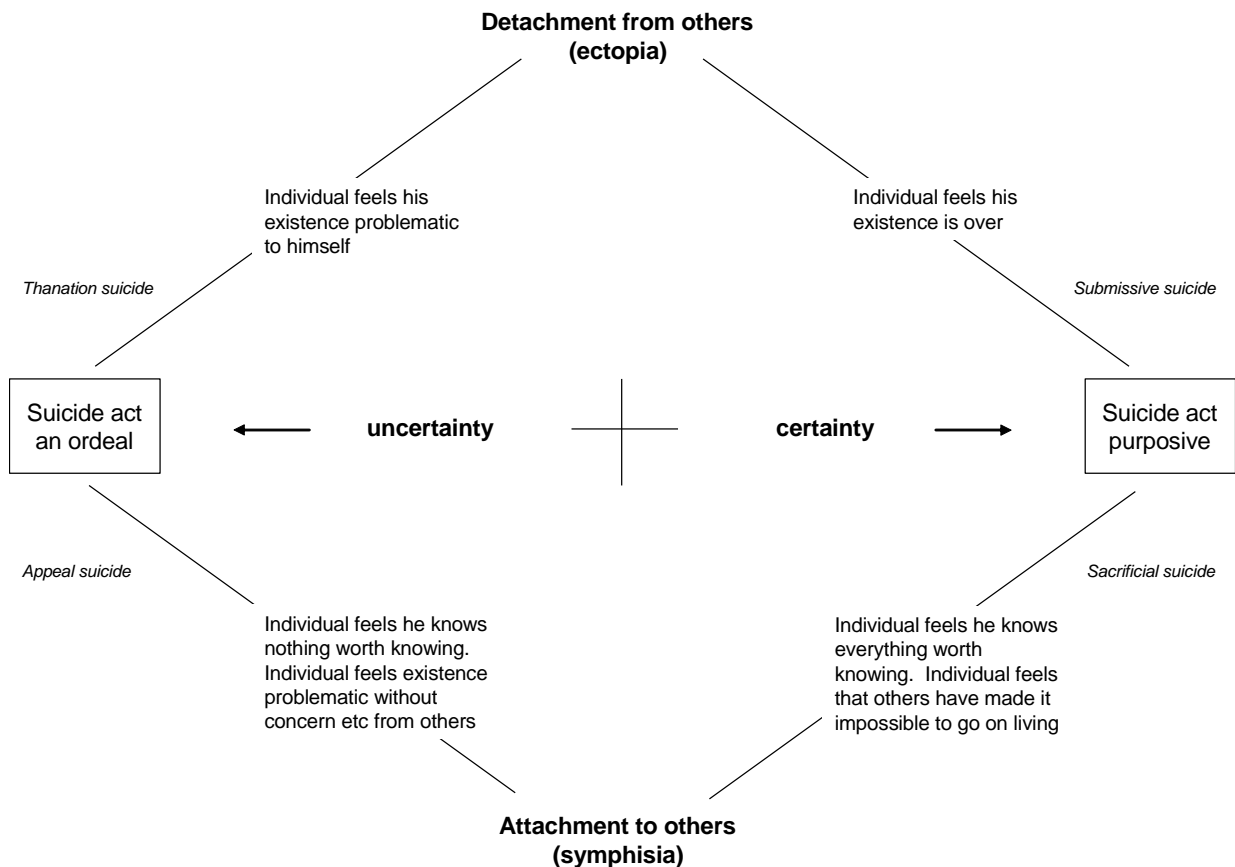
<sup>2</sup> Suicide ideation is the act of thinking about killing oneself.

individualism - referred to as egoistic suicide - reflects the individual's inability to integrate into society. This falls under the certainty portion of the diagram (Figure 1.2), where life feels endlessly meaningless. Second, the state of 'normlessness', or anomie, results from society's inability to integrate an individual, or what Durkheim dubbed 'inadequate social regulation' (Dorling and Gunnell 2003, Maskill et al., 2005). This represents the uncertainty, or left half of the diagram, where life feels hopelessly problematic for suicidal individual.

Taylor's theory of suicide fills the gaps of Beautrais' model by highlighting the important differences between *anomie* (or the belief that existence is problematic, progress is an uncertainty with no control over the outcome), and *autonomy* (or the belief that existence is over, based on the certainty that life is meaningless), while emphasising that the outcome of these conclusions is influenced by the suicidal individual's attachment/detachment to others (Maskill et al., 2005, Taylor, 1988).

Figure 1.2 also shows that suicide can be understood as the act of solving a problem with death by splitting suicide into two conclusions: the *purposive conclusion*, which holds that death will resolve the individual's cognitive pain that he or she finds to be caused by living, and the *ordeal conclusion*, which holds that death will resolve the pain the individual believes he/she has inflicted on others by being alive.

**Figure 1.2 Taylor's theory of suicide**



Source: Adapted from Taylor, 1988.

I agree with Matskill et al. (2005) that social integration theories are best approached through subjective well-being measurements, such as life satisfaction, happiness, quality of life, stress, and isolation. These are a conjunction of social and psychological factors that explain the extent of detachment that an individual feels from society. Also, since factors such as sociability and trust have been found to discourage suicide (Helliwell, 2007), it is important to capture individuals' subjective accounts of their life situation and the quality of their relationships in order to predict suicidal behaviour.

In conclusion, setting suicidal behaviour in a conceptual framework takes two parts: one which is socially objective, as indicated in Beautrais' model, and the other which is subjective and social integrative, as displayed in Taylor's model. It is in the

combination of the two that we can begin to appreciate the conditions precipitating suicide, and this is best done by accounting for both social environment and objective individual risk factors, *as well as the subjective inner beliefs and conclusions experienced by a suicidal person.*

### *Analytical implications*

In arguing that suicide rates are a reflection of self-reported beliefs and perceptions of unlivable situations, I use an accumulative risk model emphasising the importance of social disadvantages, childhood adversities, and exposures to stress components on suicidal behaviour, rather than personality traits and mental health problems (Fergusson et al., 2003, Heled and Read, 2005).

This was first done in New Zealand by psychologists Heled and Read (2005), using an accumulative risk model to help frame their survey that asked 384 university psychology students to rank distressing factors of New Zealand culture. In their results they found that New Zealand youth were more likely to report suicide as the result of social pressures to perform, rather than depression (Heled and Read, 2005). Concluding that, while it seems New Zealand youth “see the link between individual distress and suicide, they are more interested in what has caused the distress in the first place” (Heled and Read, 2005; p. 177).

It is from the findings of Heled and Read that I argue for empirical attention to be turned to the environmental correlates of subjectively perceived life satisfaction, instead of focusing disproportionately on genetic facets of mental health as the sole viable explanation for higher youth suicide rates. With this challenge in mind, no one discipline or methodology is capable of capturing the link between suicide and well-being, and among well-being, place and age. However, I argue that human geography brings a valuable perspective to this study because of its concern with the social context of place. Although no one discipline is able to fully explain the act of suicide, the geography in rates by age and sex offer valuable insights into suicide, especially for suicide survivors, who usually suffer from lower levels of well-being.

This fact is well documented by the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders, which states that "the level of stress resulting from suicide of a loved one is ranked as catastrophic- equivalent to that of a concentration camp experience" (Fine, 1997; p. 36). Suicide survivors also "share many of the same psychological reactions as people who have experienced traumatic events such as rape, war, and crime victimization" (Fine, 1997; p. 193). Many suicide grieving workshops revolve around the concept that when suicide survivors 'definitively determine' the true motivation of the person whose life has been lost, a sense of closure is achieved (Fine, 1997). Therefore, the theory, literature and evidence explored in this thesis may help suicide survivors come to some form of a conclusion as to how the process of suicide was fully realized and carried out by their loved one.

### *Outline of thesis*

The thesis is presented in six chapters. Chapter one introduces background on youth suicide, methodology, as well as the analytical implications behind studying well-being and suicide. Chapter two examines the literature on suicide and well-being, providing a critical assessment of the methods used to define and characterize these issues, as well as reviewing some of the key well-being surveys. Chapter three reviews the historical and contemporary evidence on suicide in New Zealand, pointing to the historically unprecedented vulnerability of youth by noting the generational shift of falling suicide rates amongst adults and the increase in those of youth. In chapter three I draw attention to key differences in the pattern of suicide variation, examining factors such as the well-recognized disparity between male and female suicide rates. For this reason I also address trends in self-harm, referred to in the literature as parasuicide, non-fatal suicide, and self-harm. Chapter four focuses on the relationship between subjective well-being and age. I do this using responses from the World Values Survey to address differences in well-being between New Zealand with four comparison countries: Australia, Canada, the UK, and USA. I then draw on the more detailed 2006 Quality of Life Survey to test

prevailing patterns of well-being by age. This analysis is extended in chapter five by focusing on differences between well-being in places within New Zealand both for the population as a whole and in the case of young adults specifically. The thesis concludes in chapter six by reviewing the contribution and limitations to research on youth suicide and subjective well-being in New Zealand.

# **Chapter 2**

## **Literature review**

As discussed in chapter one suicide has been linked empirically with low subjective well-being. Therefore, the aim of this chapter is to catalog important factors that contribute to youth suicide. The review will reveal gaps in the literature on the link between suicide and subjective well-being, as well as the need for a broader scope of understanding in the geography of suicide.

This chapter is divided into eleven parts. The first section addresses the link between subjective well-being and suicide. The second section critically reviews the methodical history of subjective well-being. Current research on subjective well-being in New Zealand will be discussed in the third section as well as New Zealand surveys that reveal the state of youth mental well-being.

The fourth section will discuss the current and historical definitions of youth and the pathways to adulthood, with an emphasis on the effects of unemployment on well-being. I will then explore several studies that relate well-being to pecuniary factors such as material acquisition and recessions.

Section five considers suicide rates of youth and young adults as indicators of subjective well-being. From there I will discuss the literature on the genetic and social factors that contribute to suicidal behaviour.

I focus on the known effect of place on suicide in section six, and mobility and suicide in section seven, socioeconomic differences in section eight and social fragmentation in section nine. This will help align the literature with the components of social connectedness in section ten and the effects of trust and social capital (collectively termed local capital) on youth subjective well-being. I conclude the literature review with a summary in section eleven, and recount the key assertion on which this thesis is based, namely that suicide and low levels of subjective well-being are closely linked.

## *1. Subjective well-being and suicide*

Measurements of subjective well-being particularly as captured by the life satisfaction question, have been found to be closely associated with suicide (Daly and Wilson, 2009, Koivumaa-Honkanen et al., 2001, Gunnell and Bray, 2006, Helliwell, 2007).

In support of this association, Daly and Wilson's (2009) empirical study of the determinants of subjective well-being and suicide found the same factors that affect suicide risk also effect subjective well-being. They did this by using data from the United States General Social Survey (GSS), as well as the National Longitudinal Mortality Study (NLMS), and matching them to the National Death Index (NDI) and the U.S. Vital Statistics to produce an aggregate time series data on U.S. suicide rates.

Using both individual level and multivariate regressions to check the strength of correlation between income and suicide, and subjective well-being Daly and Wilson found a strong and consistent relationship between the determinants of subjective well-being and the probability of suicide rates (Daly and Wilson, 2009).

Therefore in this thesis I justify my use of subjective well-being measurements to capture suicide risk for the same reasons Daly and Wilson use suicide to verify their measures of subjective well-being.

“Although suicide is admittedly at the extreme lower tail of the happiness distribution, the results presented here suggest that the same factors that increase suicide risk also shift people down the happiness continuum. This suggests that suicide data may be a useful way to assess the preferences of the general population, not just those in the extreme lower tail of the happiness or well-being distribution.” (Daly and Wilson, 2009; p. 547).

The same close association has also been documented by Harvard economists Culter, Glaeser, and Norberg (2001). In an effort to explore why suicide tripled among youths in the United States over the period of fifty years and fell among older adults and the elderly, they point to the strong association between suicide and happiness and argue that suicide attempts were an indicator of life dissatisfaction.



Cutler et al. (2001) estimated the correlation of youth well-being and suicide using a regression of medically screened suicide attempts on severity of the attempt, demographic features, age dummy variables, the role of peer pressure, divorce, sexual activity, contagion effects, drugs and alcohol participation with data from AddHealth 1996, which included 17,001 US high school students, ages 12-18 years old. Although Cutler et al. (2001) did not use subjective dimensions such as happiness, life satisfaction or quality of life in their regressions they acknowledge the link between happiness and life-threatening behaviour by arguing that suicide attempts are a signal of unhappiness that young people use to change relationships, and shift resources in their favor. They also argue against genetic dispositions of suicide concluding that age captures a significant effect on suicide, and noting that “depression is clearly related to suicide attempts, but it does not fully explain the pattern of result” (Cutler et al., 2001; p. 248).

In the same year, Finnish researchers Koivumaa-Honkanen et al. (2001) published their test of this association by investigating whether measurements of subjective well-being actually predicted suicide. This was done by linking a sample of 29,173 males and females ages 18-64 years from the Finnish Twin Cohort 1976-1995, with mortality data from the national registry. When they examined the associations between life satisfaction, interest in life, happiness, general ease of living, and feeling of loneliness with individual aspects and suicide, Koivumaa-Honkanen found that, “life dissatisfaction still predicted suicide after adjusting for age, sex, baseline health status, alcohol consumption, smoking status, and physical activity” (Koivumaa-Honkanen et al., 2001; p. 1).

Koivumaa-Honkanen et al. (2001, p. 10) also found that life satisfaction had a long-term effect on the risk of suicide in Finland over a twenty years span, noting,

“This effect is independent of gender and health status and seems to be partially mediated through health behavior and social situation. *Assessment of life satisfaction might help in early detection of population groups with cumulated risk factors for suicide*” (my italics).

As evidence, those who reported dissatisfaction at the baseline and again six years later showed high suicide risk (Koivumaa-Honkanen et al., 2001).

Bray and Gunnell (2006) also explored the relationship between suicide rates life satisfaction and happiness in a study at the country level of 39,678 people drawing on the European Values Survey 1999/2000, and matching 32 countries with suicide rates from the WHO Mortality Database. From their analysis an inverse Spearman rank correlation was found between suicide and life satisfaction of  $r = -0.44$ ; (95% CI: -0.67, -0.08), an association that was slightly stronger than with happiness,  $r = -0.42$ ; (95% -0.67, -0.08). Their work also calculated the association of suicide and subjective well-being using three different age groups (15-44 years, 45-64 years and 65+ years). They found the association between age and life satisfaction to be stronger in older rather than younger people. The following is an explanation posited by Bray and Gunnell (2006, p. 338):

“Suicides amongst older people are more likely to be pre-meditated and arise in the context of difficult living condition or long-term unhappiness (population related factors that may give rise to such a correlation are poverty, and lack of social support or medical care) while younger suicides may be more impulsive, occurring at times of acute crisis, rather than reflecting more general unhappiness.”

They go on to suggest that variables such as community trust and feeling in control of one's life should be explored in the future Europe Values Surveys due to their potential contribution to population mental health.

In 2004, Helliwell did exactly this by exploring the association between trust, religion and divorce on suicide rates using data at a national level from the 50 countries covered by the World Values Survey as well as the European Values Survey (Inglehart, 2000). From these international comparisons Helliwell found the effect of trust on suicide rates to be significant. According to Helliwell's suicide equation, using suicide as the dependent variable, experiencing more trust would have resulted in a large 4.0 per 100,000 drop in the annual suicide rate for males, and a smaller 0.5 per 100,000 drop for females. If the Helliwell (2004), Bray and Gunnell (2006), Cutler et al (2001), and the Daly and Wilson (2009) arguments

linking a person's well-being to the probability distribution of suicide apply, then closer attention to subjective well-being in New Zealand may help us understand likely patterns of suicide. I take up this relationship in chapter five.

## *2. Measuring subjective well-being*

Measurements of subjective well-being are now growing in popularity, thanks to the recent Stiglitz report emphasising the value of correlating variables of subjective well-being with those economic and objective factors likely to contribute (Stiglitz et al., 2008). This report also included the research of Amartya Sen, who strongly encouraged nations to collect data on subjective, as well as objective, measurements to improve economic performance and understand social progress by using the individual accounts of happiness, life satisfaction and quality of life.

In the past, subjective states were widely considered the product of genetics (Hellevik, 2003). Therefore subjective findings were not taken seriously, and kept at a distance from national policy making. This may have been due in part to psychological research on mood dairies kept by mono-zogtic and di-zogotic twins, which often lead researchers to believe that Pollyanna tendencies, just like depressive states, have (or were the result of) a kind of innate, neuro-chemical structure (Wierzbicki, 1986, Lykken and Tellegen, 1996).

Research focusing on genetics, such as these twin studies, perpetuate the view that happiness and depression are inborn traits, and this may have in turn delayed the interest in subjective responses (Seligman, 2000), which are more time sensitive. However, current studies on other genetic determinants of happiness and depression have shown that chemical imbalances are only part of a wider, complex web of suicidal behaviour.

It is clear from the change in suicide rates over time, from young to old internationally, that not all suicides are caused by mental illness. As Pickering and Walford (2000, p. 4) point out, “....according to sociologists, people do not kill themselves. Instead, those who commit suicide are always, at least partly, killed by

the social conditions in which they live.” I adopt this position in exploration of how the social context of a place, and the social bonds between individuals, are important factors in suicidal behavior, and how their influence can be captured in measures of subjective well-being. This approach may in turn provide a more inclusive understanding of the likelihood of suicide (Baudelot and Establet, 2008).

The social external factors (I loosely referred to here as social capital) that were examined in both Durkheim’s and Halbwach’s classic studies on social contexts highlight that conditions of mental health are now considered to be of seminal importance in happiness and depression research (Inglehart and Klingemann, 2000, Inglehart et al., 2000, Alexander and Smith, 2005). Therefore, in order to capture the intricacies and inner workings of well-being I consider the new science of happiness, and its methodologies, for it is possibly the most valuable contemporary approach to understanding both temporal and spatial patterns of suicide.

Although subjective measures of well-being are now in widespread use in the contemporary literature, its historical roots go back to 1917, to Myerson’s article exploring the *Well being of Normal*, under what was then called eupathics (Angner, 2011, Myerson, 1917). From the 1920s on, as Angner (2011) writes, the measurements of subjective well-being were part of an “uninterrupted stream of research”, with roots in marital success studies that relied on subjective scales of happiness. This includes research undertaken by social worker Katharine Davis (Davis, 1929) who asked 2,200 subjects in the 1920s, “Do you consider your life on the whole, (a) happy, satisfactory, successful; (b) unhappy, unsatisfactory, unsuccessful? In each case why?” (Davis 1929, as quoted by Anger 2011; p. 6).

Happiness was then quantified through various studies that asked respondents to rate their levels of happiness. This includes David and Hamilton’s (1929) work on marital happiness, Stanford Professor Lewis Terman’s (1938) work on *Psychological factors in marital happiness*, and Hart’s (1940) research on marital happiness and educational philosophy titled, *Chart of happiness* (Hart, 1940, Terman, 1938,

Hamilton, 1929, Angner, 2011). It is interesting to note that Hart charted the progress of happiness by recording the ups and down of a young suicidal male.

In a departure from studies of the individual, epidemiologists began to employ measures of happiness and satisfaction as measures of mental health, using nationally representative survey samples (Angner, 2011). Today, surveys which include questions that cover dimensions of subjective well-being have now become an important resource in the field of epidemiology, and are used to help policy makers understand how to improve the quality of life. These questions also inspired different measures of progress in the 'social indicator movement.'

The first epidemiologic study on subjective well-being took place in 1960s when Gurin, Veroff and Feld asked 2,460 randomly selected US adults if they were "very happy", "pretty happy" or "not so happy" (Costa and McCrae, 1980, Gurin et al., 1960). These authors were "primarily interested in how individuals themselves as opposed to mental health experts - saw their mental health" (Angner, 2011; p. 14). Their findings highlighted differences in response by age, and the effects of education on income and happiness. They concluded that, "older people were less happy than younger people...(and) those with more education were happier than those with less (and)...happiness was positively related to income" (Gurin et al 1960, as quoted by Angner, 2001; p. 15).

With this background epidemiological work on quality of in life, psychologist Warner Wilson was eager to capture exactly what a happy individual entailed, and presented in 1967 what is now considered the "first major review article of research on happiness" (Angner 2011, p. 16) entitled, "Correlates of Avowed Happiness." In his article Wilson challenges researchers to use the same measures of subjective well-being to find a reliable definition of happiness suggesting, "comparability of results might be increased if all investigators used the same measure" (Wilson 1967, as quoted by Angner 2011, p. 16). But most importantly he proposed the first version of a happy person as being a "young, healthy, well-educated, well-paid, extroverted, optimistic, worry-free, religious, married person, with high self esteem" (Wilson

1967, as quoted by Diener et al. 1999; p. 294). Many disciplines have sought to test Wilson's 'happy person', resulting in large, international effort to correlate and directly measure subjective well-being (Diener and Oishi, 2000, Diener and Suh, 1998a, Horley and Lavery, 1995).

Inspired by epidemiological surveys of happiness, and subjective well-being, the 1960s and 70s also saw a growing interest in measuring *objective* factors of well-being. This was accomplished by a search for alternative measurements of progress, as opposed to the widespread use of the sum of a country's financial transaction, or Gross Domestic Product (Angner, 2011). Psychologist Angus Campbell referred to these studies as instigating the 'social indicators movement', and noted they,

“Generated a wealth of so-called ‘objective indicators’ that is, statistics concerning life expectancy, quality of food and water, access to medical care, level of education, quality of housing, and so on (Campbell, 1976 p. 118). The underlying assumption, of course, was that more education, housing, and medical care tended to increase the quality of life” (Angner, 2011; p. 16).

Yet there were many people who believed that objective factors did not capture the whole story behind the quality of life, and were far too similar to economic indicators (Angner, 2011). This led to the creation psychologist Hadley Cantril's 'self-anchoring scale' and large national surveys in which respondents themselves were asked to subjectively define “best life” and “worst life”, then asked to rate their current status of each according to their own scale, drawing on life satisfaction as an indicator of national well-being (Paul T. Costa and McCrae, 1980, Cantril, 1965). Cantril tested a total of 23,875 subjects in 13 countries on how aspiration levels affected their happiness and life satisfaction, and found that those who were most satisfied rated themselves higher on the Self-Anchoring Striving Scale (Angner, 2011, Cantril, 1965).

Building on Cantril's idea that life satisfaction could be quantified, psychologists Angus Campbell, Philip Converse, and Willard Rodger attempted to create an indicator of life quality. In doing so, they surveyed 2164 Americans using a scale of 10 levels of dissatisfaction ranging from "Completely Satisfied" to "Completely Dissatisfied" based on Cantril's self-anchoring scale (Campbell et al., 1976), to capture a more valuable representation than economic and social indicators of the state of society (Angner, 2011, Campbell et al., 1976).

Andrews and Withey argued along with Campbell, Converse and Rodgers that quality of life or subjective well-being *can* be reliably measured through a set of questions regarding a person's assessment of his or her own life (Andrews and Withey, 1976). Noting the statistical evaluations of Campbell, Converse and Rodger in the application of a life satisfaction scale, as well as Bradburn's evaluations of positive and negative effects on life satisfaction, psychologists Andrews and Withey created the Delighted-Terrible scale, which uses a set of seven categories ranging from, "Delighted," to 5 "Most Satisfied" to 2 "Unhappy". Their results conclude that, indeed, measurements of well-being may be the most "direct" way measure happiness and life satisfaction (Angner, 2011).

Although the study of Andrews and Withey (1976) comprised 5,500 Americans, addressing relationships between quality of life, marriage, employment, mobility, religious effects, relations with other people and area, they excluded youth (ages 15-24) and thus left out an important part of society.

Research on subjective well-being was then dominated by the discipline of psychology, which focused on clinical explanations of life satisfaction until the late 1990s. It was at this time that psychologists became divided over whether subjective well-being was based primarily on personality or external factors (Diener et al., 1999b, Kahneman and Krueger, 2006), with some psychologists clearly unhappy with the strong emphasis on genetic determinants.

Historical studies that measured subjective well-being by age directly addressed the external influences on life satisfaction. Researchers used 17 national polls in the US from 1948 to 1977 (Witt et al., 1980), and seven large-scale US social surveys to regress happiness and life satisfaction on age in 1980 (Herzog and Rodger, 1981). The results were inconclusive (Stock et al., 1983a). In an attempt to clarify the correlation between subjective well-being and age, Stack et al. (1983) used a meta-analysis<sup>3</sup> of 556 sources as well as consulting, ten persons considered experts on the topic of subjective well-being (Stack et al., 1983). They did this by giving a detailed overview of the research base up to 1983, and the relation of effect-size magnitude of sample characteristics on subjective well-being measurements (including happiness and life satisfaction). However, they were unable to establish a linear or non-linear relationship. They suggested that, in future quantitative research, more longitudinal studies should be created to examine the relationship between subjective well-being and age since the commonly used method of cross-sectional research cannot reveal causal pathways.

In an effort to deconvolute the processes underpinning happiness, psychologists Diener, Suh, Lucas and Smith created a longitudinal series of questionnaires that used 'Likert scale' responses of different dimensions in well-being (Diener et al., 1999b). Using the same sample over several decades, they were able to report a non-linear relationship between life-satisfaction and age and undertook explicit tests of the direction of causation between exogenous factors such as demographics, and well-being (Frijters et al., 2005).

However, there are also problems with longitudinal studies, including the inability to retain the same survey subjects over time. For example, unhealthy individuals may choose to drop out of the panel leaving only healthy respondents (Van Ourti, 2003). Nevertheless, longitudinal studies are valuable in providing evidence that health and well-being change from place to place over time.

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<sup>3</sup> Aggregate studies are several studies combined in effort to better understand and review the strength of a relationship between variables.



Possibly the most valuable return from longitudinal studies has been their use in challenging the first paradigm theories of subjective well-being, contesting that we are born with a genetically determined set point of happiness that remains intact, regardless of contextual change (Headey, 2010, Oswald and Powdthavee, 2005, Oswald and Powdthavee, 2007). As Headey (2010) and Veenhoven (2005) argue, the idea that our subjective responses are actually inborn temperaments has important policy implications; if our happiness or life dissatisfaction cannot be altered by external forces, then policies need not attempt to reverse either “trait” (Veenhoven, 1993, Veenhoven, 1991, Veenhoven, 2002).

Gradually evidence is being assembled to challenge set point theory. Inglehart and Rabier for example, found evidence from the World Values Survey to suggest that that subjective well-being was not constant as the genetic argument suggested but does indeed change over time (Inglehart and Rabier, 1986). In another global study of happiness derived from the World Values Survey collected from 1981 to 2007 they showed that happiness levels of entire societies did not remain fixed over time (Inglehart et al., 2007). Similarly, in another study which analyzed data from the well-known longitudinal German Socio-Economic Panel (GSOEP) spanning seventeen years (1984-2002), researchers found that 24% of the respondent’s life satisfaction levels changed significantly over time from the first five years to the last five years (Frijters et al., 2005). This evidence has caused many academics to question and reconsider set point theory (Diener et al., 1999b, Paul T. Costa and McCrae, 1980, Kahneman and Krueger, 2006, Lucas et al., 2003, Lucas et al., 2004).

Additional evidence provided in Veenhoven’s (2005) meta-analysis of 26 longitudinal studies from around the world, including the Victoria Immigrant Survey (1991), Australian National Science Survey (1984), German Survey Among Foreign Workers (1982), German Socio-Economical Panel, first wave (1984), German Welfare Survey (1980), Eurobarometer (1981), and European Value Survey (1981) found that life events have *lasting* effects on levels of happiness at a statistically significant level. In other words people show *incomplete* hedonic adaption to life events such as widowhood, marriage dissolution and

unemployment, and therefore, that happiness is not entirely an internally regulated matter (Veenhoven, 2005).

It is in the context of this debate over adaption that I argue that suicide itself is an indicator of non-adaption to specific social context. That is, when an individual feels hopeless there are situations or external factors that exacerbate feelings of hopelessness, and increase the chances of suffering from suicidal thoughts or depression.

### *3. Subjective well-being in New Zealand and Australia*

Over the past ten years New Zealand and Australia have taken major steps towards understanding the complexities of subjective well-being. From 2001 to 2006 Australia collected 16 surveys for the Australian Unity Well-being Index Report (Cummins et al., 2009), involving 2,000 randomly selected respondents from randomly selected regions.

New Zealand began to ask such questions in the biennial Quality of Life Surveys, which, as I show in chapters four and five, allowed geographical differences in subjective well-being to be identified. However, the country's main official instrument of measuring well-being is now the New Zealand General Social Survey (NZGSS) undertaken 2008 and 2010.<sup>4</sup>

Apart from the purely descriptive reports published from the following surveys, there are still relatively few analytic studies of subjective well-being in New Zealand. This remains despite the decade-long availability of both the biennial Quality of Life Survey, the biennial New Zealand General Social survey (NZGSS), which was first run in 2005, and the two New Zealand Contributions to the World Values Survey in 1998 and 2004 (Rose et al., 2005a, 2005b). An early paper based on the first NZGSS was presented by Conal Smith in 2005 (Smith (2005), but to my knowledge the first publication on subjective well-being in New Zealand was authored by Morrison (2007), followed by a more extensive study in 2010 (Morrison, 2010).

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<sup>4</sup> New Zealand General Social Survey (NZGSS)- <http://www.stats.govt.nz/nzgss/>

The New Zealand samples from the World Values survey have only recently been used by economists interested in social capital (Roskrug et al., 2010), and the same team has recently begun to make use of the Quality of Life Survey, this time by pooling the 2006 and 2008 surveys (Roskrug et al., 2011). The only other study draws subjective well-being measures from the New Zealand lifestyle study: *New Zealand Beyond 2000 a Quinquennial Survey*, which was undertaken by the Marketing Department at the University of Otago, New Zealand (Ganglmair-Wooliscroft and Lawson, 2008). This survey has been used to compare subjective well-being differences between European and Māori. The 2005 survey yielded 3556 usable questionnaires.

Other surveys sponsored by the New Zealand government that investigate well-being include the Youth2000 surveys Youth01' and Youth07'. These cover the ages of 12-18, while students are at secondary school. Questions address a range of youth well-being factors, including the extent of their sexual activity and subjective responses to their community connectedness. Results show that nearly one in twenty young people reported that they had attempted to kill themselves in 2007. Females were twice as likely to make a plan to kill themselves (11.5% to males 6.1%), and the chances of females attempting suicide were higher if they had been bullied weekly (21.5% compared to male 8.8%). Females were also twice as likely to have suicidal thoughts compared to young males.

In both Youth2000 surveys, young Māori reported higher percentages of suicide ideation, planning, attempted and actual suicide than their European counterparts (Fortune et al., 2010). Overall, those with the highest suicide risk in the 12-18 age bracket were those who live in low socioeconomic communities, as well as those with substance abuse and mental disorders, and those attracted to the same or both sexes.

A report by Denny (2011) noting the differences between the 2001 and 2007 Youth Survey reveals that, since 2001, there has remained a concerning number of students who are at risk of poor health and well-being outcomes from experiencing

socioeconomic adversity and violence, and from the frequency and amount of alcohol they consume (Denny, 2011). He also points out that nurturing homes, school and community environments are protective factors in the lives of young people, reducing the likelihood of poor health and well-being outcomes. For these reasons, it is vital to review the concept of 'youth' and reasons for their vulnerability.

#### *4. 'Youth' and pathways to adulthood*

In this study I include youth (years 15-24) and young adults (years 25-30), recognizing at the same time that age cutoffs are somewhat arbitrary. The idea that people pass through a developmental phase between childhood and adulthood began as an ideological notion in the late 1800s, when industrialism caused what many now call 'youth' to leave the countryside for work in the city. More jobs and the rise of urban migration led to a more materialistic culture. Subsequently, youth became the key component in the spread of mass production in their willingness to contribute long hours in the factories for low wages. The relatively better pay than farm work in factories, and consistent employment, encouraged youth to participate in accumulating material goods unknown to generations before (Savage, 2007).

Following the industrial revolution and urban migration in the early 1900s psychologist Stanley Hall became fascinated with defining this new group of thriving participants in the city's economic sphere. Documenting the rise of this new class, Hall became the first to cite a systematic definition of youth, naming them adolescents, bracketed by the ages of 14-24 in his two-volume edition, *Adolescence* (Savage, 2007, Hall, 1904). At the same time Hall had a somewhat negative view of adolescence, describing them as, "emotionally unstable" and deeming the phase of adolescence, "the age of natural inebriation without the need of intoxicants" (1904, quoted on Savage, 2001; p. 71).

With growth of this adolescent population and market, there emerged a need to put some boundaries around the growing age group. Therefore, building from Halls

interpretation of adolescence, Yale psychologist Kenniston Kenneth cited the term 'youth' in 1970 and wrote of it as a time of economic and personal 'temporariness', with the capacity to last for 2-10 years (Santrock, 2001, Santrock, 2004).<sup>5</sup>

Although youth is now widely recognized as a stage of life, the beginnings of early adulthood are contested, starting either the late teens or mid 20's. This disagreement has created a wide range of pathways to adulthood and challenged the identities of youth - issues I will address in establishing their relationship to economic activity.

Employment plays an important role in linking youth to adulthood because it offers a built-in community, a venue of thought outside oneself, as well as a provisional income. Without all of these things mental well-being would be difficult to achieve, and this may be particularly true for young people who are more likely to be concerned with obtaining material objects to define themselves than older populations, who are arguably less concerned with their identity in terms of work status, and family status. Furthermore, studies have shown that women and men who are in insecure work or unemployed exhibit higher levels of ill-health, and lower accounts of well-being (Chapman et al., 1998, Winkelmann and Winkelmann, 1998, Winkelmann, 2009b, Silla et al., 2009, Clark and Oswald, 1994, Blanchflower, 2001).

Worldwide, the youth labour market collapse in the 1970s and early 1980s brought about new challenges for youth in the West, associated as this was with an increase in concern over vocational training and work mobility (Santrock, 2001, Wyn, 1998). Epidemiological research focusing on unemployment levels and suicide rates provide evidence for a positive association between suicide and unemployment, showing suicide to be far more frequent among the unemployed (Platt and Hawton, 2000). For example, in a US longitudinal study, risks of suicides were found to be double for males during spells of unemployment (Kposowa, 2001).

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<sup>5</sup> It is with this theoretical background that I use traditional approach of adolescence from Hall's work, and Kenniston's definition of youth to control for youth subjective well-being empirically, as years 15-24 in the chapters ahead.

Baudelot and Establet (2008) specifically argued that the contemporary gulf between suicide rates in the young and old, are related to the economic deregulation precipitated by the oil crisis in the 1970s. These shifts in the economic sphere have encouraged discussion among life developmental theorists regarding the existence of traditional pathways to adulthood. For example, youth psychologist Jeffrey Arnett believes that there is new phase of life, which he calls *emerging* adulthood. This new movement considers a person's twenties as a separate sphere of adulthood, and its creation is largely attributed to the lack of entry-level jobs after obtaining an undergraduate degree, cohabitation and birth control (Arnett, 2000, 2006).

In New Zealand, youth unemployment rose markedly in 1980s following a major push in economic policy to adopt more libertarian views on the deregulation of welfare states. Shortly after New Zealand deregulated, a global recession occurred, and the tax-supported benefit system came under considerable financial strain. This global recession had a greater effect on lower socio-economic groups widening the gap of wealth, and it was during this time that youth suicide ages 15-24 rapidly increased. As I show in chapter three, by 1996, suicide between the ages of 15-24 was the most common death for males in New Zealand (Chapman et al., 1998).

Although, Chapman et al. (1998) found the decline of a liberal 'safety net' model and male youth suicidal behavior to be only slightly correlated, the empirical observations of Blakely and Collings (2003) in New Zealand provided clear evidence that labour markets and economic cycles could have unforeseen costs on the well-being of youth. Using the 2.04 million respondents in the New Zealand 1991 census and linking them to mortality records, they found a strong association between unemployment and suicide among 18-24 year old males in New Zealand (Blakely and Collings, 2003). They further suggested that mental illness may explain half, but not all, of the association between employment and suicide - a conclusion which still leaves mental illness to be explained.

Deregulation in the 1980s may have contributed to greater levels of unemployment and life dissatisfaction, and consequently, youth suicide. Craig Jeffery claims that in many parts of the world the decline of state welfare systems since the 1980s have undermined youth's ability to obtain social goods associated with adulthood (Jeffrey, 2009). For example, the tumultuous socioeconomic conditions of post-soviet Hungary, for example, had a considerable negative effect on Hungarian youths' self worth, as they were unable to compete with lifestyles and the consumption in the West (Piko and Piczil, 2004). Historically, Hungarian suicide rates peaked for males (as well as females) in the mid 1980s at astounding rates of around 67/100,000 (WHO).

Considering that the identity of youth is linked to their amount of involvement in the economic sphere, the stress experienced by youth under unknown financial circumstances may be reflected in consumption patterns. Piko and Piczil (2004) approached the subjective constraints of consumerism on Hungarian youth well-being by exploring the interrelationship of smoking, drinking, illicit drug use, and the psycho-social challenges stemming from the socioeconomic transitions. Their interviews uncovered powerful sources of stress confounded in deep uncertainty over job security. Among coping strategies, Hungarian youth often used cigarettes, alcohol, and various drugs to get through the times of unknown (Piko and Piczil, 2004). Youth researchers Arnett and Eric Erikson have also found increases in health risk behaviours such as drinking, smoking, sexual activity, and drug usage among young people during intense times of identity crises, which often coincide with spells of unemployment (Arnett, 2000).

Perhaps economic deregulation in New Zealand functioned much in the same way as Hungary, where the youth labour market collapse made it difficult for youth to obtain a stable job, valuable skills, and secure housing, and encouraged many to numb their uncertainties in drinking and drug usage. The guidelines on suicide provided by the Ministry of Health have yet to link these ideas in line with prevention plans, as I discuss in the appendices to this thesis.

## *5. Youth subjective well-being and suicide*

The Ministry of Health also has yet to include the literature on youth mental health supporting research that youth well-being is largely a result of care during early childhood development (Land et al., 2007, Helen, 2005). This relationship is crucial to explore in youth suicide cases and subjective well-being, for parents help shape personality and emotional status in their children through genetics as well as social interactions. Therefore, when identifying factors that shape youth subjective responses, distinguishing the differences between the contributing effects of societal characteristics and the characteristics of an individual is key, including important relationships with family, friends, and community members. I argue this has been done best through studies on suicidal behaviour because they offer the unique perspective of 'active' unhappiness and life dissatisfaction. Now that measures of subjective well-being are regularly collected, these two can be used to monitor youth along with other age groups, as I suggest in chapter four and five.

It has been suggested that mental disorders are behind 70-90% of suicide and suicide attempts (Beautrais et al., 2005a). While this figure is widely debated, what accounts for the remaining 30-10% of suicide and suicide attempts unknown as are many of the determinants of 'mental health' itself. Although there is a large body of clinical literature on youth suicide, there are few studies that explore the social, contextual factors affecting youth suicide, let alone the specific social context of place.

In this thesis I argue that suicide and suicide attempts develop from the same conditions that produce low subjective well-being, including childhood adversities, troubled marriages, and divorce, among many other contextual factors. Therefore I now turn to the association between, life stressors, genetic predispositions, sociological patterns in suicide, and then to aspects of place and suicide.



### *Life stressors*

Suicide researcher and author Donaghy claims that, “almost always, a suicidal state of mind is the result of an accumulation of troubles and attitudes which probably began in childhood” (Donaghy, 1997; p. 59). Therefore, I examine here the effect of life stressors on suicide, including childhood adversities, marriage and divorce, as well as alcohol abuse.

Childhood adversities have been known to work in an aggregate effect, with most at risk of suicide showing multiple childhood disadvantages (Beautrais, 2003). These disadvantages include experiencing sexual or emotional abuse, neglect, divorce or parental separation, history of suicide in family networks, family discord and experience of institutional or welfare care (Stack, 2000a, 2000b, Beautrais, 2003). Specifically, those who have been sexually abused are more vulnerable to the development of mood disorders and are at higher risk of suicidal behaviour than those experiencing other childhood adversities (Beautrais, 2003).

For example, both suicide attempt survivors Anna and Cynthia thought of suicide as an escape from the sexual abuse they were exposed to at a young age (Leo, 2010). However, they came to this conclusion through different cognitive processes. Cynthia reported not being able to sort the ‘sharks’ from the ‘dolphins.’ In other words, people who hurt, from people who help. In contrast, Anna stated, “no one could save me from two decades of self criticism and inability to take care of myself and meet my own needs and put myself first” (Leo, 2010; p. 57). Yet both of these stories allude to the lack of self-worth, and coping skills to deal with the abuse they experienced as children.

Both Durkheim and Halbwach suggested that marriage reduces the risk of suicide because it offers emotional support, consistent sex, and greater meaning to life (Halbwach, 1930 (English Translation 1978)). Current research supports this theory and shows that marital stress, dysfunctional families, and divorce contributes to suicide rates, especially youth suicide rates (Stack, 1995, Beautrais et al., 2005a). For example, Stack (1995) found that individuals who divorce are 3-4

times more likely to die by suicide, and this is also true for young couples (Stack, 1985, Maris, 1981). Adults who die by suicide are more likely to be divorced or widowed, live alone and to never have been married (Beautrais, 2003). Although debate arises as to whether divorce is the confounding reason for suicide or a contributing factor.

Addiction to alcohol is also associated with failures in marriage, friendships, relationships, friendships, and work. Studies have shown that when alcoholics are uprooted from these extended social networks, the chance of suicide is increased (Ebbett and Clarke, 2010). The over consumption of alcohol also functions as a contributing factor to impulsive behaviour and suicide (Skog, 1991), altering the effect of drugs by increasing their intensity, and creating potentially lethal dosages (Beautrais, 2000). Also, individuals who are dependent on alcohol are more likely to suffer from a psychiatric disorder. This is seen in the considerable evidence for a positive relationship between poor psychological well-being, especially depression, and binge drinking (Ebbett and Clarke, 2010, Kuntsche and Gmel, 2004), as well as anxiety and mood disorders (Kenkel et al., 1994, Bogart et al., 2007). However, causal relationships between alcohol dependence and mood disorders cannot be drawn from these studies.

### *Genetic predispositions*

The link between mood disorders and suicide is well established and almost universal (Costello et al., 2002, Cavanagh et al., 2003, Helliwell, 2004). Rates of suicide are higher for those suffering from schizophrenia, especially when depression is also present. For those with unipolar<sup>6</sup> disorder or bipolar disorder, the lifetime risk of a suicide attempt has been calculated as approximately 15-30% respectively (Chen and Dilsaver, 1996).

Clinical studies on depressive behaviour point to blockages in the synaptic gap as a contributing factor to suicidal behaviour (Mann et al., 2001, Keverne, 2004, Jacobs,

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<sup>6</sup> Manic depressive, or depression

1994). This is because in order for the brain to mature the pruning of synapses must occur, which is done by cutting off unused pathways in the brain. Synaptic pruning intensifies during adolescence- after a time of rapid brain-cell proliferation. Through this process of pruning, the brain eventually settles into a structure that's most efficient, creating well-worn grooves for the pathways that young person uses most.

Harmful activities such as binge drinking and drug usage slow down the growth of brain cells, and this in turn may have a negative effect on the pruning process (Nixon and Crews, 2004). Therefore, youth who participate in heavy drinking and drug usage are possibly decreasing their chances of forming structures that are most efficient in terms of buffering themselves against depressive behaviour and suicidal behaviour.

However, epidemiological studies on relative risk indicate that, while mental illness is associated with suicide, yet it is not a strong predictor of suicide. Foley, Goldston, Costello and Angold (2006) show in a proximal psychiatric risk factor study (n=1420) with 6676 records across eight waves of data collection from the Great Smoky Mountains, psychiatric disorder is a major risk factor for suicidal behavior but has poor predictive value (Foley et al., 2006).

This issue could be related to result of gender differences in suicidal behaviour - for although symptoms of depression are found to be more prevalent in female adolescence than males (Grant and Compass, 1995) suicides are far more frequent among males than females.

There are several theories around the difference in rates of suicides for males and females, mostly relating to levels of resiliency. For instance, women are thought to have more flexible coping skills throughout the life course, and less stigma around the warning signs of suicide (Stack, 2000a), although this is not true for sexual minority women<sup>7</sup>, who have been found to be more at risk of mental health

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<sup>7</sup> Sexual minority women (SMW)- bisexual and lesbian.

disorders, particularly depression and anxiety (Fredrikson et al., 2010). Child rearing responsibilities, and fertility may also help explain why women are more likely to suicide at younger ages, and are less likely to suicide during the average time of child rearing (Qin et al., 2000, Brockington, 2001).

Looking to indigenous heritage, men and women of indigenous populations are known to exhibit epidemiological patterns of disease that display higher rates of malnutrition, heart disease, infectious diseases, as well as suicide and depression (Durie, 2004). The discrepancy between indigenous and non-indigenous suicide rates are similar to those in USA and Australia, are likely to be even greater than suggested in New Zealand (Ferguson et al., 2004). Causal links are difficult to prove between suicide behavior and indigenous heritage, for studies also show that indigenous populations often suffer from lower standards of housing, income, unemployment, and educational achievement, which may have a considerable effects on lower rates of social well-being, and higher rates of suicide (Durie, 2004).

Furthermore, Donaghy; noted in her book on youth suicide in Australia titled, *Leaving Early* (1997, p. 133), that indigenous populations have 'lost their place in society' and this causes many of the identity problems that lead to suicide. Taking young Aboriginal men into example,

“More than any other group of young people in Australia, young aboriginal men are experiencing enormous confusion about the role they are meant to play in a society to which they have never truly belonged...They are confused not only by what is expected of them as males, but also what is expected of them as males descended from a totally different culture to the one in which they find themselves.”

#### *Social conditions*

As previously mentioned, Durkheim believed the suicidal process was primarily shaped by society, famously claiming that each society has a definite aptitude for suicide - therefore the characteristics of the society itself should be considered when explaining variations in suicide rates (Durkheim, 1896). Based on this reasoning Durkheim argued that the process of modernization leaves people

without a strong bond between the individuals and society, creating a lack of identity and comfort. He then theorized that this process of modernization would make life relatively meaningless, and more people, especially the young, would commit suicide in response to this meaninglessness. Durkheim worried that the processes of modernization would only intensify over the 20<sup>th</sup> century. He predicted suicide would continue to increase over time (however, Halbwach argued those in different countries would stabilise to an international average).

Durkheim's other theories hypothesize that specific factors of modernization such as the urbanization that followed industrialization worked to cut young people off from ancestral ties to kin, home, churches, places of importance and friendships (Stack, 2000b). This argument can be taken a step further by introducing the idea that the lack of connections to place may increase the importance of obtaining more material objects (materialism) in order to find comfort and familiarity. Such an argument links closely to one of Durkheim's most prominent ideas about suicide, namely that modernization leads to individualism, and in turn individualism leads to suicide (Baudelot and Establet, 2008). Although materialism generally refers to the importance people place on material goods, it has also been correlated with personality traits such as envy, lack of generosity, possessiveness and lower levels of life satisfaction (Kasser et al., 2004). For example, psychological studies show that materialistic adults tend to exhibit life dissatisfaction, unhappiness, low self-esteem and less concern with the welfare of others (Kasser and Ahuvia, 2002, Richins and Dawson, 1992, Sheldon and Kasser, 1995, Belk, 1984). Additional studies reveal that materialistic young adults are less autonomous, less likely to find meaning in life, less able to relate to others and are less satisfied with their standard of living, family lives, and the amount of fun and enjoyment they experience (Richins and Dawson, 1992).

Other studies reveal that materialistic youth are more likely to be anxious and unhappy (Kasser, 2005), and surveys conducted by Cohen and Cohen in 1996 show that youth who display materialistic behaviors such as buying clothes are also at a higher risk of depression (Cohen and Cohen, 1996). Furthermore, youth who score

high on scales of materialism are found less likely to connect with others, spend time with family, be socially integrated or help others in the community (Froh et al., 2010).

At the same time it is unclear as to whether materialism precedes low subjective well-being or if low subjective well-being *leads* to materialism, and in spite of the ill effects of materialism, especially on youth, the research around the causal relationship between consumerism and lower levels of life satisfaction is sparse (Kasser and Ahuvia, 2002, Schor, 2004).

In terms of religion's effect on suicide, Durkheim believed that the more religion encouraged independent thought, the less integrated the church and the community it served would be (and more vulnerable the community would become to suicide) (Durkheim, 1951). Durkheim theorized this after he discovered that Protestants had three times the rates of suicides as Catholics, with Catholic guilt functioning as a buffer for suicide.

Today, religious homogeneity is thought to reduce suicide rates because it is associated with stronger social capital (Ellison et al., 1997). This is the result of more recent studies suggesting that the protective effects of religion may be greater in less religious parts of various Western countries (Neeleman and Lewis, 1999, Neeleman et al., 1997). However, the religious reducing effects could also be due to the reluctance to commit a deadly sin, and the general willingness to classify a suicide death as accidental (Helliwell, 2007).

Durkheim also suggested that education maybe a dangerous factor in suicidal behaviour because it encouraged independent thought, yet today there is little evidence that higher education per se is associated with higher suicide rates (Helliwell, 2007). The long standing myth of high suicide rates among extremely bright university students appears to be unsupported in samples ranging from Cambridge University, through to a set of large U.S. universities (Collins and Paykel, 2000, Silverman, 1993, Silverman et al., 1997). For almost all sub-groups of

students, suicide rates are actually below those of demographically matched members of the general population.

## *6. Place*

I now turn from individual and broad social aspects to discuss how epidemiologists and geographers have explained the differences in suicide rates between places, including rural and urban differences, mobility, deprivation studies, and social fragmentation.

Most geographers and epidemiologists attempt to establish whether or not the characteristics of an area actually have an effect on the mental health of individuals over and above the personal characteristics of individuals. There are several challenges involved in taking such an approach however and not all have been resolved. It has long been argued, for example, that rural and urban spheres may imply multiple contexts of suicidal behaviour. For example, urban spheres could be lacking strong social bonds as well as health services, and rural areas may suffer more when there is a lack in employment opportunities (Morrell et al., 1999) and geographic isolation (Kelly et al., 2010). Other theories of rural and urban differences suggest that urban spaces are not only less socially connected but also have more pollution and crowded spaces, while rural spaces are commonly considered to be have smaller, well-connected communities with ample space. At the same time access to lethal means for suicide such as agricultural poisons and guns are thought to have a large influence of rural suicide rates (Beautrais et al., 2006, Dudley et al., 1997).

Verifying urban and rural differences in suicide rates is a complex matter, requiring statistical models which control for individual level attributes and district level attributes. The contextual individual risk factors are often defined as personality, recent adverse life events, social support, perceived sense of community, as well as duration of participant's exposure to specific rural environment and community. District level contextual factors range from relative socio-economic disadvantage,

district population change, drought severity, remoteness, to country specific standard geographic classification (Kelly et al., 2010).

Kapusta et al. (2008), for example, explored the growing gap of urban and rural suicides from 1970-2005 in Austria and found that between 1995-2005 rural suicide rates of males decreased and male urban suicide increased. In line with international individual effect results, the highest suicide rates among urban and rural Austrian suicides were found among widowers (123.7-156.1 per 100,000) and the lowest suicide rates were found among married and single men (17.3-25.1 per 100,000) rather than rural and urban differences (Kapusta et al., 2008). Kapusta et al. (2008) also found that individual effects were greater than area effects, although without controlling for ethnicity and country of birth or suicide method availability, socio-economic parameters, regional divorce rates or demographic shifts.

In another study, men were found to be 4-5 more times more likely to die by suicide in rural regions of Australia, but the differences were found to lie within their individual level attributes, rather than their location (Page et al., 2007). Page, Morrell, Taylor, Dudley and Carter (2007) found little difference in young Australian rural and urban suicides from 1979-2003 after controlling for other factors (Page et al., 2007). After considering the effects of migrant composition, socioeconomic factors, area based economic, educational and occupation resources they found migrant composition accounted, "for a greater proportion of the urban-rural suicide differential than psychiatric factor or health service access" (Page et al., 2007; p. 443).

Middleton, Gunnell, Frankel, Whitley and Dorling (2003) used regression models to test for urban and rural differences in suicide trends of young adults in England and Wales from 1981-1998. In their sample of 9264 participants that linked national census information with suicide mortality data, they found the greatest increase in suicide of young adults since the 1960's and 1970s occurred in rural areas from 1981-1998 (Middleton et al., 2003). They suggested that this spike in suicide rates may have been more related to contextual aspects of a place such as the lower



utilization of services in rural social spheres, rather than the rurality of place (Middleton et al., 2003). They noted individual aspects such as declines in the rural economy and subsequent break up of family units, as well as migration of healthier individuals away from rural areas leaving behind a greater concentration of more susceptible individuals.

In a qualitative study of mental health in rural areas Parr, Philo and Burns (2004) focused on 100 users of psychiatric services in the Scottish Highlands. From their interviews with locals they suggested that suicidal behavior may have had more to do with the cultural norms and daily routines of a place. This includes the prevailing ethos one respondent put as the, “no nonsense type, get on with your life...pull yourself together sort of thing” (Parr et al., 2004; p. 408). This type of attitude may work against patients who are seeking help to manage their mental distress (Parr et al., 2004), and may be more commonly found in rural places.

New Zealand epidemiologist Tony Blakely claims that so far no study has properly examined whether there are such urban/rural inequalities in suicide in New Zealand (Blakely et al., 2005). While Pearce et al. (2007) examined differences in male and female rural and urban suicides and found both female and male suicide rates were significantly higher in New Zealand’s urban areas from 1980-1982, by the 1990’s these urban rural differences were no longer significant (Pearce et al., 2007b). Pearce suggested this was in part due to the small population and low numbers of suicides in rural communities that made statistical significance difficult to prove.

Overall, rural and urban differences are too inconclusive to be used as quantitative indicators of suicide. It may be instead that the social context of rural and urban life, compounded with remoteness, or social isolation and cultural attitudes of place, encourages suicide. Also, studies on mobility show that the differences in urban and rural suicides may be explained by other variables such as place of birth and length of residence, and migrant status itself.

## 7. Mobility

Closely related to the influence of place on suicide is the effect simply of *changing* place, or mobility. Durkheim theorized that migration would lead to lower levels of social integration which could in turn lead to suicide (Hassan, 1995). This theory is supported by empirical studies that have found an association between internal migration and higher rates of suicide as well as immigration (Stack, 1980, Stack, 2000a). Further evidence from aggregate studies show a positive relationship between suicide and migration from rural to urban areas (Stack, 1982), although urban and rural differences are often un-controlled for their respective levels of isolation, social integration and economic depression.

Nevertheless, mobility is considered to increase suicide risk. As one study found, the odds of nearly lethal suicide attempts doubled during the twelve months following a move (Potter et al., 2001). In Potter et al.'s (2001) study of attempted suicide it was hypothesized that mobility might make youth more vulnerable to attempting suicide. Results from 153 cases of attempted youth suicide in the geographic region of Houston, Texas from 1992 through to September 1995, using multiple area controls indicated that, "moving in the last past 12 months is positively associated with a nearly lethal suicide attempt" (Potter et al., 2001; pg. 1). Other controls included specific aspects of the move and characteristics of the individual. Those who migrate they conclude, are more at risk of suicide than those who do not experience the social isolation and stress of relocation.

Qin, Mortensen, and Pederson (2009) also found that frequent change in residence (in Denmark) was associated with increased risk of attempted and completed suicide, an influence which was not modified by sex or age at the time of move. This association was still significant after controlling for personal and parental psychiatric history, birth order, birth place, link to father and parental age at birth using four Danish longitudinal studies of all children born between 1978-1995, 11-17 years of age, of which 4160 attempted suicide, and 79 completed (20 girls and 59 boys) (Qin et al., 2009).

In their sample of the entire population of New South Wales, Morrell, Taylor, and Slaytor (1999) controlled for migrant status, area of residence, and nine major birth groups in a regression that showed how migrant status made the difference between urban and rural suicides (Morrell et al., 1999). Morrell also noted gender differences in migrant status.

“...suicide among migrant males living in non-metropolitan areas accounts for most of the excess of male suicide in rural New South Wales and the significantly lower risk of suicide for non-metropolitan Australian-born women does not apply to migrant women” (Morrell et al., 1999; p. 81).

There was also evidence that rural urban migration might increase stress to levels that increase risks of depression and suicide such as lack of integration and isolation (Maskill et al, 2005). I build on these arguments when examining the influences of place on well-being in chapter five.

### *8. Socioeconomic differences among places: deprivation studies*

Of all the attributes of place associated with suicide none find a more consistent positive correlation than area deprivation. In the past poverty was considered by Durkheim to *protect* individuals from committing suicide, although this idea is not supported by the current research on socioeconomic differences. This is largely because in contemporary studies in developed economies especially, it is necessary to distinguish between absolute and relative poverty. It may be socioeconomic status inequality rather than any absolute level of poverty that is the relevant influence on suicide.

In agreement with Durkheim's findings on poverty, fifty years ago Henry and Short (1954, p. 247) hypothesized that, “higher status categories will have higher suicide rates than low status categories”, from non-age-standardised observations. However, in 1967 Maris provided evidence against this, using age-standardised cross tabulations of occupation status as well as a socioeconomic status score from

2,153 Cook County, Illinois death certificates.<sup>8</sup> Results for Maris work revealed that suicide was inversely related to high status (Maris, 1967).

The role of status inequalities was often overlooked in accounting for suicide risk until epidemiologist Richard Wilkinson's seminal paper on income distribution and life expectancy was published in 1992, where Wilkinson reintroduced the idea that the difference between the top performers<sup>9</sup> and low performers<sup>10</sup> has a significant effect on societal health.

Subsequent research by Wilkinson shows that countries with higher income inequality have lower percentages of people agreeing that others can be trusted and higher percentages of people with mental illnesses (and this includes drug and alcohol addiction) (Wilkinson and Pickett, 2009, Wilkinson, 1996). As a response to this research, status inequalities have been positively correlated with in a number of variables including life expectancy, math and literacy scores, infant mortality, homicides imprisonment, teenage births, obesity, mental illness, and more recently social trust, social capital and social mobility (Wilkinson, 1992).

However, at a recent conference on inequality held at the Victoria University of Wellington, Tony Blakely noted that Wilkinson's collection of evidence is impressive, but too simplistic. In Blakely's view, inequality matters, though not as universally as Wilkinson argues because of importance Wilkinson puts on certain variables (Blakely, 2010). Nevertheless, there is now a significant amount of evidence from a number of countries including New Zealand, capturing geographical inequalities in health (Ministry of Health, 2009, Crampton et al., 2004). Research from the Canterbury geography department monitoring geographical inequalities in health reveal that economic and social policies increase inequalities in health, and that these differences became particularly pronounced during the 1980s and 1990s (Pearce and Dorling, 2006a, Pearce and Dorling, 2006b).

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<sup>8</sup> Based on the United States Census Bureau Index from U.S. Government Printing Office, 1963.

<sup>9</sup> Defined by high income earners.

<sup>10</sup> Defined by low income earners.

Deprivation indices have been created to capture differences socioeconomic inequalities between places, and have been widely utilized in health research to examine the social dimensions of ill health (Carstairs and Morris, 1991) including suicide (Levin and Leyland, 2005). For example, the higher number of suicides in Scotland compared to the rest of Great Britain have been explored extensively by deprivation (McLoone, 1996, Exeter and Boyle, 2007, Boyle et al., 2005), and more recently through ecological analysis combining mortality records and levels of deprivation (Exeter and Boyle, 2007, Boyle et al., 2005). These mortality studies of deaths in small geographical areas show a strong association between suicide and economic deprivation.

The first study of Scottish area effects on mortality was compiled by McLoone (1996) in 1981-1993, and identified suicides and undetermined deaths among all Scottish residents with information provided by the general Register Office for Scotland. Associations with deprivation were then compared to Castairs deprivation scores categories: affluent, average, and deprived (McLoone, 1996). In doing so he found that although various individual factors were at work on Scottish suicide rates such as drug misuse, divorce, and unemployment, these aspects were more common in deprived areas.

Boyle, Exeter, Feng and Flowerdew (2005) built upon McLoone's (1996) research using similar methods to explore the suicide gap among young adults in Scotland from 1980-1982, and 1999-2001. Older adult suicide decreased, while young adults, especially young male suicide increased as the gap of levels of deprivation increased, therefore youth suicide was found to be associated with lower deprivation levels (Boyle et al., 2005).

Building from their previous research on suicide, Exeter and Boyle (2007) were the first to consider the spatial clustering of suicide among young adults as the result of the concentration of socioeconomic deprivation in Scotland 1980s and 1990s. Statistical tests for the significance of geographical clustering were carried out for each period separately to consider whether the likelihood of suicide persisted

through time. Deaths by suicide and undetermined causes were combined and assigned into 10,058 small areas, and they detected a significant cluster of suicide in east Glasgow in all three-time periods (involving 92, 159 and 245 cases), although they did control for individual risk factors, or other area effects.

Ecological mortality studies with a focus on suicide outside of the United Kingdom include the work of Martikaninen, Maki, and Blomgren (2004), which linked 15-99 year old Finns to death records in 1991-2001, including 13,589 suicides with individual level data from Statistics Finland. In their study they found that the effect of area socioeconomic structure and social cohesion on suicide, while partly attenuated after adjustment for individual socioeconomic characteristics, remained as consistent independent area effects providing evidence of a social spatial effect on suicide rates.

However, in a follow up study Martikaninen, Maki and Blogram's (2004) work on the young Finnish male population shows no association between area effects and mortality. Their research linked death records in 1991-1995 ( $n=14,878$ ) with area characteristics based on the Finland 1990 census records of men over 25 years of age in the Helsinki metropolitan area ( $n=215,509$ ). Individual and area characteristics were tested as predictors of mortality, after controlling for socioeconomic differences. When all area and individual characteristics were entered into their model the effects of individual characteristics on total mortality are much larger than those of area based (Martikainen et al., 2003). Yet Martikaninen, Kauppiene and Valkonen (2003) did not test for associations between *suicide specifically* and neighbourhood characteristics (referred to in other studies as social fragmentation) effects. They instead explored the influence of neighbourhood characteristics on young male *total mortality* (Martikainen et al., 2003, Martikainen et al., 2004).

Cubbin, LeClere, and Smith (2000) may have compiled the first injury mortality ecological study to control for suicide and neighbourhood characteristics, as well as socioeconomic status. A Cox Proportional Hazard Model was used to estimate

individual and neighbourhood effects on injury mortality, Cubbin et al (2000) based on the National Health Interview Survey, from 1987-1994, covering ages 18-64 (n=547,535). They tested the intensity of a possible increase relationship between occupational class, and injury mortality. In doing so they found that spatial characteristics had an independent effect on the outcome, even after adjusting for individual variability. In other words, social inequalities in injury mortality were found to exist for both people *and* places.

In their findings they also distinguished neighbourhood characteristic variables (and what I will later explore as social fragmentation), stating there was,

“About 50% increased risk [of suicide] for persons living in neighbourhoods with the following characteristics- low socioeconomic status, high racial concentration, and higher residential and family instability. These places may increase feelings of hopelessness or social isolation for people who may be considering suicide and this, contribute to the increased risk” (Cubbin et al., 2000; p. 522).

Mortality studies such Cubbin et al. (2000) suggest that after statistically controlling for socioeconomic differences, and area and individual histories, the place where we live, and who we are surrounded by has an effect suicide risk. Therefore, what are the main attributes of a place, particularly the social interactions characteristic of a place, that contribute to or mitigate the chance of suicide? Questions such as these are very similar to those Durkheim was asking, namely, the extent to which individuals are (or feel) integrated within society, which is in line with the prevailing thesis is that social cohesion lowers suicide. Or turning it around, relatively high suicide rates are indicative of loss or relative lack of social cohesion in the community, as experienced by those who may be vulnerable by virtue of their own set of personal characteristics.

Dorling and Gunnell (2003) state from Durkheim’s findings in *Le Suicide*,

“In highly integrated societies, where there appeared to be strong social bonds and a high degree of social cohesion, suicide rates were low. Lower levels of social integration on the other hand implied to Durkheim that people may not have adequate

mechanisms of social support and they may therefore resort to individualistic solutions to their problems” (Dorling and Gunnell, 2003; p. 443).

Local manifestations of Durkheim’s social integration theory have been tested using measures of social fragmentation or anomie, which refers to the lack of societies ability to integrate certain groups or individuals.

### *9. Social fragmentation*

It may be that contemporary youth are more vulnerable to suicide than those older in the population, because they are less integrated within society than in the past. Integration in turn occurs at the level of place, in the relevant locality. It is therefore important that place effects be estimated by age. The literature on place effects certainly diverges depending on whether age (and sex) specific rates are used, as opposed to aggregate or crude rates of suicide. However the fact that suicide is a rare event means that in order to gather sufficient numbers any disaggregation by age (and sex) can compromise division on other domains, such as time as in the Dorling and Gunnell (2003) study. In order to estimate regression equations for sex specific age groups for example they had to generate suicide rates over a ten-year period.

Among those who stay with aggregate suicide rates the dominant approach to understanding the role of place has been to generate local indicators of isolation or social fragmentation. The terms differ and their treatments vary by discipline but in all cases their aim has been to demonstrate that suicide reflects a lack of social connection either in terms of the family or the community.

Current indicators of social fragmentation include variables such as proportion of people living alone, economically active unemployed people, household with no car, overcrowded households and households with no owner occupied (Middleton, 2004). Yet so far there is no prevailing, international definition of social fragmentation.



In an attempt to test Durkheim's social integration theory Congdon (1996) created a social fragmentation variable to test predicted suicide rates in the authority districts of London. Using a discrete Poisson regression model Congdon considered suicide at three ward levels from 1990-1992 accounting for numerous boroughs, which included 2.04 million of London's 6.29 million residents.

Congdon's ecological analysis addressed the association between social fragmentation and age group, sex, as well as socioeconomic factors on suicide and parasuicide. Although the effect of spatial clustering of suicide in London's could not be identified, Congdon found that social fragmentation (labeled anomie in this study) and deprivation variables correlated with suicide and parasuicide to different degrees in different age groups in different areas of London. For example, the effects of deprivation were more pronounced for males under the age of 60 for those living in outer London (Congdon, 1996).

However, Congdon made the important point that much of the spatial variability of suicide in London was due to chance, partly because there are issues around finding statistical significance in rare events like suicide at a small-area scale. Also, his measure of anomie and deprivation was also not uniform across geographical contexts, which may have been the result of using inner outer division wards and boroughs, or the non-parametric regression mixture analysis itself (Congdon, 1996).

Other ecological studies similar to Congdon's provided evidence that suicide mortality is more strongly related to social fragmentation, whereas other types deaths are more closely associated with deprivation indices. Whitley, Gunnell, Dorling and Smith show this by creating their own Townsend and social fragmentation score much like Congdon's index (Whitley et al., 1999). Through examining 633 parliamentary constituencies of Great Britain defined in 1991 they found that, "social fragmentation, and Townsend scores were associated with higher suicide rates in all age and sex groups, and the association was greatest for social fragmentation" (Whitley et al., 1999; p. 1035). Although they found social fragmentation to be associated with suicide, the direction of the association is

unclear and it may be that, “people at high risk of suicide choose to live in socially fragmented areas or that these areas contain more hostels for mentally ill people” (Whitley et al., 1999; 1036) which raises issues around selection and causation effects. Nevertheless, they conclude that, “suicide rates were more strongly associated with social fragmentation than poverty at the constituency level” (Whitley et al., 1999; 1034).

Following the seminal work on social fragmentation (Congdon, 1996, Whitley et al., 1999), O’Reilly et al. (2008) constructed their own measure based on the proportion of people in private rental accommodation, the adult population who were unmarried, those aged less than 65 years who were living alone and the level of population turnover in the year preceding the census. O’Reilly et al. (2008) then conducted a five year record linkage study of 1.1 million non-institutionalised individuals aged 16-74 years, enumerated at the 2001 Northern Ireland census and observed their probability of suicide over the following five years (one of the largest longitudinal studies of suicide risk undertaken in the UK). The cohort experienced 566 suicides during follow-up.

Using the Cox Proportional Hazards Model, death due to suicide and their area effects were tested independently. They concluded that suicide risks were lowest for women and those who were married or cohabiting and were higher among those carrying indicators of individual and household disadvantage. Once these individual characteristics were taken into account area-level factors ceased to be particularly important, a result they use to suggest, “that policies targeted at area-level factors are unlikely to significantly influence suicide rates” (O’Reilly et al., 2008; p.106).

In summary while they confirmed the known associations between suicide and indicators of isolation and socio-economic disadvantage at both individual and household level, they were unable to identify place effects per se.

“The study showed that, after controlling for individual and household characteristics, area of residence did not exert an independent influence on suicide risk, suggesting that variations in suicide rates

between areas is explained by differences between the types of people living in these areas” (O’Reilly et al., 2008; p. 108).

O’Reilly et al. then go on to note how, “ecological studies cannot determine if the variation between areas is due to concentrations of at-risk individuals in these areas. To do this requires studies that can examine the influence of area-level factors while *simultaneously* adjusting for individual level factors.” (O’Reilly et al., 2008; p. 109).<sup>11</sup> At the same time, O’Reilly et al.’s result stands in marked contrast to Congdon (1996), Whitley et al. (1999), and Cubbin et al. (2000), who showed strong associations between rates of suicide and self-harm and levels of deprivation and even stronger association among social fragmentation measurements.

Ecological studies on despair (suicide) in turn show a strong association between suicide and social fragmentation after comparing individual risk factors with levels of deprivation and social fragmentation. For example, Middleton, Sterne and Gunnell’s (2006) work on the geography of despair among 15-44 year old men in England and Wales from 1988-1994 tested the association of suicide with area characteristics using geo-coded postal codes from the last known place of the suicidal individual with coroner inquests (Middleton et al., 2006). In their results they found that after controlling for the effects of all characteristics single people, social fragmentation measurements such as lone-parent households, and unmarried people associated the most with suicide (Middleton et al., 2006).

Dorling and Gunnell (2003) also tested the spatial and social components of suicide in Britain, with compiled data from the Office of National Statistics and the General Registrar’s Office for Scotland from 1980-2000. Census information was linked with suicide including all deaths recorded as intentional self-harm<sup>12</sup> and injury

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<sup>11</sup> The same authors go on to point out that there have been relatively few such studies to date. Instead, ecological associations identified in the literature have been primarily due to the proportions of high-risk individuals living in particular areas and as such selection effects need to be addressed. Note the Northern Ireland study was not large enough to address effects by age and sex.

<sup>12</sup> ICD E950-E959.

undetermined whether accidentally or purposely inflicted.<sup>13</sup> Much like Middleton et al (2006) study on despair in England and Wales, Dorling and Gunnell found suicide to be associated with area effects. More importantly Dorling and Gunnell's (2003) work examines a longer period of time, two decades as opposed to the six years used by Middleton et al. (2006), therefore they were able to show correlations between the changing geographies of despair (suicide) and changes in area (Dorling and Gunnell, 2003).<sup>14</sup> In their results Dorling and Gunnell (2003) also recognized that attributes of places have different influences on both men and women and people of different ages and therefore any ecological correlations need to be made age and sex specific.

Before considering the research on the association between social fragmentation and suicide in New Zealand it is important to recall the factors that help control for area or place effects. These include age-specific suicide rates, individual characteristics, length of stay in a place, mobility, socioeconomic status, and objective neighbourhood effects such as house ownership, and community connectedness. Therefore, in an attempt to explain how context plays a part in New Zealand's suicide rates at a local level Collings, Ivory, Blakely and Atkinson (2009) constructed a measure that would capture the construction and maintenance of a social ties within a neighbourhood which includes many of the aspects mentioned above, called 'neighbourhood fragmentation.'

Two measurements of neighbourhood fragmentation were used. The first was a 'Index of Neighbourhood Social Fragmentation' which included variables single person household, non-family households, recent immigrants, self defined Māori/non-Māori, non-NZ language speakers, residential mobility (less than a year), fewer school aged children, home owners, long-term residents (fifteen years or

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<sup>13</sup> ICD E980-E989.

<sup>14</sup> In the context of Dorling and Gunnell's conclusions based on aggregated regressions it is interesting to read O'Reilly's comment and to read of Kunce and Anderson's suggestion that studies employing large aggregates of the population tend to bolster contextual influences on suicide KUNCE, M. & ANDERSON, A. (2002) The impact of socioeconomic factors on state suicide rates: a methodological note. *Urban studies*, 39, 155-162. whereas data gathered on smaller aggregates yield little or weakened support for them.

more) and married adults. The second was a New Zealand version of the UK Congdon index, including the four variables private rentals, single person households, residential mobility (less than a year) as well as marital status which was used as a check on the 'Index of Neighbourhood Social Fragmentation.' Levels of deprivation were also measured using the NZDep96.

Collings et al (2009) used a multilevel analysis of a three-year cohort study with census records and linkage to mortality records of over 2.8 million individuals ages 20-74 years old, to analyze the influence of the neighbourhood. Results from their regression resulted in no consistent association between suicide and social fragmentation. There was also no further evidence of an association between nine variable index, deprivation NZDep96 and a New Zealand version of the UK Congdon index that included private rentals, single person households, residential mobility, and marital status.

Although neighbourhood fragmentation did not generate a significant association in suicide rates, Collings, Ivory, Blakely and Atkinson (2009) did find that socioeconomic status of the neighbourhood itself was a significant risk factor, without controlling for effects of social support or bond.

In conclusion, the international and local literature on ecological assessment has been based on observable objective measurements of the individual and the areas in which they live. However little attention has been paid to the use of *subjective* measurements. This is important because of the strong association I have already documented between subjective measurements and suicide at the country level. Subjective measurements may also be a credible tool to measure and predict suicide and better assess the usefulness or need of prevention policies in specific places *within* countries. These include variables of trust and social capital measurements for their strong association to youth life satisfaction and mental wellbeing. I turn therefore to this literature.

## *10. Trust and social capital*

The international evidence suggests that measurements of trust and social capital or local capital, strongly correlate with positive accounts of subjective well-being, and negatively with suicide (Daly and Wilson, 2009). Lack of trust has been found to be a significant theme in case studies of youth suicides. For example, in a poem dated October, 1995- five months before his death, Australian 19 year old Adam Kemp wrote,

“Trust, faithfulness, compassion...words which no longer hold  
meaning for me/ Have been replaced with/ Betrayal, isolation and  
worthlessness/ All blended together to create this dark and sour  
being which is my true self” (Donaghy, 1997; p. 85).

In the first line of Adam’s poem he mentions an important aspect of coping with heavy loads, namely trusting other people, and being supported by trustworthy people. After a suicide of a young person it is common for survivors question their social surroundings. Or as one author put it, “Intentional death on the brink of life threatens our own sense of community” (Donaghy, 1997; p. 5). In other words, youth suicide often causes community members to ask how exactly does a young person come to resolve the issues within themselves with death, specifically here?

Suicide prevention worker Barry Taylor believes, “our society is imposing suicide on the young as a viable solution to disappointment and despair” (Donaghy, 1997; p. 5), suggesting there is an important social effect on suicidal behaviour. Therefore, using social capital measurements might be the best way to test for social effects on suicidal behaviour. If there is a breakdown in social bonds the tendency to rest on an individual virtues is greater, and this greater social isolation in turn gives more vulnerable members of the community an increased opportunity to act on suicidal thoughts (Joiner, 2005, Joiner et al., 2007).

The concept of social capital can be loosely defined as the social bonds built between individuals or groups of people. Social capital is often tested for quality of connection with other variables, such as trust, and these measurements fall under

local capital. Also, the emphasis of social capital through community cohesion also aligns with Francis Fukuyama notion of trust, which emphasis that a group must adopt common norms as a whole before trust is established and generalized amongst its members (Coker, 2007). Therefore, trust is promoted by the cohesive nature of social capital.

Historically, the term “social capital” was first used by Hanfin in 1916 when he investigated the role of rural school on community well-being (Roskrugue et al., 2010), and was largely disregarded until rediscovered in the 1980’s sociologists Bourdieu, and Coleman (Bourdieu, 1986, Coleman, 1990). Social capital theory then crossed disciplines in the 1990s when Stanford political scientist Robert Putnam used the term to expand on his economic and political work (Roskrugue et al., 2010).

Putnam was of the first to explore correlations between the positive relationship between subjective well-being and social capital in his best seller *Bowling Alone* (Putnam, 2000), noting that since WWII there has been decline in American involvement in politics, community affairs and crucial social networks and this has been reflected in lower levels of well-being (Putnam, 2000).

Putnam’s observation that Americans join, trust and vote less than 10 years ago is also applicable to New Zealand (Putnam, 2000) - today in New Zealand young people exhibit lower social trust, less community involvement, and connection to their community than older cohorts (Thornton and Clark, 2010). The lack of community felt by young people in particular is disconcerting, for the benefits of being involved are well recorded in suicide research, as outlined in sections 1 - 9 (Beautrais, 2003d, Joiner et al., 1997). Also, participating in activities outside the pecuniary sector encourages young people to work towards a common goal, and this functions as a de-isolator, for by nature it is an all-inclusive event.

Moreover, extracurricular activities have been cited to create a web of cooperative relationships between citizens (Brehm and Rahn, 1997). The literature on youth life satisfaction supports this notion, showing that participation in extracurricular and religious activities, and close familial relationships during youth has an effect on life

satisfaction, happiness, and quality of life later on in life (Smith, 1999). Furthermore, a recent report from the New Zealand Youth Connectedness Project collected and analyzed by Jose and Pryer found that a sense of connection to family was the most powerful predictor of better psychological health from 10-15 year olds in New Zealand. Other connections that correlated positively with youth health in New Zealand included peer connection, school connectedness and community connectedness (Jose and Pryor, 2010).

## *11. Summary*

Within this chapter I have covered studies of youth: genetic predispositions towards suicide, including sex and indigenous heritage, the effects of religion, education, materialism, individualism, modernization, alcohol abuse, sexual abuse, mobility, rural and urban differences, ecological analysis of socioeconomic deprivation, and social fragmentation, which attempts to capture all of these things.

In conclusion, I have found that the literature on youth and young adult subjective well-being and suicide confirm they are indeed associated. There are many studies, including those on mobility, and social fragmentation that show individual and area attributes do have an effect on both well-being and suicidal behaviour. Therefore, the study of subjective well-being offers considerable insight into possible reasons for temporal and geographical variations in suicide rates.

I have also found that adolescence is a time of life in which many young adults transition from secondary to post secondary education to other facets of adult life such as higher education, work, marriage or parenthood (Blustein, 2006), yet the most important processes of psychological development for a young adult are those of individuation and separation (Blustein, 2006). Moving from being dependent on an older caregiver to someone else or primarily themselves is a sign of adulthood (Blustein, 2006, Milyavskaya et al., 2009), and a successful negotiation of this transition is made more difficult in social climates and economic downturns where



jobs opportunities for young people, especially those who live in lower socioeconomic areas, are limited.

In the next chapter I will turn to suicide and self-harm rates in New Zealand in order to understand the current contextual factors of suicide in general and among youth and young adults in particular.

## Chapter 3

### Suicide trends in New Zealand

In their stirring reflection on suicide trends from the end of the 1990s, local New Zealand writers Langford and James and Jan Ritchie expressed the country's concern over the 'alarming increase in suicide' especially among the country's 'youth', pointing out that, "New Zealand has recently undergone a number of social and economic changes that have created dramatic social and cultural shifts" and that, "given the rapidity of these changes, the shock on such a small country has been difficult to absorb" (Langford et al., 1998; p. 94).

The irony of their stance is not lost on the New Zealand audience, as these authors had become well known for their glowing acclaim for New Zealand twenty years earlier as a great place to bring up children (Ritchie and Ritchie, 1978). Negotiating the 1980s as an adolescent turned out to be much more difficult than even they realized at the time (Ritchie and Ritchie, 1984).

The aim of this chapter is to describe the pattern of suicide and self-harm in New Zealand over the post-war period and to draw attention to changes in their distribution over the life cycle. In turn, these patterns will raise fundamental questions about how New Zealand society has changed over this period and particularly the way in which relative well-being has been redistributed away from the young to those in their older years. New Zealand, which used to be 'such a great place to bring up kids' has *now* become 'a great country to grow old in.'

Using suicide to understand society goes back to some of the most profound writing in sociology with many insights being identified even before Emile Durkheim's classic, *Le Suicide* (Durkheim, 1897 [1951]). Although many have now written on suicide trends in New Zealand, the field itself is dominated by health professionals and epidemiologists, concerned primarily with the proximal causes of suicide. Notwithstanding their canvassing of a wide range of 'societal' factors (Maskill et al.,

2005), one is still left pondering the role these social changes have played in reducing the relative well-being of the young and the extent to which this is in turn reflected in the changing level and distribution of suicide and self-harm behavior.

The central empirical message of this chapter, and the central trend upon which I wish to build my argument, has to do with what I call the 'generational switch.' By this I mean the way in which a gradual fall in the age-specific rate of suicide among the middle age and older population over the last half century has been accompanied by a more spectacular rise in the suicide rate of young adults. Even though this increase has now leveled off, the ratio of young and older suicides is still much higher than it was in the 1950s and 1960s and is an order of magnitude higher than the 1920s.

The literature I have reviewed in chapter two suggests strong links between suicide and the much broader social conditions to which they are responsive. In particular a division has arisen between the age groups, which can be attributed to ethnicity, deprivation or any other major social division. This is suggestive of a fundamental reversal in the relative life chances and quality of life of younger and older New Zealanders.

I present the evidence in eight sections beginning with section one on the way suicide is identified and measured in New Zealand and other OECD countries. Section two presents an age-standardised view of changes in suicide rates over the post-Second World War period for both men and women. I then point out how age has the effect of masking the uneven distribution of suicides across the age groups and therefore in section three I present the age-specific rates of suicide and the phenomena of 'generational switching.' I then undertake some international comparisons in section four and in section five turn to the patterns of suicide among Māori whose rate and age patterns of suicide differ in several important ways from the non-Māori population.

Section six presents evidence linking suicide rates to an ecological (area base) measure of deprivation, the New Zealand Index of Deprivation. This is followed in section seven by a discussion of self-harm and how this much more widespread occurrence tends to parallel trends in suicide itself. The argument of this chapter is summarized in section eight.

### *1. Identifying and measuring suicide*

There is a disagreement among social scientists as to whether or not coroner's inquests accurately attribute deaths to suicide and the degree to which individual country results are comparable internationally. In the absence of a resolution, international age-standardised rates from the World Health Organization (WHO) continue to be used.

For the past 100 years the International Classification of Disease (ICD) has been used to classify causes of death, providing an international standard for reporting mortality. Today, all accounts of data collection on mortality and morbidity are currently facing major revisions by the ICD (ICD-10) Topic Advisory Group of the World Health Organization (WHO Topic Advisory Group on Mortality, 2010). This group is expected to edit and discuss mortality rules and by 2015 they will provide WHO with a new international standard of disease classification, including mental and behaviour disorders (ICD-11).

International comparisons of suicides rates are most commonly made between countries in the Organization for Economic Co-operation and Development (OECD). These classification systems of suicide are subjected to the countries own standard of suicide identification, although most Western countries use the ICD-10 as a guide in suicide classifications.<sup>15</sup>

New Zealand often compares health statistics with other OECD countries because they are considered to have similar as well as reliable data collections. Suicides in New Zealand are usually determined by the necessity of a note and coroner

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<sup>15</sup> To date an international definition of suicide has yet to be accepted by OECD members.

investigation under the ICD-08 (or 09) classification guide (Ministry of Health, 2010), although these requirements have recently been contested by coroners (Cairns, 2010). Currently in New Zealand a death can only be classified as suicide on completion of an inquest by a coroner, and could take six to eighteen months to complete (Ministry of Health, 1999). This is one of the reasons why the most recent statistics I use below only include up to 2008.

The counts of youth suicides in particular have been called into question by skeptics due to the large number of undetermined and accidental deaths in this age group (Madge and Harvey, 1999). Prevailing classifications have not specifically targeted youth, whom often do not leave notes and are considered to act much more impulsively compared to older cohorts (Manor et al., 2004). Some studies go so far as to suggest that official statistics may only cover one in three youth suicides (Madge and Harvey, 1999, Phillips and Ruth, 1993). Fatal and non-accidental self-injury in the form of reckless driving, drug overdose, and alcohol abuse are thought to be much more common than international suicide statistics indicate. Only a handful of researchers note the link between the large number of youth (15-24) traffic accidents and suicides, which are the two main causes of death among young people in the US, Australia and New Zealand (Cutler et al., 2001). The figures I use below do not take into account possibly misclassified youth suicides, and are therefore probably underestimates of the actual rate.

Epidemiologists also advise a cautious approach when comparing international suicide statistics (Andriessen, 2006). Some of the prohibiting factors they note in making international comparisons includes misclassifications due to social stigma, religious attitudes towards self destruction, occupation of a victim, and issues of confidentiality (Andriessen, 2006). Despite limitations, and the vocal presence of some skeptics, the *overall* picture of suicide rates seems to be reliable, and there are now several studies which compare international suicide rates over time (Andriessen, 2006, Fernquist and Cutright, 1998).

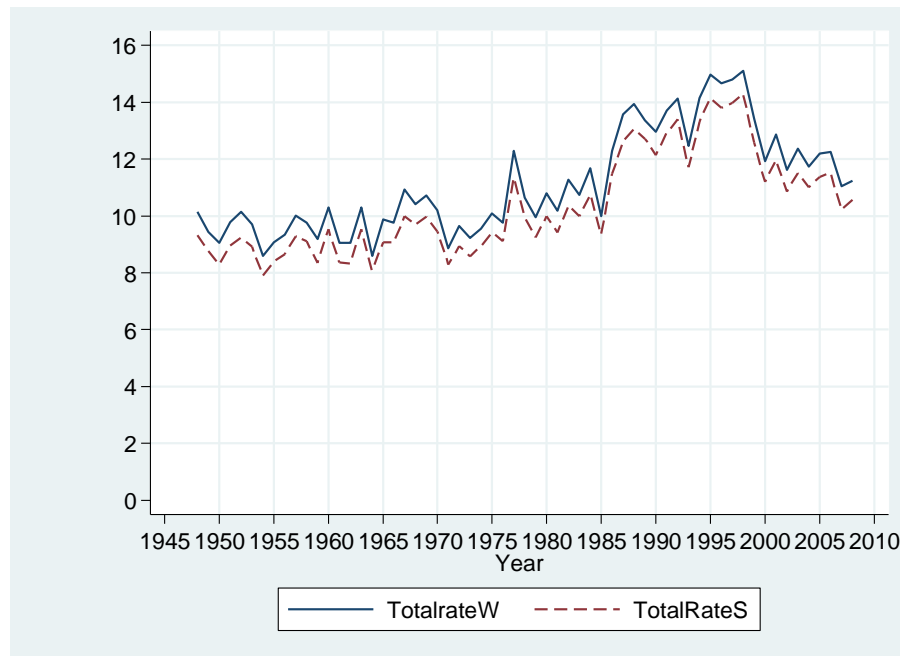
New Zealand data on suicide counts by sex, which are assessable by the public are available in electronic form by age from 1948 onwards, by self identified Māori to non-Māori from 1996 onwards, and by District Health Board from 1996 (which were reconfigured in 2001), and levels of deprivation from 2001 on. These datasets offer a relatively comprehensive base from which to document changes in suicide rates in New Zealand.

## *2. Changes in suicide rates – the age-standardised evidence*

Suicide is highly sensitive to age, though exactly how the mix of young and old affects the rates varies over time as I will show. A common way of presenting trends in a country's overall rate of suicide is to use the "age-standardised" rate, that is, suicide rates adjusted for the relative size of age groups in the population. Standardisation ensures that rates of different countries, (or places within countries) and over time do not vary simply because of differences in the age composition of the populations concerned.

Two series showing age-standardised rates for the New Zealand population over the fifty years 1948-2008 are shown in Figure 3.1 as suicides per 100,000 people. The choice of population for standardization (using the two sources SEGI and WHO) only alters the rates by a constant as the parallel lines shown on the next page.

**Figure 3.1 Age-standardised suicide rates per 100,000 by year in New Zealand, 1948-2008**



Source: New Zealand Health Information Service.

Note: Deaths by suicide by year of registration. Rates per 100,000 age-standardised to WHO world standard population and Segi's world population. ICD-9<sup>16</sup> codes E950-E959<sup>17</sup>; ICD-10 codes X60-X84.<sup>18</sup>

Figure 3.1 shows that over the first two decades of the series, suicide rates fluctuated around a fairly stable rate below 10/100,000, or about 151 suicides per year. From the early 1970s through 1998, a period of nearly 30 years, suicide rates increased with only short lived fluctuations about the trend. By 1998 the (WHO) number of recorded suicides reached 577 per year and a rate of 15.1/100,000. Thereafter suicide rates declined, but even by 2008, still stood well above the pre-

<sup>16</sup> The ICD is the international standard of diagnostic classification for all general epidemiological and clinical use. ICD-08 codes for mortality were typically used in the 1970s, ICD-09 in the 1980s, ICD-10 in the 1990 and 2000s, ICD-11 codes are now being written. Each country adopts these rates at different times. <http://www.who.int/classifications/icd/en/>

<sup>17</sup> Suicide deaths and attempts are coded by method from E950-E959 in ICD-08 (death by solids and liquids, gases, hanging and other self-inflicted injury) which also include E980-E989 (death by poisoning, jumping and undetermined intent). These method classifications have only slightly changed throughout each revision of ICD codes 08-11. <http://www.who.int/bulletin/volumes/88/11/BLT-09-068809-table-T1.html>

<sup>18</sup> Other poisoning methods outside of E980-E989.

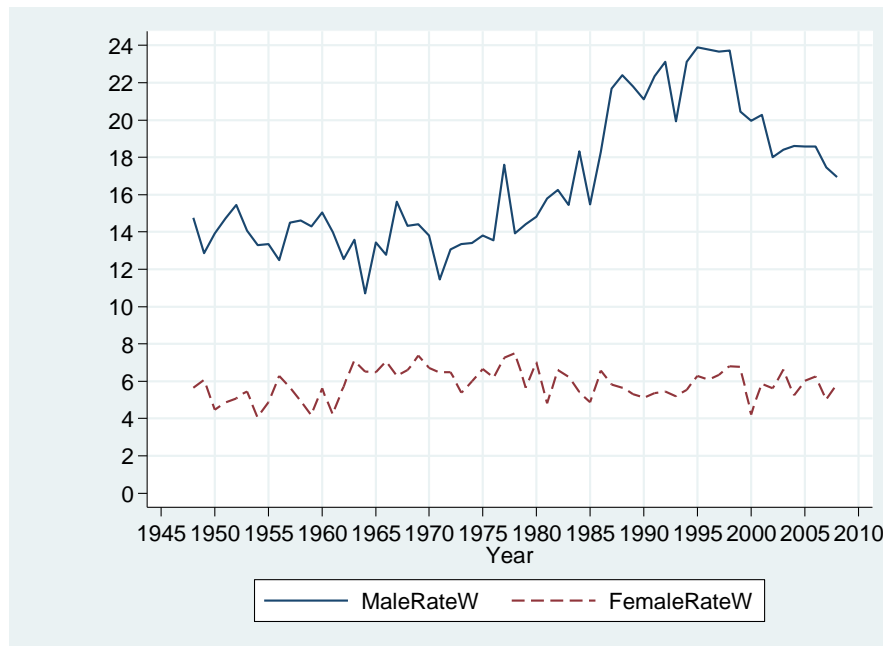
1985 average. In absolute numbers, by 2008 about 500 (497) people were recorded taking their own lives in New Zealand each year, a rate of over 11/100,000.

While instructive, the data in Figure 3.1 are problematic in three respects. First, they are standardised for age, which means that the different suicide rates which apply at different ages are disguised when aggregated into a single rate. This point was realized by Fernquist and Cutwright when they compared age-standardised suicide rates for 21 developed countries over the period 1955-1989 (Fernquist and Cutright, 1998). They were not able to use their age-standardised data to address the observation that over that period, “the youthful suicide rate increased at the same time the rates for older persons were in sharp decline” (Fernquist and Cutright, 1998; p.123). Their conclusion was straightforward: “A study of age-specific trends should be a priority of future research” (Fernquist and Cutright, 1998; p.12).

The second limitation of the aggregate series Figure 3.1 is that it hides marked differences between male and female rates of suicide. The rise in the aggregate series in Figure 3.1 turns out to be due *entirely* to changes in the male rate. As Figure 3.2 shows female rates of suicide actually fell in the 1990s when male rates were reaching their historical highs. Despite the economic and social upheaval that accompanied the change in the male rate, female rates remained at 6/100,000 - only very slightly higher than they were in the 1950s. Male rates remained more than double the female rates through to the early 1970s, and over four times their rate when suicides peaked in the 1990s. Even though they fell subsequently, even by 2008 the latest year I have data available, male rates of suicide were almost three times the female rate.



**Figure 3.2 Age-standardised suicide rates of men and women per 100,000 by year in New Zealand, 1948-2008**



Source: New Zealand Health Information Service. See note to Figure 3.1.

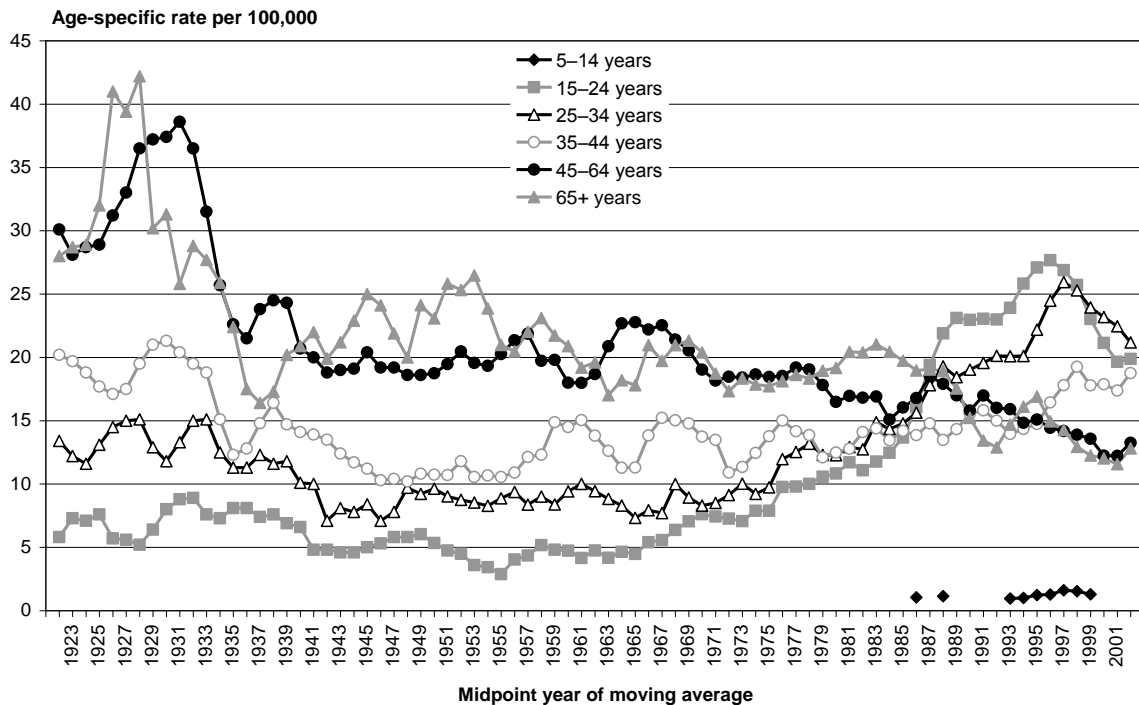
The third drawback of the age-standardised series is the time frame. While the post-1948 series does bring contemporary trends into historical perspective, a much more interesting picture is obtained when we track the series further into the past, to before the Second World War.

### *3. Age-specific rates of suicide*

Age-specific rates of suicide are calculated by dividing the number of recorded suicides for the age group by an estimate of the resident population of that age in the same year. The actual figures behind the following age-specific rates over the period between 1921 and 1948 are unavailable at the time of writing, but I was able

to reproduce the Ministry of Health graph as Figure 3.3 which shows the dramatic change in suicide rates by age over the 80 year period 1921 - 2001.<sup>19</sup>

**Figure 3.3 Age-specific suicide rates, by age group, three-year moving average, 1921-2001**



Source: New Zealand Health Information Service. Reproduced from Figure 6, page 3 New Zealand. Suicide Trends: mortality 1921-2003, hospitalisations for intentional self-harm 1978-2004. Downloaded 20 Jan 2011 from <http://www.moh.govt.nz/moh.nsf/pagesmh/5489>.

Note: Rate was not included if count was less than 5.

What we see in Figure 3.3 is what I am calling the 'generational switch', the long term decline in the rate of suicide by those in late middle and older age groups (45-64 and 65+) from approximately 40/100,000 during the depression (from 30/100,000 in the 1920s) through to the relatively low rates among this age group today of between 10 and 15/100,000.

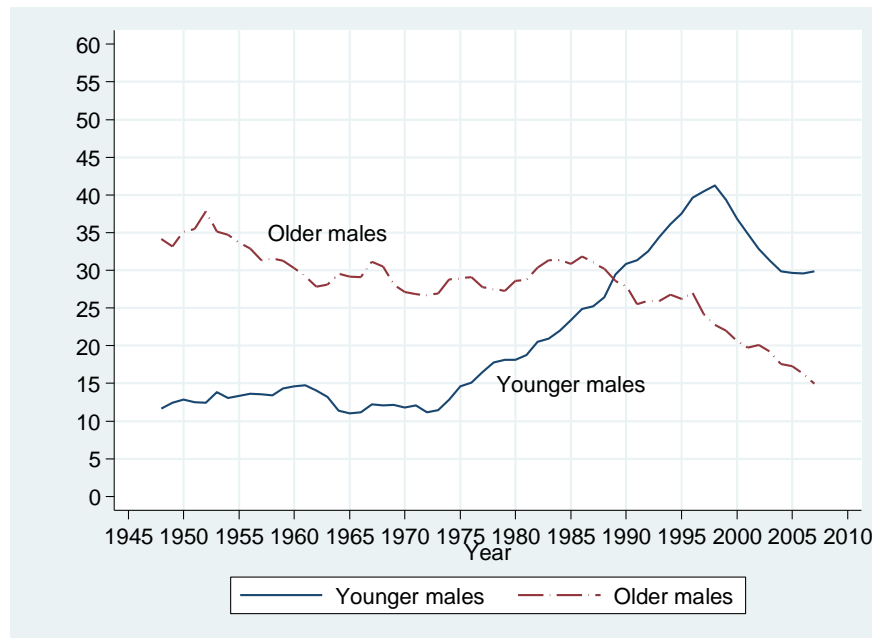
<sup>19</sup> For a comparison of suicide in 1930s and 1980s see WEAVER, J. & MUNRO, D. (2010) The historical contingency of suicide: a case-based comparison of suicides in New Zealand in the 1930s and 1980s. *New Zealand Sociology*, 25, 100-130. Rural suicides are traced by the same authors from 1900-1950 in WEAVER, J. C. & MUNRO, D. (2009) Country living, country dying: rural suicides in New Zealand, 1900-1950. *Journal of Social History*, 42, 933-961.

By comparison, eighty years ago suicide rates were much lower among the young – who incidentally were a much larger share of the population given the greater fertility rate at the time. The younger the age group, the lower the rate prevailing in the 1920s: between 15-20/100,000 among the 35-40 year olds, 10-15/100,000 among those 25-34 years and between only 5-10/100,000 among those 15-24 years old.

All these rates for young people declined through to their lowest levels in the 1950s. Then there occurred three different turning points, firstly rates began to rise in the late 1950s among the 35-44 year olds. This was followed by the two younger age groups whose age-specific rates showed a slow but steady climb before the end of the 1960s, but most noticeably from the early 1970s onwards. Thereafter suicide rates recorded for the two youngest age groups climbed to *five times* their 1950 rates some 40 years later - an increase from under 5/100,000 to over 25/100,000 in the space of only two generations. Even after settling back to 20/100,000, young people in 2000 were still four times more likely to take their own lives than they were in the 1950s. Meanwhile those of their parent's generation were less likely to take their own lives than any other time since the 1930s depression. It is this stark reversal in the propensity to suicide and it is this 'generational switch', that I wish to turn to.

The next two figures present results in ten-year age groups smoothed using five year moving averages of age-specific rates. Figure 3.4 breaks down the rate of New Zealand male suicide rates in older (65-70 years) and younger populations (25-35 years), showing a clear switch in age-specific suicides in the mid 1980s early 1990s.

**Figure 3.4 Age-specific suicide rates of young (25-35) and older male (60 plus) age groups. New Zealand, 1948-2007**



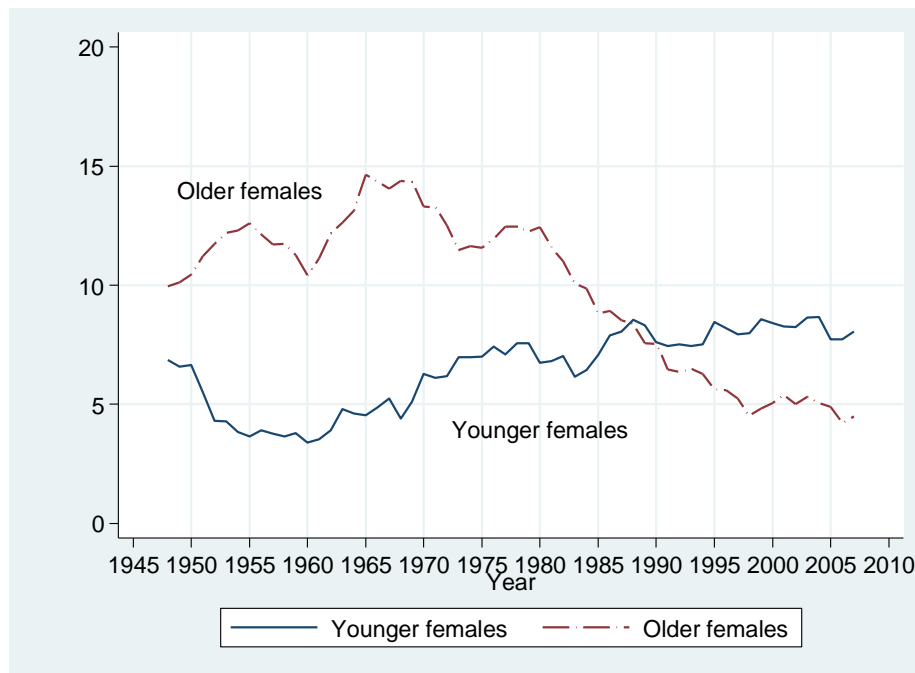
Source: New Zealand Health Information Service. Five year moving averages applied.

Note: Deaths by suicide by year of registration divided by census based counts of numbers in each age group. The following classifications of death by suicide were used: ICD-9 codes E950-E959; ICD-10 codes X60-X84.

Rates for women are lower in general, but they too exhibit a similar switch in Figure 3.5. Note the convergence by age in both series to almost the same degree.

The negative relationship between the two series prevails from the immediate post-war through to the late 1990s after which the two series decline together. Whereas the older male population 65-70 years exhibited slow down in their decline during the severe recessions of 1970s and 1980s the same period was accompanied by an almost continual rise in suicide rates experienced by young men in their early adult years. This generational switch after the recessions is evident in Figure 3.5 between the older female and younger females as well.

**Figure 3.5 Suicide rates of young and older female ten year age groups 1948-2007 in New Zealand. Five year moving average**



Source: New Zealand Health Information Service.

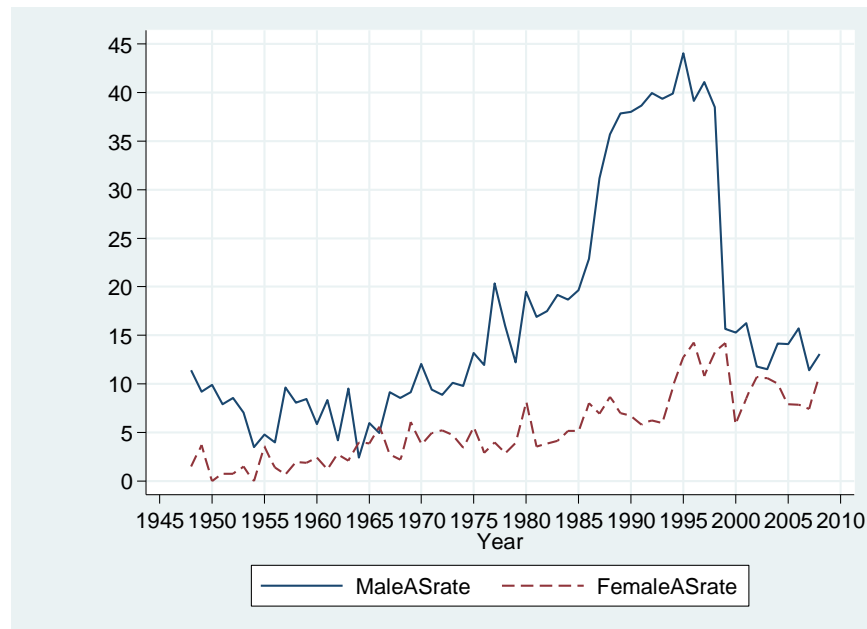
Note: Deaths by suicide by year of registration divided by census based counts of numbers in each age group. The following classifications of death by suicide were used: ICD-9 codes E950-E959; ICD-10 codes X60-X84.

However, the phenomenon of ‘generational switching’ was not unique to New Zealand. As Baudelot and Establet (2008, p.104) showed for France, “the suicide rate amongst young people rose as that for the elderly fell: in 1950, almost five times as many people between 65 and 74 committed suicide than those between 25 and 34, but by 1995 the ratio had fallen to 1.5.” Although less pronounced, this same ‘switching’ also took place in the USA, Australia, Canada and Great Britain (Baudelot and Establet, 2008).

The magnitudes of the ‘switching’ is seriously muted when male and female rates are combined as they were in Figure 3.3. The marked difference between male and female rates show that intergenerational changes in the male rate of suicide by age

are considerably more dramatic. Ideally I would be able to display changes in age-specific series from 1948 onwards for each of the same age groups as in Figure 3.3. However, I have only been able to obtain changes in age-specific rates for 'youth', defined ages 15-24 years old, as shown in Figure 3.4 below.

**Figure 3.6 Age-specific suicide rates of male and female 'youth' (15-24 years),  
New Zealand, 1948-2008**



Source: New Zealand Health Information Service. See note to Figure 3.1.

Figure 3.6 shows that age-specific suicide rates for the young men and women rose over the fifty-year period between 1948-2008. The female series fluctuated around an increasing trend, and between the mid 1970s and late 1990s doubling from around 5 to around 10/100,000. By the end of the period young women's suicide rates were several times their 1950s rate, moving closer to the young male suicide rate.

By contrast, between the late 1960s through to late 1990s, rates of suicide among male youth had risen more than eightfold, from 5/100,000 to over 40/100,000 at their peak. The drop at the end of the 1990s was equally dramatic, and currently

the rates sit at the levels reached in the mid 1970s, when they were just beginning to rise.

While several researchers have described these trends as they emerged in a range of countries, only Baudelot and Estabiet appear to have explicitly argued that the fall in the rate of suicide of the old, and the rise in suicides rates among the young, are actually *interconnected* and are not independent events. In the words of the French authors:

“The two phenomena ...are closely related and must be analysed together. There is now a gulf between the young and the old, and it is a gulf between those who enjoy the main advantages of social power and those who suffer the greatest number of handicaps” (Baudelot and Estabiet, 2008; p.103).

They follow up their argument with a poignant example highlighting the difference between the insecurity of one generation and the relative security of the other,

“...being 20 years old in 1975 and looking for a job when mass unemployment was becoming a permanent phenomenon did not have the same meaning as retiring in that year and knowing that you would receive almost 80% of your final salary for the rest of your days.” (Baudelot and Estabiet, 2008; p. 106).

Baudelot and Estabiet then go on to explain the change in the age profile of suicide in terms of new economic situation that emerged after the oil crisis in the 1970s.

#### *4. International Comparisons*

What makes the New Zealand experience of particular interest is that that age-specific suicide rates for young males (15-24) were higher than every other OECD country except for Finland (2007) as shown in Table 3.1. Males in the next age group (25-44 years of age) were only slightly above the average at 23.4 per 100,000 population compared to the international median 22.3 per 100,000 population (Ministry of Health, 2010).

**Table 3.1 Age-specific suicide rates for OECD countries, by age-group and sex per 100, 000 population, mid 2000s**

Country	15-24		25-44		45-64		65+	
Year	M	F	M	F	M	F	M	F
Australia (2004)	14.4	4.9	26.1	6.0	18.2	5.3	21.7	4.5
Canada (2005)	17.0	4.8	22.3	6.4	23.1	8.4	17.6	4.8
Finland (2007)	26.5	9.6	33.2	8.9	39.9	14.2	42.4	9.4
Japan (2007)	20.2	10.4	34.6	13.4	54.0	15.5	45.4	20.0
New Zealand (2008)	25.7	11.1	23.4	7.7	22.9	6.0	14.6	5.1
United Kingdom (2007)	7.4	1.8	15.2	3.4	13.2	4.5	9.6	3.1
USA (2005)	16.1	3.5	21.4	5.7	23.9	7.2	28.3	4.0

Source: WHO [http://www.who.int/mental\\_health/prevention/suicide\\_reports/en](http://www.who.int/mental_health/prevention/suicide_reports/en) (assessed 1 February 2011).

Note: The rates in this table are standardised to the WHO standard world population for the relevant age group.

In a less well-known statistic, Table 3.1 also shows that in 2008, New Zealand had the highest rate of *female* youth suicide (15-24) per 100,000. Female suicide was also high by international standards for ages 25-44, with 7.7 suicide deaths per 100,000 population, compared to the international median value of 5.4/100,000



population. This reflects a higher rate of suicide and depression in females under 45, but not for older New Zealand female populations.

### *5. Māori suicide rates*

Differences in suicide rates of New Zealand indigenous peoples have been noted by several writers including Skegg, Cox, Broughton (1995), and Beautrais and Fergusson (2006). While both groups found higher suicide risk in Māori in comparison to non-Māori, Skegg et al. (1995) linked this risk particularly to young Māori men being alienated from their culture.

Up until the mid 1990s the Māori suicide rate was followed similar rates to the non-Māori (Edmonds et al., 2000).<sup>20</sup> Today, Māori suicide rates are higher than other ethnicities, with particularly high rates for Māori males 15-29. The New Zealand Census-Mortality Study of the Segi World Population also provides evidence that male and female Māori suicides have been increasing over the last 20 years (Potter et al., 2001).

Over the period in which suicide data for Māori have been released, years 1996-2008, Māori suicides made-up 22 percent of the non-Māori number (24 percent in the case of female suicides). This means that age-standardised suicide rates for Māori as a whole, were almost one and a half times that of the non-Māori rate (1.4) over the period (for both male and female), an average of 25/100,000 in the case of males and 7.7/100,000 in the case of females and therefore a total of 16/100,000 overall. This compares with 18.6, 5.4 and 11.8 for the non-Māori population.

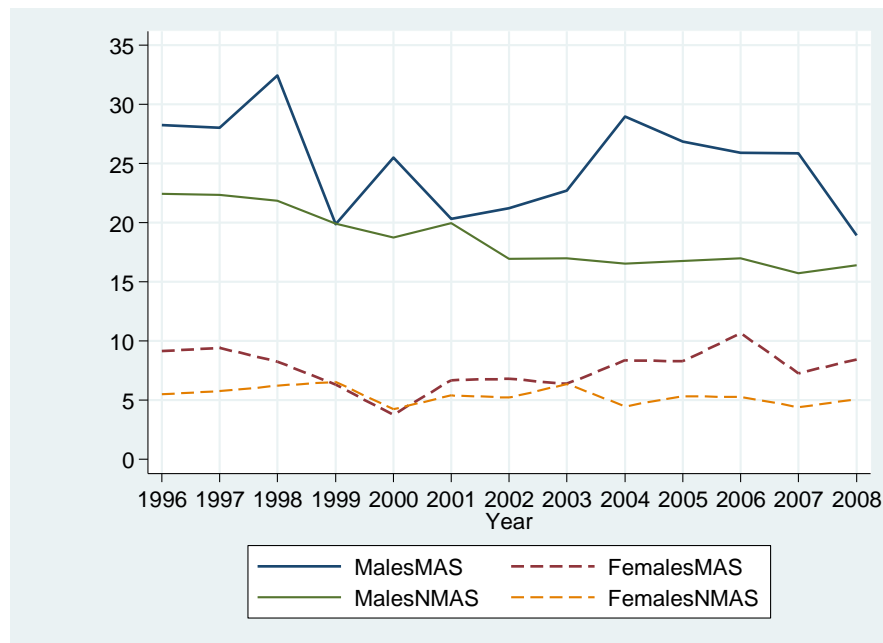
Figure 3.5 documents two important features of Māori suicide, firstly that suicides of Māori males have been consistently higher than non-Māori for a nearly decade. Secondly, that Māori males exhibit a more highly fluctuating rate around a trend

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<sup>20</sup> Pre-1996 ethnicity was recorded by percentage of blood on death registration forms, and cultural affiliation in the census. From 1996 on the biological concept on death forms was revised, allowing respondents to determine their ethnicity. This helped resolve undercounting in mortality rates from 1996 onwards EBBETT, E. & CLARKE, D. (2010) Māori identification, alcohol behaviour and mental health: a review. *International Journal of Mental Health Addiction* 8, 214-231.

between 20 and over 30/100,000. The two age-standardised female suicide rates are much closer although they do show substantial periods when Māori rates were higher. Unlike the overall male rates, which have been tracking downwards for the past decade, female rates for both Māori and non-Māori have been fairly stable and periodically rising.

**Figure 3.7 Age-standardised suicide rates for Māori and non-Māori in New Zealand, 1996-2008**

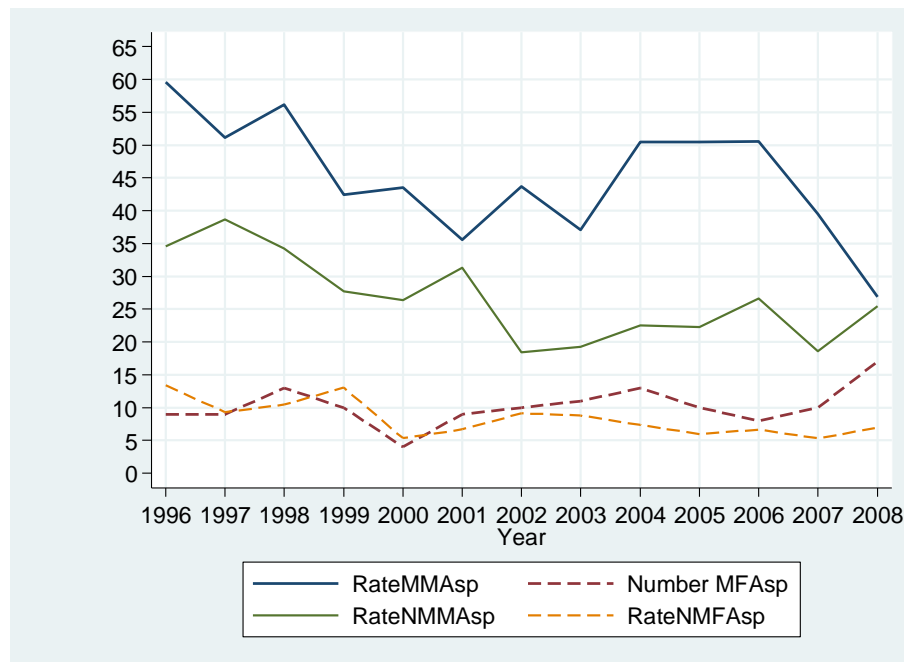


Source: New Zealand Mortality Collection.

As we have seen for the population as a whole, there is a major difference between rates as they apply to the age-standardised population of Māori, and the age-specific rates of Māori youth (15-24) as shown in Figure 3.6. The primary difference lies with the Māori male youth rates, which was exceedingly high, fluctuating between 30 and 60/100,000 from 1996-2008, which is much higher than the non-Māori youth rates of between 20 and 40/100,000.

At the same time, there has been a clear downtrend in age-specific suicide of young Māori males in recent years. Suicides in this demographic were highest over the four years 2002 to 2006, confirming results from the Youth2000 surveys that show that young Māori are more likely to plan, attempt, and idealize suicide than non-Māori (Denny, 2011).

**Figure 3.8 Age-specific suicide rates for Māori male and non-Māori male youth (15-24 years), New Zealand, 1996-2008**



Source: New Zealand Mortality Collection.

The other point of note is that, when it comes to youth, there is a greater difference in magnitude between Māori and non-Māori suicide rates than in the case of the age-standardised populations as a whole; compare the top two lines in Figure 3.6 with those in Figure 3.5.

When it comes to young women, I find an age-specific rate for young Māori which exceeds that of young non-Māori women over most of the period. The difference is not large but appears to be rising more recently as a comparison of the last two dashed lines shown in Figure 3.6.

Results from qualitative work on Māori suicide suggest that rapid social changes have caused a generation gap in Māori cultural knowledge and experience, as well as an increasing secular influence on the breakdown of moral conduct, both of which contribute to higher Māori youth suicide rates (Hirini and Collings, 2005).

The mixed methods research from the decade long study of Māori family done by Te Hoe Nuku Roa (Oakley et al., 2006) as well as qualitative work done by Hirini and Collings (2005) also show that health, well-being and education standards were worst where access to land, language, and other Māori resources were least available, and the Māori identity was most secure where resources were plentiful (Durie, 2004).

Rates of deprivation and the widening gap of health inequalities between non-Māori and Māori have also been considered in terms of explaining the high Māori rate of youth suicide, which I will go into more detail in the next section (Pearce and Dorling, 2006a).

## *6. Suicide and deprivation*

The release of suicide statistics to the public in New Zealand has been a matter of periodic controversy, and only recently have we been able to explore some of its correlates in a systematic manner. Among the most important correlates is 'area deprivation' a feature that has been subject to in-depth analysis by researchers (Collings et al., 2005, Blakely et al., 2005, Blakely et al., 2003). The statistics available to me are those released in spatially aggregated form.

It has been widely noted that there is a strong and significant relationship between suicide rates and absolute and relative levels of deprivation of the areas in which they occur (Crampton et al., 2004, Pearce et al., 2007a, Cubbin et al., 2000, Martikainen et al., 2003, O'Reilly et al., 2008). Although these correlations are pervasive it is difficult to attribute causal pathways because deprivation as such does not explain suicide either at the individual or ecological level.

Baudelot and Establet (2008) noted from observing international suicide rates, that the poorest and most unequal societies such as Latin American and African countries have some of the *lowest* suicide rates. While this may be the case *between* countries it tends not to hold *within* developed countries. This is because deprivation has two meanings: absolute and relative, and it is the latter that is most relevant within developed economies. The more unequal the society is, the greater the relative level of deprivation at the bottom end of the distribution.

The most widely used measure of relative deprivation used in New Zealand is the New Zealand Deprivation Index, calculated from a weighted sum of nine variables (Crampton et al., 2004).<sup>21</sup> The index allows statistical areas to be classified in one of ten deciles, or one of five quintiles arranged from least deprived quintile (1) to the most deprived (5). When suicides cases are geocoded back to the place of the person's residence researchers have noted that quintiles 4 and 5 of the NZDep2001 index consistently have the highest rates of suicide relative to the lowest quintiles, as shown in Table 3.2.

**Table 3.2 Age-standardised rate of suicide relative to quintiles of the New Zealand Deprivation Index, 1983–2003**

<b>Period</b>	<b>Quintile 1</b> <b>(least deprived</b> <b>small areas)</b>	<b>Quintile 2</b>	<b>Quintile 3</b>	<b>Quintile 4</b>	<b>Quintile 5</b> <b>(most deprived</b> <b>small areas)</b>
1983–1985	1.0	1.2	1.4	1.8	1.6
1992–1994	1.0	1.2	1.5	1.9	2.1
2001–2003	1.0	1.3	1.4	1.7	1.8

Source: New Zealand Health Information Service.

Note: Measured by quintile (NZDep01) over three three-year time periods.

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<sup>21</sup> See Appendix 5 for details.

From other Ministry of Health data we learn that in 2007 there were 13.3 suicides per 100,000 population in the most deprived areas compared to half that rate, 7.7 suicides per 100,000 population in the least deprived areas (Ministry of Health, 2009). There was a similar pattern in 2008 with 14.1 deaths per 100,000 population in quintile 5 (the most deprived) and 8.8 deaths per 100,000 in quintile 1 areas (the least deprived) (Ministry of Health, 2010), and similar patterns also apply to self-harm, as I will now show.

### *7. Self-harm*

Rates of self-harm are often two to three fold the rate of completed suicides (Cutler et al., 2001) and debate revolves around whether suicide attempts actually represents suicide or rather a form of addiction. This partly explains the presence of multiple terminologies and the choice of ‘self-harm’ in the New Zealand context.<sup>22</sup> I argue here that self-harm can be viewed as an extension of suicide insofar as it provides a signal of life dissatisfaction, and is a desperate, negative method to resolve problems within oneself. Furthermore, as I argue in the chapter to follow, both suicide and self-harm reflect a common condition – low subjective well-being – and derive from similar social conditions (loneliness, lack of integration and weak social ties).

Self-harm rates are often measured through hospitalisation admission rates. These rates noted in the Table 3.3 below reveal that females are much more likely to be admitted for intentional self-harm than males, which counters with gender trends in suicide rates. This is true internationally as well as within New Zealand.

Overall, the rate at which New Zealanders are being admitted for self-harm has decreased since 1996, when hospitalisations were at their peak, although this could

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<sup>22</sup> Also referred to as parasuicide, non-lethal suicide.

be the reflection of changes in the way self-harm rates were captured in the past.<sup>23</sup>

24 From Table 3.3 we see that the rate of female hospitalisation has endured many peaks and drops over from 1996 to 2006, sometimes doubling male rates.

**Table 3.3 Total numbers and rates of hospitalisations involving self-harm:  
year, total, male rate, female rate**

Year	Number	Male Rate	Female Rate
1996	3030	66.8	104.9
1997	3074	63.1	104.9
1998	3103	66.9	100.3
1999	2836	59.2	93.7
2000	3017	62	100.3
2001	3136	60.1	106.3
2002	2902	52.2	98.2
2003	3142	54.4	106.1
2004	3000	50.1	100.8
2005	2742	48.1	88.7
2006	2868	458.9	90.3
2007	2686	45.6	82.2
2008	2465	41.9	74.4

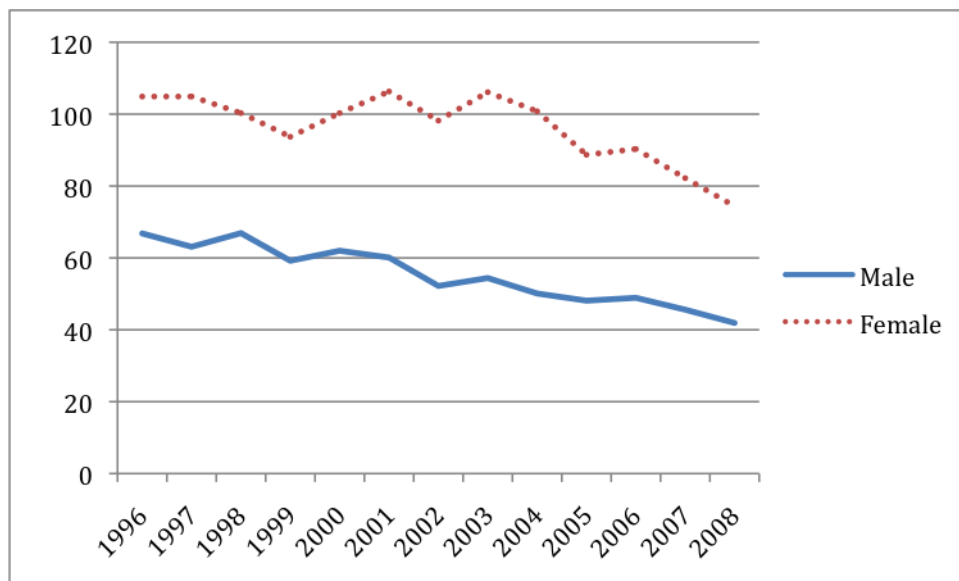
Source: New Zealand National Minimum Dataset.

Note: The rate shown is the age-standardised rate per 100,000 population, standardised to the WHO standard world population.

<sup>23</sup> Re-admissions and transfers were previously counted as separate intentional self-harm events, resulting in over counts of intentional self-harm. This method of count is not comparable internationally and with inconsistent best practice injury statistics in New Zealand, yet it is still used today MINISTRY OF HEALTH, M. O. H. (2006) New Zealand suicide trends: mortality 1921-2003, hospitalisations for intentional self-harm 1978-2004. *Monitoring Report No. 10*.

Examining these rates in graph form in Figure 3.7 we see that female rates have been consistently higher than male rates. The figure also shows that overall hospitalisation involving self-harm is trending down, parallelling suicide rates. While there was a significant downward trend in hospitalisations from 85.8 per 100,000 population (age-standardised rate) in 1996 to 63.9 per 100,000 population in 2008 (Ministry of Health, 2010). This decrease could be a reflection of a drop in suicide ideation. At the same time, it could also be the result of fewer beds available, and changes in medial practice of self-harm classification over the past decade.

**Figure 3.9 Male and female hospitalisations involving intentional self-harm, 1996-2008**



Source: New Zealand National Minimum Dataset.

Note: the rate shown in the age-standardised rate per 100,000 population, standardised to the WHO standard world population.

Table 3.4 shows the ratio for intentional self-harm in the most deprived areas are nearly triple those in the least deprived areas (1 and 2), and this has been a persistent trend over 20 years. Therefore, high rates of individuals hospitalized for self-harm also rise with deprived areas.



Self-harm rates are also positively correlated with ecological measure of deprivation. In 2008, the total rate of intentional self-harm hospitalisation in the least deprived quintile was 36.4 per 100,000 population, while the total rate of intentional self-harm hospitalisations in the most deprived quintile was 75.3 per 100,000 population, nearly twice the rate of the least deprived (Ministry of Health, 2010). Findings from the Canterbury Suicide Project, the Christchurch Health and Development Study and the New Zealand Mental Health Survey all show that, along with suicide and suicide attempts, suicide ideation is also more prevalent among those with socially disadvantaged backgrounds (Oakley et al., 2006, Beautrais, 1998).

**Table 3.4 Age-standardised rates of hospitalisation rates for intentional self-harm in New Zealand as ratio of the lowest quintile of the deprivation index, 1983-2003**

Period	Quintile 1 (least deprived areas)	Quintile 2	Quintile 3	Quintile 4	Quintile 5 (most deprived areas)
1983- 1985	1.0	1.2	1.6	2.1	2.6
1992-1994	1.0	1.2	2.0	2.4	2.9
2001-2003	1.0	1.3	1.8	2.1	2.2

Source: New Zealand Health Information Service.

Note: Measured by quintile (NZDep01) over three three-year time periods.

## 8. Summary

From data presented in this chapter we have established that young women are now committing suicide at a higher rate than they were 20 years ago, and Māori rates of suicide remain higher than non-Māori, particularly in the case of males,

although these two have seen a decline in 2007 and 2008. There is also evidence that levels of area deprivation appear to be closely associated to suicide rates.

Therefore, it is interesting to note that the Ministry of Health cites a typical profile of a suicide victim as a young person, with family and social disadvantage, and stressful interpersonal and legal life events. This brings me to the essential message of this chapter, the phenomenon I refer to as 'generational switching', namely the thirty year rise in suicide rates among the young and a correspondingly decline in suicide rates within the older population.

Historically, many of those in the older age groups, both Māori and non-Māori had benefited from a more stable upbringing in the 1950s and 60s when internal labour markets guaranteed many a secure career. This is not the case for many of their children however, and this has been reflected, as I will argue in chapter four, with reduced levels of subjective well-being.

The rise of female self-harm and suicide may be linked with changing females roles (performing multiple roles), and the pressure to participate in the labour market. Therefore, suicide patterns documented in this chapter may suggest a deeper malaise which we see reflected in levels of dissatisfaction, unhappiness, lower qualities of life and stress, which as the next chapter will show are now more likely to be experienced by young adults relative to their parents. Suicide and self-harm may simply be indicative of a much deeper schism that has developed between the generations.

## Chapter 4

### Subjective well-being and age

In the previous chapter I draw attention to a striking feature of social change in New Zealand – what I have called the ‘generational switch.’ In less than two generations we have seen the age-specific rate of suicide of older people decline, and suicide rates of the young rise. This crossover or switch occurred in the mid-1980s after which rates of suicide of young and old continued to diverge. The result is a contemporary relationship in which both suicide *and low levels of subjective well-being* are much higher among young adults.

In the mid-2000s, almost a decade after their peak, New Zealand youth (15-24) still exhibited one of the highest recorded suicide rates for young adults in the world, *and* one of the lowest rates for older people - and in both respects Māori differences between the generations were even greater.

The reversal of relative suicide rates of old and young observed in New Zealand is not unique to this country, although the size of the gap between them may be. The US, Australia, France, and Canada also show similar changes in suicide rates by age, although the timing and magnitude and exact ages of change vary slightly (Baudelot and Establet, 2008).

Despite the magnitude of this generational switching of vulnerability to suicide, remarkably little appears to have been written about what the switch indicates about the changing nature of the societies in which it has occurred. The bulk of attention has been on the rising rate of youth suicide per se, (Cutler et al., 2001), rather than the *relative* changes in the comparative well-being of the generations.

The rates of suicide, as over a hundred years of scholarship has attested, is indicative of fundamental changes in the heart of society itself. For this very reason trends in suicide and self-harm are likely to be reflected in the more general measure of subjective well-being or rather *low* well-being. Most people who say

they are experiencing low levels of well-being do not attempt to deliberately harm themselves, or succeed in taking their own lives, but most of those who do come from this group. The two conditions - suicide (as well as self-harm) and low levels of subjective well-being - are highly correlated across countries, and with the population itself.

It is this high correlation between subjective well-being and suicide that offers considerable opportunity for understanding the distribution of the condition within both the population, and across communities within the country. The (albeit limited) statistics available on contemporary patterns of suicide in New Zealand (chapter three) have been thoroughly explored by an active cadre of New Zealand researchers (Langford et al., 1998, Blakely et al., 2003, Collings et al., 2005, Blakely et al., 2005, Howden-Chapman et al., 2005, Beautrais, 2003b, Beautrais, 2003c, Beautrais, 2003a, Beautrais and Fergusson, 2006, Beautrais et al., 1998, Beautrais et al., 2005b, Collings et al., 2009, Collings and Beautrais, 2005a) and many more have studied self-harm. What has yet to receive any more than passing attention is the distribution of the much more widespread condition - low subjective well-being. Given the presence of the 'generational switch' it is of particular interest to study how low levels of satisfaction with life, unhappiness, low qualities of life and high on-going levels of stress vary with age. It is this evidence that I will now examine.

The recent collection of subjective well-being measures in this country means that we are now able to explore in some depth the way well-being relates to age, as well as to contemporary age-specific differences in suicide rates. I begin therefore by drawing on a theoretical proposition linking subjective well-being to age in section one. I then turn in section two to the evidence compiled on the relationship between well-being and age over a range of countries drawn from the World Values Survey. This section will cover the fact that the New Zealand data from the World Values Survey does not fit the prevailing U shape relationship between subjective well-being and age - even when I undertake my own exploration of the same data I find that subjective well-being simply appears to decline with age.

In section three I use the World Values Survey data to test whether rates of well-being among youth in New Zealand are actually lower than comparable countries. New Zealand's two population samples from the World Values Survey are too limiting in their size to go further than this so I turn in section four to a larger more comprehensive survey of subjective well-being- the Quality of Life Survey. This time however I focus deliberately on those who return *low* levels of subjective well-being, and demonstrate how the proportion responding in this way by cross-section is *convex* in age; in other words dissatisfaction rises into young adulthood then declines with age – a result consistent with the U shape model relating positive subjective well-being to age covered in section two.

Analysing Māori subjective well-being is also possible with the larger survey as I show in section five, as are the comparisons of the way three other measures of low subjective well-being vary with age in section six. In section seven I make the connection back to the slightly different ways subjective well-being varies with age. The chapter concludes with section eight.

The results of the empirical work in this chapter offer considerable support not only for the argument that subjective well-being and age correspond closely to the way suicide and self-harm vary by age, but also gender along with what we already know about how Māori and non-Māori differ over these domains. More importantly still, the data appear to support the theoretical approach on performance and non-performance identities that are central to understanding why some people take their own lives, and therefore serves as a solid base from which to move to a discussion of place in chapter five.

### *1. Theoretical expectations*

Why should suicide and subjective well-being vary by age? Among the many papers written in response to this question none appear to have considered the possibility that the relationship between the two might actually have varied over time. Yet this is precisely what the 'generational switch' evidence presented in chapter three

would suggest - and therefore that well-being would be negatively related to age in the 1950 and 60s and positively related in the 1980 and 90s.

Instead the focus of the literature has been primarily on the impact of aging *per se* on people's perceptions and experience of physical and mental well-being. Gerontologist Stock et al. (1983) for example make a persuasive case for understanding how age might affect well-being.<sup>25</sup> Studies relating subjective well-being and age before the 1970s appear to either assume, as Stock et al. do, or show as Wilson does for the 1960s (Wilson, 1969), that self evaluated well-being is *highest* among the young and declines with age. Several other studies documenting the same relationship over the same period are cited in Stock et al (1983, p. 279).

My interest, however, is slightly different; I am not as concerned with the effect of age on well-being as the effect of being *young* on well-being. I doubt that my question about the well-being of the young would have been asked a generation or two ago (for the reasons Baudelot and Establet outline). It would simply have been assumed.

Sociologist Chris Girard pointed to the long-standing inability of social scientists to explain age (and gender) differences in the risk of suicide. He cites Morselli's nineteenth century evidence in which the risk of suicide increases steadily with age (Morselli, 1881). Girard also turned to Durkheim for guidance only to find that Emile Durkheim never regarded age as a social fact in its own right; the only dimension he recognized was the length of time individuals are exposed to society. Because people become more vulnerable to "meaninglessness and physical decay" as they get older, Durkheim noted, the potential for suicide would 'naturally' rise with age (Baudelot and Establet, 2008). Such a view also formed an integral part of the model of suicide derived from the precepts of economics: namely that after

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<sup>25</sup> We know that the causal connection is not one way and that well-being can also affect age by extending life; see MARMOT, M. (2005) *The status syndrome: how social standing affects our health and longevity*, New York, Owl Books.

some point (in age) the costs of living longer begin to outweigh the benefits (Hamermesh and Soss, 1974).

Girard's alternative perspective is built around the concept of personal identity (Girard, 1993).<sup>26</sup> At a social psychological level, "suicide is a last resort response to life-changing events that jeopardize the self-concept" (1993, p. 554). As he explains:

"...when circumstances threaten a person's identity, denying an essential aspect of what a person believes to be his or her true self, suicide provides the ultimate release from a potentially painful conflict" (Girard, 1993; p. 554).

Suicide also, "has an important symbolic function – to affirm that the threatened identity is an inalienable part of the self. Suicide communicates to significant others and the self that life cannot continue without one's identity" (Girard, 1993; p. 554).

In other words, life-changing events are most threatening when they undermine identity supports that are central to the self-concept and are difficult to replace (Girard, 1993). The breakdown of a marriage can thus be seen as a case in point. It is often unanticipated and very difficult to replace (at least at short notice). By contrast the life changing effects of physical aging are more or less anticipated, and can be planned for.

Particularly useful for the argument I develop in this thesis is Girard's distinction between the performance and non-performance components of the self-concept. The relative strength of these two components varies by age (and sex), thereby creating varying vulnerabilities to identity threats (Girard, 1993; p. 555).

What Girard did not recognize (as a sociologist) was that people might also sort themselves spatially according to whether their self-concept is performance or non-performance based. According to this argument, which I develop further in chapter five, individuals whose identities are performance based and who choose

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<sup>26</sup> Girard notes, in what is a continuing subtext that though most of the suicide/well-being literature, the wide gulf between sociological and psychological studies; the former emphasizing the sum of social relations that make up the individuals social context and the later the accumulated history of the individual's own mental health.

achievement oriented psychological careers will seek environments that enhance their prospects of success. Typically these are large cities, for they contain an infrastructure that can enhance productivity (Maré and Timmins, 2006), even though they may not be optimal locations for those with non-career performance based identities, such as the raising of children. Migrants to large cities are therefore particularly vulnerable to challenges of their performance based identity, and hence are more likely to display lower levels of subjective well-being on average, and for a small proportion of that subset, suicide and self-harm.

Interestingly this point linking performance based identity and migration to highly productive locations is rarely made explicit in the frequent discussion of the relationship between suicide in urban and rural locations. It is implicit nevertheless in two widely discussed empirical relationships: that suicide rates rise with economic development, and in the tendency for suicide rates to rise in urban areas during the process.

There is growing evidence that there is a corresponding relationship between inequality and suicide which is linked to relative status in a highly competitive society (Breed, 1963). In a paper quite salient to the notion of inter-generational competition more generally, and based on New Zealand data, Porterfield and Gibbs show that upper-class fathers produce more than their proportion of suicidal sons and that suicide rates are significantly higher among persons of high prestige (Porterfield and Gibbs, 1960). This positive relationship between high status and suicide seems to have its origins in Henry and Short's 1954 book *Suicide and Homicide* (Henry and Short, 1954), their point being that what is important is not status per se, but status change (Maris, 1967). Henry and Short go on to relate business cycles to various levels of suicide frequency, and by extension, life satisfaction.

Meanwhile, Girard has argued that several macro-level hypotheses concerning age (and gender) patterns in suicide rates derive from the theory linking economic development, identity threats, and psychological careers. In the first of these, since



high levels of economic development encourage achievement based psychological careers, the risk of suicide is expected to increase with age, through to the (performance) prime age years of the 30s and 40s.

Girard's theory is of special interest in this chapter for what it foreshadows about the empirical relationship between suicide and age:

"By undermining the central position of kinship in traditional social structures, economic development reduces identity threats at marriageable ages and hence the risk of suicide for young adults. Second, by generating achievement-oriented psychological careers, economic development increases the risk of suicide in middle age..." (Girard, 1993; p. 559).

Girard also notes the cushioning of the welfare state for older people much as Baudelot and Estabiet had done, noting that,

"In countries able to provide a comfortable retirement, older men and women may develop a more non-contingent [non-performance] self-concept than they had at the peak of their psychological careers. This suggests that high GNP per capita increases the likelihood that suicide rates will begin to decrease after reaching a maximum in middle to late adulthood, *generating a convex pattern of suicide*" (Girard, 1993; p. 568) (my italics).

What is particularly interesting in light of the evidence of the 'generational switch' I presented in chapter three is that most contemporary studies now contradict the earlier evidence that well-being rises continuously with age (Diener and Suh, 1998b). Countries have moved, like New Zealand, from a post-second world war situation prior to the 1970s when youth *did* exhibit higher levels of well-being than the old, to a post 1970s context several generations later when youth now exhibit lower levels of well-being compared to the old. What has changed therefore is the *evidence* relating age to well-being rather than the supersession of one *theory* by the way well-being changes with age.

Two classic studies drawing on data from the 1960s for example both report a *negative* relationship between subjective well-being and age (Campbell et al., 1976);

also see (Andrews and Withey, 1976). By contrast the mid 1980s were the period in which the age-specific suicide rates of those 15-24 began to exceed those of the 45-64 and 65+ age groups (recall Figure 3.3). It is not surprising therefore to find that studies based on data from the 1980s and 1970s offer little consistent evidence that subjective well-being was either positive or negatively related to chronological age, or that a linear correlation age explained more than a few percentage points of the variance in subjective well-being (0.01-0.6), as noted by Stock (Stock et al., 1983; p. 286).<sup>27</sup>

In summary, there is considerable mileage to be gained from linking Girard's argument to Baudelot and Establet's argument, namely that since the Second World War, "young people have become more vulnerable and old people more protected" (Baudelot and Establet, 2008; p. 107). Changes in labour demand, deregulation and attempts by the State to limit their exposure to increasing social welfare demands have rendered young people more vulnerable in the 1980s and 1990s relative to the generations that preceded them. And it is this important comparative aspect of the inter-generational difference that makes the 1980s very different from the 1930s for example. Not only is this difference reflected in the 'generational switch' in suicide rates but also in the way subjective well-being varies with age. It would appear that over the post-war period subjective well-being - which was negatively related to age in the post-war period - is now quite positively related to age. It is this contemporary relationship which has been subject to a large-scale international study to which I now turn.

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<sup>27</sup> Stock et al. operationalise subjective well-being as, "any global measure of happiness, life satisfaction, or morale" STOCK, W. A., OKUN, M. A., HARING, J. J. & WITTER, R. A. (1983b) Age differences in subjective well-being: a meta-analysis. *Evaluations Studies Review Annual*, 8, 279-302. p. 280. They included in their meta-analysis both chronological and subjective measures of age (across the entire age range) and drew only on cross-sectional studies while fully recognizing that people "differ not only in their ages, but also in their birth year (i.e. cohorts)" (Stock et al., 1983; p. 280).

## *2. Subjective well-being and age: contemporary international evidence*

In the journal *Science and Medicine* Blanchflower and Oswald (2008) present data collected in the 1990s from a wide range of countries to show that that subjective well-being is now U shaped in age. They observe how modern subjects' evaluation of their own well-being is relatively high among younger adults, then declines through to middle age after which it rises with successively older age (Blanchflower and Oswald, 2008). They also show that this U shape linking subjective well-being and age persists long after a wide range of demographic and socio-economic controls have been applied.<sup>28</sup>

Although the U shape relationship between subjective well-being and age fits the data from most countries, Blanchflower and Oswald were unable to identify a U shape from their New Zealand sample (from the 1998 World Values Survey). Instead the New Zealand sample showed a linear positive relationship in which subjective well-being was lowest among the young and rise into old age. Blanchflower and Oswald put this down to New Zealand having too small a sample, a characteristic it shared with a number of other mainly developing countries for whom U shaped relationships could not be identified (Blanchflower and Oswald, 2008; p. 1741).<sup>29</sup> In light of their observation of the New Zealand case I have reanalyzed the same data they used but also included the subsequent New Zealand sample collected as part of the World Values Survey in 2004.

### *The World Value Survey evidence*

Questions designed to capture the well-being of respondents are now fairly standard in the literature and are regularly used to model well-being in the rapidly growing literature on the 'economics of happiness' (Layard 2005, Diner et al, 1999).

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<sup>28</sup> Their results stand in contrast to the single example presented elsewhere DIENER, E., EUNKOOK, M. S., LUCAS, R. E. & SMITH, H. L. (1999a) Subjective well-being: three decades of progress. *Psychological Bulletin*, 125, 276-303.

<sup>29</sup> An inspection of those countries with distinct U shapes reveal several with sample sizes smaller than New Zealand e.g. Croatia (892), Denmark (847), USA (927) etc. or with similar sizes e.g. El Salvador (1024); see their Appendix 4.

The most commonly used measure of well-being is life satisfaction. The following specific question is taken from the World Value Survey the results of which I draw on below:

“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).<sup>30</sup>

The resulting negatively skewed frequency distribution shown in Table 4.1 is typical of responses to this question, and the results are very similar across the two New Zealand World Values Survey samples.<sup>31</sup> There is very little difference in the way men and women’s responses are distributed over the Satisfaction categories in the two surveys and therefore I present only the combined results here.

**Table 4.1 The distribution of responses to the question on Life Satisfaction  
New Zealand 1998 and 2004 World Values Survey responses**

1998			
satisfaction with your life	Freq.	Percent	Cum.
1. dissatisfied	17	1.45	1.45
2. 2	8	0.68	2.13
3. 3	33	2.82	4.95
4. 4	27	2.30	7.25
5. 5	97	8.28	15.53
6. 6	78	6.66	22.18
7. 7	167	14.25	36.43
8. 8	292	24.91	61.35
9. 9	202	17.24	78.58
10. satisfied	251	21.42	100.00
Total	1,172	100.00	

<sup>30</sup> Copies of the questionnaires are available from the WVS web site:  
<http://www.worldvaluessurvey.org/>

<sup>31</sup> For a discussion of possible reasons for this skewness see CLARK, A. E. & OSWALD, A. J. (1996) Satisfaction and comparison income. *Journal of Public Economics*, 61, 359-381.

## 2004

satisfaction with your life	Freq.	Percent	Cum.
1. dissatisfied	7	0.76	0.76
2. 2	8	0.86	1.62
3. 3	16	1.73	3.34
4. 4	20	2.16	5.50
5. 5	50	5.39	10.90
6. 6	67	7.23	18.12
7. 7	149	16.07	34.20
8. 8	224	24.16	58.36
9. 9	182	19.63	77.99
10. satisfied	204	22.01	100.00
Total	927	100.00	

Source: World Values Survey. New Zealand samples, 1998 and 2004.

A second question often asked on subjective well-being concerns Happiness:

“Taking all things together, would you say you are: 1) Very Happy, 2) Rather Happy, 3) Not Very Happy, or 4) Not at all Happy. (Question V10).”

Unlike the ten categories offered for Satisfaction, only four are available as options for the Happiness question in the World Values Survey. The responses are again very similar in both the New Zealand surveys in Table 4.2. The differences tend to favour women when we use the Happiness measure, but the combined measures are sufficient to illustrate the general nature of the response.<sup>32</sup>

**Table 4.2 The distribution of responses to the question on Happiness  
New Zealand 1998 and 2004 World Values Survey responses**

## 1998

HapR	Freq.	Percent	Cum.
Not at all Happy	7	0.59	0.59
Not very happy	52	4.36	4.95
Quite Happy	739	62.00	66.95
Very Happy	394	33.05	100.00
Total	1,192	100.00	

<sup>32</sup> Although positively correlated, there is certainly not a one to one correspondence between the Satisfaction and Happiness measures, and they therefore remain valuable in tapping the separate affective and emotional dimensions of well-being respectively.

## 2004

HapR	Freq.	Percent	Cum.
Not at all Happy	1	0.11	0.11
Not very happy	24	2.54	2.65
Quite Happy	557	58.94	61.59
Very Happy	363	38.41	100.00
Total	945	100.00	

Source: World Values Survey. New Zealand samples, 1998 and 2004.

Using ordinary least squares regression on the Satisfaction data and ordered logit on the Happiness data, I have re-estimating their relationship to age using the 1994 and 2004 samples for both men and women.

Like Blanchflower and Oswald I was unable to confirm the quadratic (non-linear) model for age in either the 1998 or the 2004 surveys displayed in Table 4.3. I also found that Satisfaction rose linearly with age in a very similar manner in both survey years. With each passing year of age the estimated average satisfaction score rose by 0.194 in the 1998 survey and slightly less in the 2004 survey, 0.168. So for example, in 1998 a 60 year old would score  $0.194 * 4 = 0.776$  points higher on the 1-10 Satisfaction scale than a 20 year old.

**Table 4.3 Satisfaction with Life and age in New Zealand  
World Values Survey 1998 and 2004**

### 1998 sample

Source	SS	df	MS			
Model	124.919062	1	124.919062	Number of obs = 1150		
Residual	4553.95833	1148	3.96686266	F( 1, 1148) = 31.49		
				Prob > F = 0.0000		
				R-squared = 0.0267		
				Adj R-squared = 0.0259		
				Root MSE = 1.9917		
Total	4678.87739	1149	4.07213002			
	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
Age	.0194249	.0034615	5.61	0.000	.0126333	.0262166
_cons	6.794454	.1740565	39.04	0.000	6.45295	7.135959

## 2004 sample

Source	SS	df	MS			
Model	68.6876272	1	68.6876272	Number of obs =	903	
Residual	3046.7343	901	3.38150311	F( 1, 901) =	20.31	
Total	3115.42193	902	3.45390458	Prob > F =	0.0000	
				R-squared =	0.0220	
				Adj R-squared =	0.0210	
				Root MSE =	1.8389	

	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
Age	.0168528	.0037393	4.51	0.000	.0095141	.0241915
_cons	7.069095	.1936213	36.51	0.000	6.689094	7.449097

Source: World Values Survey. New Zealand samples, 1998 and 2004.

These results are broadly consistent with the identity argument developed above in which well-being was predicted to be lowest amongst the young and rise with age. The regression estimates are also broadly consistent with the suicide evidence as they relate to the equivalent years (1998 and 2004), recall Figure 3.3. In each case age-specific suicide rates fall with age, being highest among youth and lowest among those over 60 years of age.

When I used happiness as the dependent variable I was unable to establish any a statistically significant linear relationship with age in either of the New Zealand World Values Survey samples.<sup>33</sup> However even this result is consistent with the identity argument for Happiness, being a more immediate, short term emotion, is often regarded as being a province of the young and therefore decreases with age.

Given New Zealand's internationally high youth suicide rate one might expect not only that youth would return lower levels of subjective well-being compared to the older population, but also that this difference would be greater in New Zealand compared with those countries with relatively similar institutions and cultural similarities such as Australia, Canada, Great Britain and the USA. I found that I could use the World Values Survey to assess the degree of similarity.

<sup>33</sup> As noted above there are fewer categories in the Happiness variable and therefore the more appropriate ordered logit model was used. See Appendix 4.

### 3. Is New Zealand's youth suicide rate really higher than elsewhere?

In order to see whether New Zealand youth are more likely to experience significantly lower levels of well-being compared to other relevant countries I created a pooled five country sample from World Value Survey by adding responses from the UK, USA, Canada and Australia.<sup>34</sup> I found that in the pooled sample containing all five countries that youth reported lower levels of Satisfaction than non-youth, (shown in Table 4.4a), but that New Zealand youth were not that different. Although Satisfaction carried a negative sign as hypothesized, the specific indicator variable for New Zealand youth did not meet the usual criteria for statistical significance.

I received the same result when I applied the same model to the second round of surveys administered in the 2000s (Table 4.4b). Youth in general show distinctly lower levels of Satisfaction in the pooled sample, but New Zealand youth were not significantly different in this respect from the other four countries.

**Table 4.4 Testing for the lower subjective well-being New Zealand youth compared to four comparison countries: 1998 and 2004**

#### a. Late 1998 pooled sample

Iteration 0: log likelihood = -14101.766  
Iteration 1: log likelihood = -14092.257  
Iteration 2: log likelihood = -14092.256

Ordered logistic regression

Number of obs = 7402  
LR chi2(2) = 19.02  
Prob > chi2 = 0.0001  
Pseudo R2 = 0.0007

Log likelihood = -14092.256

a170	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
ageYouth	-.2342135	.0605621	-3.87	0.000	-.352913	-.115514
ageYNZ98	-.1260859	.1707998	-0.74	0.460	-.4608472	.2086755
/cut1	-4.634316	.1172107			-4.864045	-4.404587
/cut2	-4.055443	.0886552			-4.229204	-3.881682
/cut3	-3.275256	.0616514			-3.396091	-3.154422
/cut4	-2.750962	.0490149			-2.84703	-2.654895
/cut5	-1.847893	.0347057			-1.915915	-1.779872
/cut6	-1.337432	.0297983			-1.395836	-1.279029
/cut7	-.5567766	.0256529			-.6070553	-.5064979
/cut8	.5540334	.025648			.5037643	.6043025
/cut9	1.450208	.0309383			1.38957	1.510846

<sup>34</sup> Details of all the surveys and papers written from them may be found in <http://www.worldvaluessurvey.org/>



## b. Mid 2004 pooled sample

Ordered logistic regression

Number of obs = 6717  
LR chi2(2) = 5.88  
Prob > chi2 = 0.0528  
Pseudo R2 = 0.0002

Log likelihood = -12508.974

a170	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
ageYouth	-.1785421	.0735732	-2.43	0.015	-.3227431	-.0343412
ageYNZ04	.1532141	.238629	0.64	0.521	-.3144901	.6209183
/cut1	-4.851655	.1381189			-5.122363	-4.580947
/cut2	-4.112981	.0964458			-4.302011	-3.92395
/cut3	-3.403154	.0689899			-3.538372	-3.267936
/cut4	-2.761489	.0517916			-2.862998	-2.659979
/cut5	-1.956689	.0376335			-2.030449	-1.882928
/cut6	-1.351793	.0310659			-1.412681	-1.290905
/cut7	-.4219203	.0260581			-.4729932	-.3708473
/cut8	.9028015	.0279209			.8480775	.9575255
/cut9	1.960061	.0378917			1.885795	2.034328

Source: World Values Survey. New Zealand samples. 1998 and 2004.

In light of these initial results I then undertook two further tests. The first asked whether the international comparisons of subjective well-being results differed when men and women were analysed separately, and the answer is no. The second refocused just on the difference between youth and older population, those 65 and older. Rerunning the above test on the World Values Survey data for those under 25 and over 60 made no difference. Youth certainly did show significantly lower levels of satisfaction than the 60 plus population over the five countries, but the youth sampled in New Zealand failed to show any markedly lower levels of well-being than youth elsewhere.

Although useful for international comparisons, the World Values Survey turned out to be restrictive for a detailed analysis of well-being within countries and there are now more suitable surveys for this purpose including the Statistics New Zealand General Social Survey.<sup>35</sup> Though comprehensive, for my purposes an alternative, the New Zealand General Social Survey of 2008 is too restrictive geographically, allowing breakdowns only to New Zealand statistical regions, not cities. Therefore the rest of my analysis of the subjective well-being of youth will be undertaken

<sup>35</sup> Details may be found in <http://www.stats.govt.nz/nzgss/> (last accessed 27 April 2011). An examination of the published tables from selected subjective well-being variables from this survey show virtually identical distribution over the population as tabulated for the Quality of Life Survey discussed below.

using the Quality of Life Surveys. I will therefore continue with a brief introduction to that survey.

#### *4. The Quality of Life Survey evidence*

The Quality of Life Survey was created under the 2002 amendment to the New Zealand Local Government Act that made local councils responsible for identifying *and* addressing social well-being in their communities. Territorial Local Authorities have a statutory responsibility to measure and monitor community reaction to local body expenditure and the explicit responsibilities set out in 2002, have encouraged Local Councils to collectively devote considerable resources to the design of instruments that measure quality of life in their locality.<sup>36</sup>

The 2006 survey I use here is a collaborative effort between the Ministry of Social Development and 12 City Councils in New Zealand. The survey is based on responses to a telephone survey of individuals selected from within households drawn from the Electoral Roll. Households were telephoned at random from the live numbers provided and the interview is only advanced where the person in the household was 15 years or over at their next birthday.<sup>37</sup> The survey follows a standard format each time and covers respondents ranging in age from 15 years through to those in their mid-70s.

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<sup>36</sup> The Quality of Life Project began in 1999 and measured the impacts of urbanization and its effects on the well-being of residents within large urban areas of New Zealand. Originally, the project focused on people living in Auckland, Manukau, North Shore, Waitakere, Wellington and Christchurch. The project was extended in 2002, to include six additional territorial authorities (Rodney, Hamilton, Tauranga, Lower Hutt, Porirua, and Dunedin) and became known as the Quality of Life Survey. In 2004, the Ministry of Social Development joined the research team. The 2006 and 2008 surveys were a collaborative effort between the Ministry and the 12 City Councils. Each city undertook its own survey in 1999 and 2000 but different methodologies, sample sizes and questionnaires made comparisons of results rather difficult and it was decided in 2002 to administer a single instrument to each of the participating urban areas.

<sup>37</sup> If that person was not available, a suitable time was made to re-contact each household being contacted up to a maximum of 12 times over the course of the fieldwork period as necessary. Only after the 12<sup>th</sup> unsuccessful call was the household replaced with another. No substitution or re-selection was made within the household. Only one interview was conducted per household. Details of refusals, reasons and why are reported in appendix five of the Team Report.

One of the real advantages of the Quality of Life Survey is the fact that it asks about subjective well-being in at least four different ways: as satisfaction with Life in general these days, as happiness, quality of life and a less conventional one which I include, stress. At the same time there are some disadvantages: the 2006 Quality of Life Survey sample does under-represent those living alone, and slightly over-represents those living in households with four or more people. Youth as an age group have proved hard to get at and renters were under-represented, as were those in the lowest personal income brackets (\$30,000 or less) from the lowest income households. By contrast those in households reporting income of \$70,000 or more were over represented (Quality\_of\_Life\_Team, 2005).<sup>38</sup> For these reasons the sample is weighted by gender, age, ethnicity, and city to ensure it is representative of the New Zealand population aged 15 years or over.<sup>39</sup> The setting of these quotas is based on population data from the most recently completed quinquennial census.

While the results based on the World Values Survey were instructive, one could question whether responses on subjective well-being per se are the most appropriate indicators of the low well-being believed to be connected with suicide. A more appropriate measure I suggest may be *low* levels of satisfaction and the way this proportion varies with age. This new measure makes use of the fact that it is those who respond to the bottom two or three levels of the Life Satisfaction question who are most likely to be at risk of taking their own lives.

The Quality of Life Survey question about Life Satisfaction in 2006, Q31, asks:

“Taking everything into account, how satisfied or dissatisfied are you with your life in general these days? Options include: Very Dissatisfied, Dissatisfied, Neither Satisfied nor Dissatisfied, Satisfied or Very Satisfied (again with a don’t know option).”

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<sup>38</sup> No incomplete interviews are present in the final data set and all respondent identifiers have been removed. However Don’t Knows are still present in the file.

<sup>39</sup> Despite a range of strategies used the final response rate for the 2006 survey was still only 22.03 percent ranging from 17.33 percent in the Rest of New Zealand to 31.25 percent in Hamilton.

In the analysis of responses to this question I want to know how the average probability of reporting *low* satisfaction varies with age. Therefore instead of using all five categories available from the Satisfaction question as in Table 4.5a, I just use the two collapsed categories shown in Table 4.5b. Most survey respondents were 'Satisfied' (52 percent) and a further 35 percent of respondents reported being 'Very Satisfied'. This leaves a group of most interest to me, namely the 13.2 percent who did not respond to either of these two categories, but said they were 'Neither', 'Dissatisfied' or 'Very Dissatisfied'. I call this my 'Low Satisfied' group.

**Table 4.5 Life Satisfaction results from the Quality of Life Survey, 2006**

**a. Five category distribution of Satisfaction with Life**

. tab Sat

Satisfaction with life	Freq.	Percent	Cum.
Very Dissatisfied	62	0.82	0.82
Dissatisfied	254	3.37	4.20
Neither S or D	678	9.01	13.21
Satisfied	3,910	51.95	65.15
Very Satisfied	2,623	34.85	100.00
Total	7,527	100.00	

**b. Two category distribution of Low Satisfaction**

(1= Very Dissatisfied or Dissatisfied, and 0= Otherwise)

. tab LowSat

LowSat	Freq.	Percent	Cum.
0	6,533	86.79	86.79
1	994	13.21	100.00
Total	7,527	100.00	

Source: Quality of Life Survey, 2006.

In the second of the four well-being measures, Happiness, I use, Question Q30 which asks:

'In general how happy or unhappy would you say you are? Very Unhappy, Unhappy, Neither happy nor unhappy, Happy, Very Happy, together with a Don't Know option.'

Table 4.6, which records the results of this question, shows most respondents indicating they were 'Happy' (53 percent), with 36 percent indicating that they were 'Very Happy'. Again, I convert this to a Low Happiness variable by collapsing over

the first three and last two categories to produce the distribution shown in Table 4.6b, of which 11.3 percent of respondents said they were neither 'Very Happy' or 'Happy'.

**Table 4.6 Happiness results from the Quality of Life Survey, 2006**

**a. Five category distribution**

. tab Hap

Happiness	Freq.	Percent	Cum.
Very Unhappy	88	1.17	1.17
Unhappy	135	1.79	2.96
Neither H nor U	627	8.33	11.30
Happy	3,988	53.00	64.30
Very Happy	2,686	35.70	100.00
Total	7,524	100.00	

**b. Two category distribution of the Low Happiness variable**

. tab LowHap

LowHap	Freq.	Percent	Cum.
0	6,674	88.70	88.70
1	850	11.30	100.00
Total	7,524	100.00	

Source: Quality of Life Survey, 2006.

The third of the four measures asks about overall Quality of Life, Q35:

"Would you say that your overall quality of life is...Extremely Poor, Poor, Neither poor nor good, Good, Extremely Good (again with a Don't Know option)."

The resulting distribution for the full and collapsed versions of this question are shown in Table 4.7a and b. Again only a minority declare less than Good or Extremely Good Quality of Life (9.2 percent).

**Table 4.7 Quality of Life results from the Quality of Life Survey, 2006**

**a. Five category distribution**

. tab QoL

Quality of Life	Freq.	Percent	Cum.
Extremely poor	24	0.32	0.32
Poor	118	1.57	1.88
Neither P or G	554	7.35	9.23
Good	4,635	61.50	70.73
Extremely Good	2,206	29.27	100.00
Total	7,537	100.00	

**b. Two category distribution**

(1= Extremely Poor or Poor, and 0= Otherwise)

. tab LowQoL

LowQoL	Freq.	Percent	Cum.
0	6,841	90.77	90.77
1	696	9.23	100.00
Total	7,537	100.00	

Source: Quality of Life Survey, 2006.

Finally, although not usually included as subjective well-being measure, I have also included the question on Stress for importance on accounts of well-being, and potential influence on youth suicidal ideation (Heled and Read, 2005). The question, Q32a, is as follows:

“Can you tell me which statement best applies to how often, if ever, in the last 12 months you have experienced stress that has had a negative effect on you? The possible responses are: “Always, Most of the time, Sometimes, Rarely, Never (again with a Don’t Know option).”

The responses shown in Table 4.8a when collapsed into two categories as in Table 4.8b show under 10 percent (9.87) as being either Always (stressed) or Most of the time.<sup>40</sup>

<sup>40</sup> At this point I asked whether these four measures of low subjective well-being were more highly correlated at the level of the individual among the young than the old. The correlation matrix for the population as a whole shows a relatively low correlation among the measures: 0.501 between Low Happiness and Low Satisfaction, 0.328 between Low Quality of Life and Low Satisfaction and 0.302

**Table 4.8 Stress results from the Quality of Life Survey, 2006**

**a. Five category distribution**

. tab Stress

Stress	Freq.	Percent	Cum.
Always stressed	144	1.91	1.91
Stressed most of time	599	7.96	9.87
Sometimes stressed	3,483	46.27	56.14
Rarely stressed	2,477	32.91	89.05
Never stressed	824	10.95	100.00
Total	7,527	100.00	

**b. Two category distribution**

(1= Always or Most of the time, and 0= Otherwise)

. tab HighStress

HighStress	Freq.	Percent	Cum.
0	6,784	90.13	90.13
1	743	9.87	100.00
Total	7,527	100.00	

Source: Quality of Life Survey, 2006.

My central concern therefore, is with those who return low levels of subjective well-being. Over the 2006 sample as a whole this involves anywhere from 10 to 15 percent of the population, with higher proportions in certain subcategories of the population as I show below. Clearly this is a much larger proportion of the population than those who take their own lives. Even at their peak only about 15/100,000 of the population or 0.015 percent of the population in New Zealand take their own lives in any one-year (recall Figure 3.1). At 15/100 those expressing low subjective well-being constitute a thousand times that number. My implicit assumption however is that 0.0015 percent who take their own lives are highly likely to come from the 15 percent expressing low subjective well-being.

I begin by summarizing the relationship by means of the quadratic model in (1), in which the log odds of the ratio of those with low subjective well-being over all respondents are regressed separately against their chronological age, and their age

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between Low Quality of Life and Low Happiness. The remaining two pairs involving High Stress had correlations of less than 0.22. Repeating these for young adults showed they are no more likely to experience the *joint* presence of these conditions than any other of the four age groups. In fact, in all except one pair, correlation rates are lower – about the same as 65+ rates. The only noticeable across the age groups in fact is the slightly lower correlations in the case of those over 65.

squared. In the case of Satisfaction for example I define p as the probability of experiencing Low Satisfaction and 1-p as being Satisfied or Very Satisfied with their life in general. For reasons outlined in detail elsewhere (Wrigley, 1985) there are sound technical reasons for regressing the log of the ratio of the two,  $\log(p/1-p)$ , against the age of the respondent,

$$\log(p/1-p) = a + b\text{Age} + l\text{Age}^2 + e$$

where a, b and l are parameters to be estimated and e is the standard error term.

The left hand side of equation (1) is known as the log of the odds ratio or logit, and it is these odds ratios which are reported in the regression results for men and women separately in Table 4.9.

**Table 4.9 The relationship of Low Satisfaction with Life to age for male and female respondents to the Quality of Life Survey, New Zealand, 2006**

**a. Male**

Logistic regression				Number of obs	=	3065
				LR chi2(2)	=	14.87
				Prob > chi2	=	0.0006
Log likelihood = -1187.345				Pseudo R2	=	0.0062
-----						
LowSat	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
ageinyears	.0324347	.0180544	1.80	0.072	-.0029512	.0678207
agesq	-.0004783	.0002018	-2.37	0.018	-.0008738	-.0000828
_cons	-2.248509	.375304	-5.99	0.000	-2.984091	-1.512926

**b. Female**

Logistic regression				Number of obs	=	4448
				LR chi2(2)	=	32.87
				Prob > chi2	=	0.0000
Log likelihood = -1720.6706				Pseudo R2	=	0.0095
<hr/>						
LowSat	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
ageinyears	.0424406	.0174763	2.43	0.015	.0081876	.0766935
agesq	-.0006491	.0001985	-3.27	0.001	-.0010381	-.00026
_cons	-2.356724	.3646003	-6.46	0.000	-3.071327	-1.64212

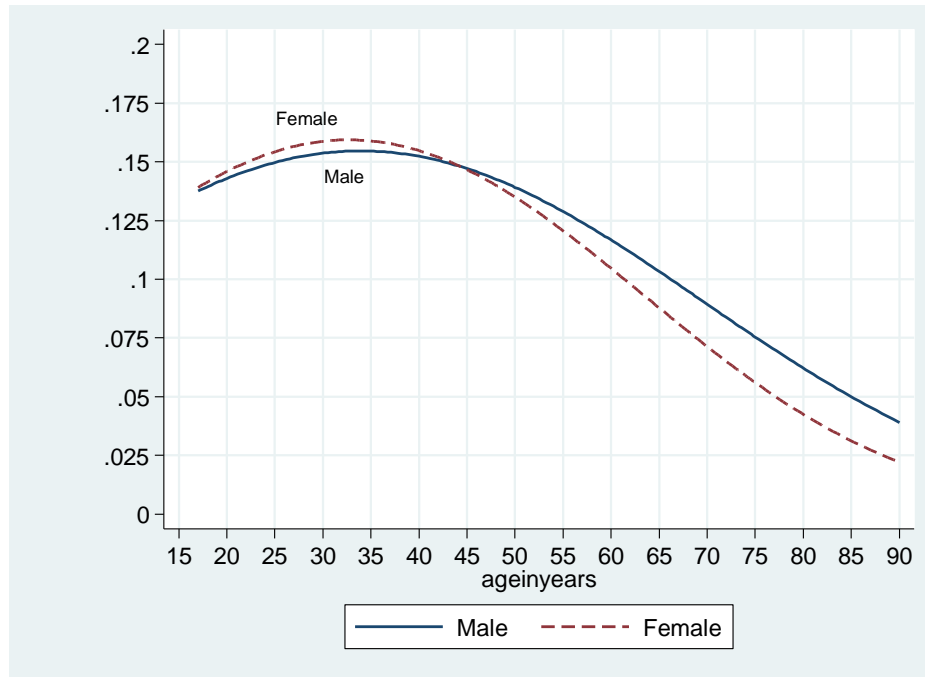
Source: Quality of Life Survey, 2006.

Both results confirm that the relationship between the estimated probabilities of Low Satisfaction and age in 2006 is convex, and that the odds of experiencing Low Satisfaction rises through early adulthood, reaches a peak in early middle age, and



then declines with age. Exactly how the average probability of Low Satisfaction changes with successive ages is summarized geographically in Figure 4.1.

**Figure 4.1 Changes in the probability of Low Satisfaction by age, New Zealand, 2006**



Source: Quality of Life Survey, 2006.

Blanchflower and Oswald's results were based only on male well-being but it is more instructive in this larger sample to present the results for both male and female as I do in Figure 4.1.<sup>41</sup> The convex shape (or reverse U shape) of the plot is exactly what I expected on the basis of both the literature in chapter two and Blanchflower and Oswalds results. Moreover these results are with the pattern of age-specific suicide rates in chapter three as I argue in more detail below.

The smoothed plot of estimated probabilities in Figure 4.1 show that the chances of returning Low Satisfaction with Life rises from under 15 percent in the case of

<sup>41</sup> The plotted line is the result of applying a smoothing function (the median spline) to the probabilities estimated using the parameters obtained from a logit regression of the binary variable, Low Satisfaction (1, 0), on age as a quadratic function, that is age and age<sup>2</sup>/100.

young adults under 20 years of age to over 15 percent among those in their early to mid 30s. Thereafter the chances of returning Low Satisfaction responses declines to about one in 10 among those entering their 60s and to under one in 20 among those in their 80s. The estimated probability of Low Satisfaction peaks at age 33.9 in the case of men and slightly earlier at 32.7 in the case of women.<sup>42</sup>

Substantively the shape taken by the average probability of reporting Low Satisfaction with Life in Figure 4.1 shows that young people are more likely to express dissatisfaction with their lives as they age and seek to establish an identity as adults. Interestingly, the probability of Low Satisfaction rises faster into early adulthood in the case of women ( $b = + 0.042$ - from Table 4.9), peaks earlier (32.7 years), but then declines more rapidly with age ( $l = -0.00065$ ) - meaning that in general women exhibit higher levels of satisfaction (or lower levels of Low Satisfaction) after middle age than men do.

According to these results, the chances of men experiencing Low Satisfaction with their lives rises more slowly as they approach middle age ( $b = + 0.032$ ), peak slightly later than women (33.9 years) and then experience a slower decline in dissatisfaction as they age ( $l = -0.00048$ ). At the age when they are least likely to express satisfaction with their lives over 15 percent of men are involved. This level does not drop to the level of the typical eighteen year old until they reach 50 years old. By the time they are 60 years of age about 12 percent of men still record Low Satisfaction.

In light of the very different rates of (fatal) suicide, one of the most interesting results in Figure 4.1 is the similarity young men and women exhibit in their probability of experiencing Low Satisfaction. Almost identical through young adulthood the two only really begin to diverge after about 40 years old as female rates of Low Satisfaction decline into old age at a faster rate than that of men, a

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<sup>42</sup> In an equation with this sequence of signs, the age at which the maximum is reached can be obtained directly from the estimated equation by dividing minus the coefficient on the age variable by 2 times the coefficient on age squared ( $l$ ), i.e.  $-b/2l = \text{age at which the modeled outcome reaches its maximum (b)}$ . So from the parameter estimates from the male equation in Table 4.9 above  $-0.03243/(-0.0004783 \times 2) = 33.9$  years is the maximum.

result consistent with the observation of greater female resiliency at this stage in the life cycle (Girard, 1993).

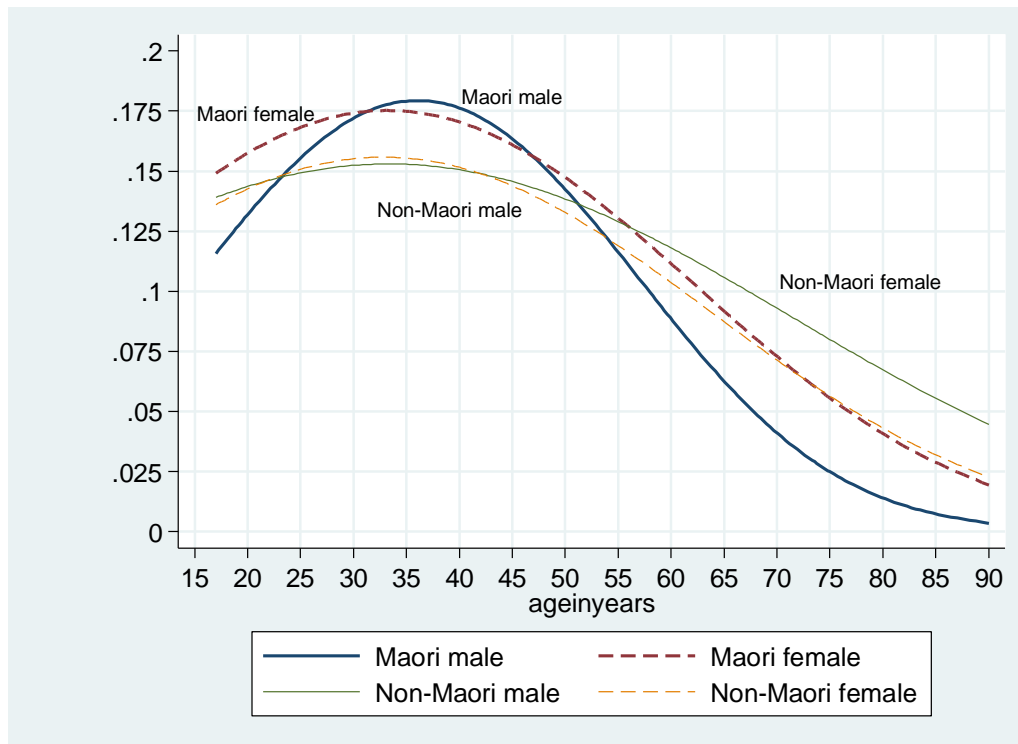
There are two caveats to the above results. The graphical summary of the way Low Satisfaction behaves in cross-section should not be read as indicating the likely pattern of any given *cohort* over time. Rather its value lies in exposing the distribution of one dimension of well-being over a range of ages at one point in time (2006 in this case). The second caveat has to do with acknowledging the impact of other possible, non-age factors, which could influence how people report their level of well-being. It is possible, as Deiner and Lucas argued (Diener et al., 1999) and Blanchflower and Oswald debated with Glenn (Glenn, 2009), that other related changes to people can raise or lower levels of satisfaction as people age: as incomes rise, partnership status changes or inputs to performance identify shift. As I will show in chapter five however, while all these features of individuals can, and do alter the probability of Low Satisfaction, they have remarkably little net effect on the way these probabilities change with age (as Blanchflower and Oswald also found). The pattern shown in Figure 4.1 therefore tends to hold regardless. With these two caveats in mind it is instructive to turn to the way age is related to well-being among those who identify with Māori (a step I could not take with the much smaller World Value Survey samples).

### *5. Māori differences in the relationship between life satisfaction and age*

The plot of the estimated probabilities of Low Satisfaction from equation 1 applied to Māori shows that not only do relatively more Māori men and women exhibit Low Satisfaction levels than non-Māori, but that there is a far greater difference in the level of dissatisfaction with life between young and middle aged Māori than in the non-Māori case; see Figure 4.2. This is especially true of Māori men whose likelihood of reporting Low Satisfaction while lowest as teenagers rises most rapidly as they age into young adulthood. Their vulnerability to Low Satisfaction peaks around age 36, but then declines more rapidly with age than the other four sub-

populations for reasons Landford, Ritchie and Ritchie trace to the greater social support afforded to Māori men of older age (1998).

**Figure 4.2 Changes in the probability of Low Satisfaction by age and gender, Māori and non-Māori, New Zealand, 2006**



Source: Quality of Life Survey, 2006.

There is a reversal in the relative levels of Low Satisfaction between Māori and non-Māori men from their 30s and their 70s. Young Māori men are more likely to be dissatisfied than young non-Māori men but this reverses as they age so that when they are over 60 it is non-Māori men who are more likely to express lower satisfaction with their life.

Another reversal is also apparent in Figure 4.2 - in the relative levels of Low Satisfaction between male and female in the older populations. Whereas Māori females are more likely to express lower satisfaction relative to Māori men when they age, non-Māori females express more satisfaction with life than non-Māori men.

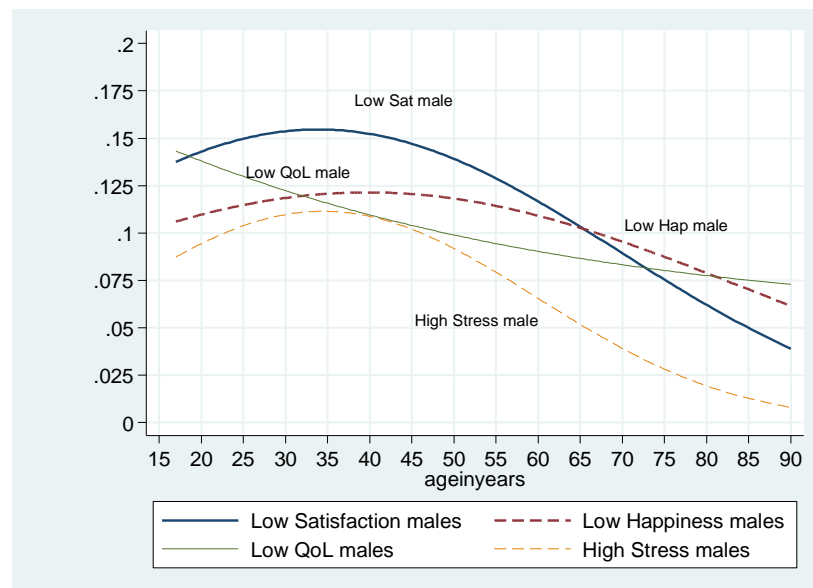
## 6. Other measures of subjective well-being

Satisfaction with life, although the most generally accepted measure of subjective well-being, is just one of several measures that contribute to what is widely acknowledged as a multi-dimensional phenomena (Diener et al., 2006). I now draw on the three other measures of subjective well-being from the Quality of Life Survey: Low Happiness, Low Quality of Life and High Stress.

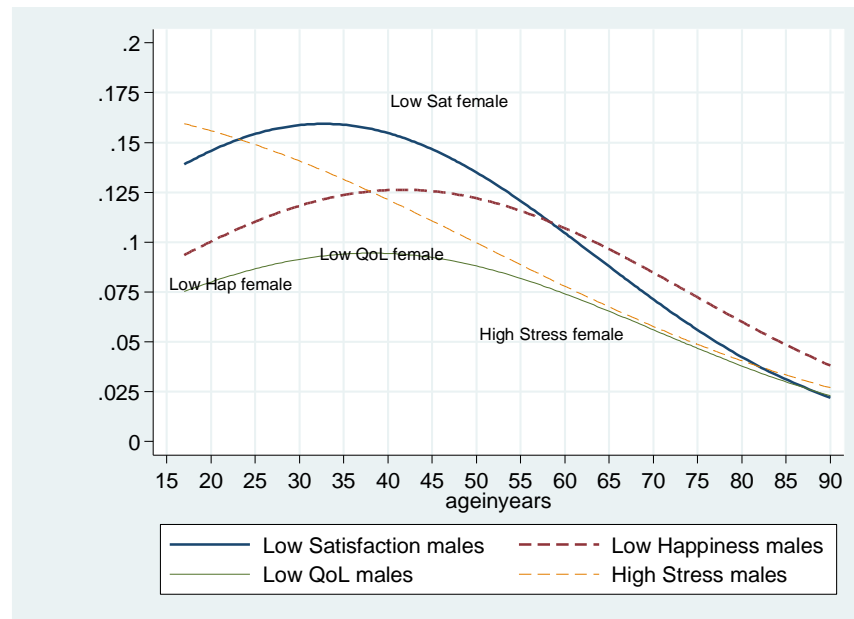
While the probability of experiencing low subjective well-being falls with advancing age, the path it takes, the turning point and the rate at low levels of well-being decline with age differs noticeably across the age domain in the case of four quality of life variables. As I've shown above, the probability of experiencing low subjective well-being in the first few decades of adulthood are similar for both men and women, after which they diverge.

**Figure 4.3 Changes in the probability of four measures of low subjective well-being with age among men and women, New Zealand, 2006**

### Male



## Female



Source: Quality of Life Survey, 2006.

The results for all four measures show that low levels of well-being peak at slightly different ages. With the exception of Quality of Life, low levels of well-being rise through the younger ages to peak among young adults: High Stress levels peak in the late 20s, Low Satisfaction in the mid 30s and Low levels of Happiness in the early 40s. The combined result is consistent with the point Beautrais often makes, namely that suicide it is not a feature of 'youth' per se but rather of early adulthood.

### *7. Subjective well-being, suicide and age*

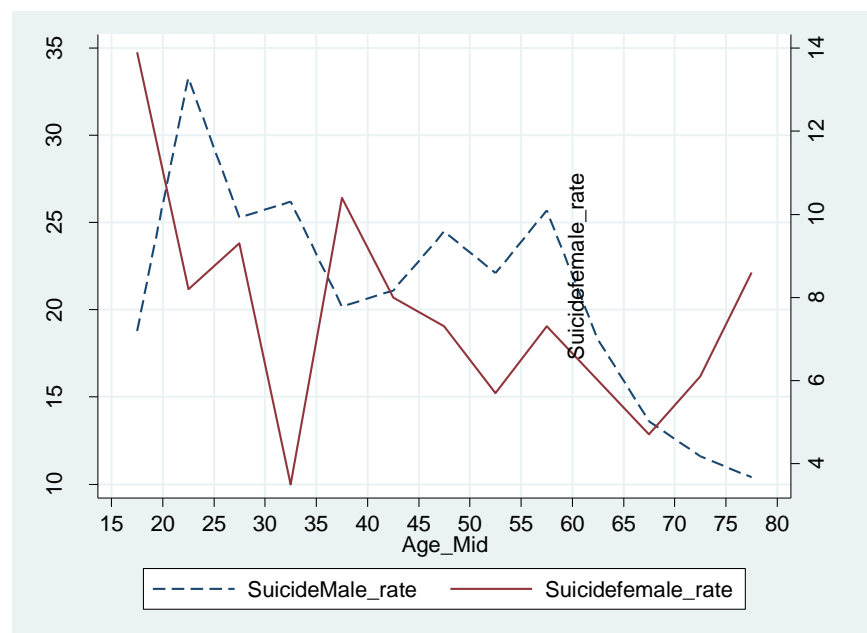
Each of these results from the 2006 Quality of Life Survey reflect observations made in the international literature on subjective well-being. While this gives me confidence in the Quality of Life Survey, the issue at hand is the degree to which I can infer likely patterns of age-specific suicide and self-harm to patterns of subjective well-being.

Intuitively one would expect suicide to be associated with extreme unhappiness, or dissatisfaction with life. Correspondingly, one would expect 'happy' people and those 'satisfied with their life' to be far less likely to commit suicide and this is indeed the case as several major studies previously mentioned in chapter two (Daly and Wilson, 2009, Helliwell, 2007, Cutler et al., 2001, Helliwell and Wang, 2011).

As these authors have argued, subjective well-being and suicide are related responses to a shared set of social conditions. One of the reasons there has not been closer attention paid to the underlying trends governing the two could be the fact that New Zealand did not begin compiling reliable figures on subjective well-being until a decade after suicide rates had peaked in 1997, and then only through the local body initiated by the Quality of Life Survey. National coverage through the New Zealand General Social Survey (NZGSS) did not begin until 2008. As a result New Zealand researchers have not been able to track trends in both suicide *and* subjective well-being in New Zealand over time. Were they able to, there is strong overseas evidence to suggest that the two would move in parallel; rising suicide would be associated with a rise in the proportion of the population reporting low levels of well-being. For now I have to be content with comparing the rates across the age domain at one point in time. Tracking changes over time will have to wait a longer series, and will therefore fall to other researchers.

The latest 2008 figures on age-specific suicide rates available for my study are shown in Figure 4.4. As noted already, male rates are much higher, but by registering the genders on two different axes we can see more clearly the differences in the way they vary by age. Rates rise within the young male adult age groups after which they decline - from a peak of over 20 per 100,000 down to just over 5 per 100,000 among those 75-80 years of age. In the case of women's suicide they begin relatively high among young women, fluctuate around much lower levels during the main childbearing years, after which they decline, but rise again in the oldest age groups.

**Figure 4.4 Age-specific suicide rates by five-year age group, male and female, New Zealand, 2008**



Source: New Zealand Mortality Collection, Ministry of Health.

Notwithstanding these differences between male and female suicide rates by age, I am primarily interested in the way suicide rates, self-harm and prevalence of low satisfaction with life correlate across the age groups. These comparisons are considerably more meaningful if they are analysed for males and females separately.

The three series I use are tabulated by five-year age groups in Table 4.10:

**Table 4.10 Suicide and self-harm rates (per 100,000), Low Satisfaction rates (per 100). Male and female respondents to the Quality of Life Survey, 2006**

**a. Male**

	agegp	suicid..	selfha..	l~tma~e
1.	15-19	18.8	60.1	15.2
2.	20-24	33.3	76.6	13.49
3.	25-29	25.3	66.2	20.74
4.	30-34	26.2	73.2	8.38
5.	35-39	20.2	70.6	17.8
6.	40-44	21.1	62	11.46
7.	45-49	24.5	50.9	16.71
8.	50-54	22.1	36.1	13.13
9.	55-59	25.7	40.7	17
10.	60-64	18.3	23.1	8.78
11.	65-69	13.6	29.6	10
12.	70-74	11.6	9.9	6.33
13.	75-79	10.4	35.3	6.94



## b. Female

	agegp	suicid..	selfha..	l~_fem~e
1.	15-19	13.9	178.7	12.94
2.	20-24	8.2	136.6	19.12
3.	25-29	9.3	89	15.18
4.	30-34	3.5	84.7	13.19
5.	35-39	10.4	114.1	12.68
6.	40-44	8	104.5	16.8
7.	45-49	7.3	107.1	14.93
8.	50-54	5.7	64.6	15.85
9.	55-59	7.3	53.3	9.73
10.	60-64	6	41.9	9.14
11.	65-69	4.7	21.1	8.79
12.	70-74	6.1	19.8	5.95
13.	75-79	8.6	8.9	4

Source: Quality of Life Survey, 2006.

My initial exploration involved correlating the three series for men and women. Over the 13 five year age groups the correlation between the suicide rate and rate of self-harm of men is quite high at 0.716 ( $p=0.006$ ), and both are positively correlated with Low Satisfaction; 0.562( $p=0.045$ ) and 0.057 ( $p=0.57$ ) respectively.

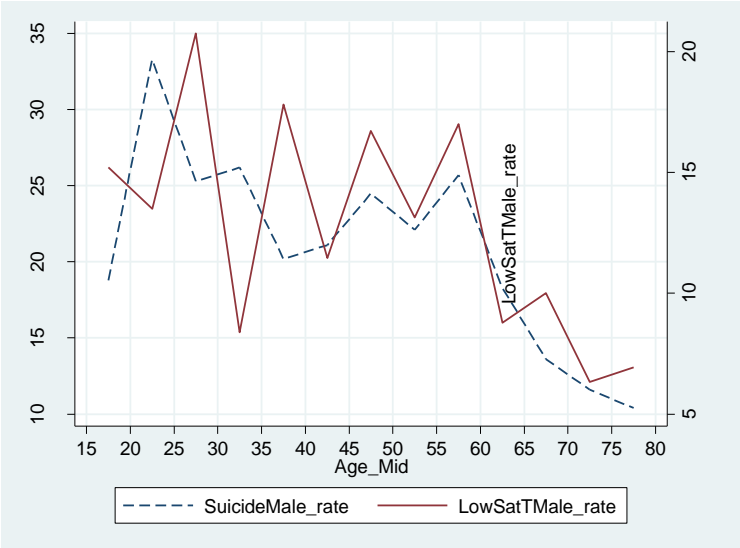
The correlation between the rate of suicide and self-harm among females is only slightly lower at  $r=0.645$  ( $p=0.017$ ) but suicide remains quite uncorrelated with the proportion in the age group who returned Low Satisfaction  $r=0.155$  ( $p=0.613$ ). The age-specific rate of self-harm however is highly correlated with the likelihood of Low Satisfaction, and slightly more so than in the male case,  $r=0.749$  ( $p=0.003$ ). This result is consistent with the much lower rate of realized suicide among women and the greater likelihood that dissatisfaction with life will be expressed in terms of self-harm.

In summary, using age as the domain, I find the incidence of Low Satisfaction with life is positively correlated with expected behaviours - namely suicide in the case of men, and self-harm in the case of women.

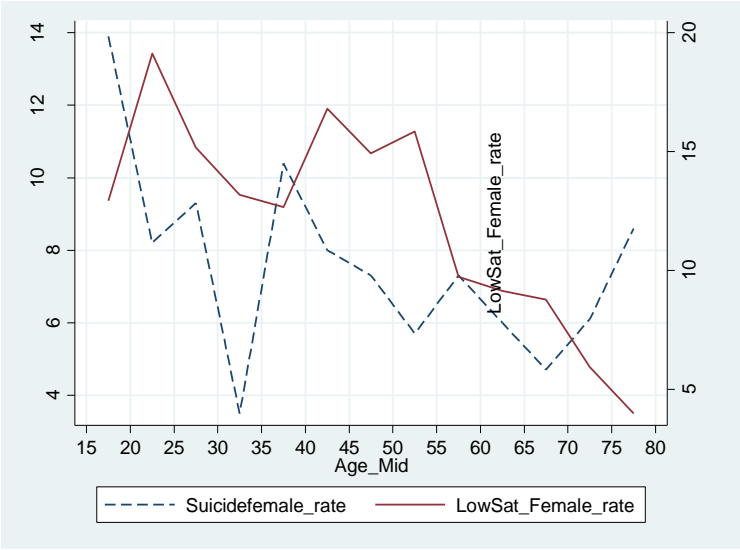
While the correlations are helpful in establishing general linear relationships between these measures, there is additional detail in the co-variation apparent when the series are presented graphically as in Figure 4.5 and 4.6.

**Figure 4.5 Age-specific suicide rates and the proportion of each age group expressing of Low Satisfaction with Life, male and female, New Zealand, 2006**

**a. Male**



**b. Female**



Source: Quality of Life Survey, 2006.

Although 75 percent of the variation in male suicide rates over the five year age groups can be accounted for statistically by knowing the likelihood of Low Satisfaction in the age group, the degree of ‘fit’ among male in Figure 4.5 appears stronger in the older rather than younger age groups. This is consistent with the observation that suicide among youth is often due to specific events (such as the breakdown in a relationship) as opposed to a more stable but Low rate of satisfaction with life. A similar observation also appears to be the case for male self-harm in Figure 4.6.

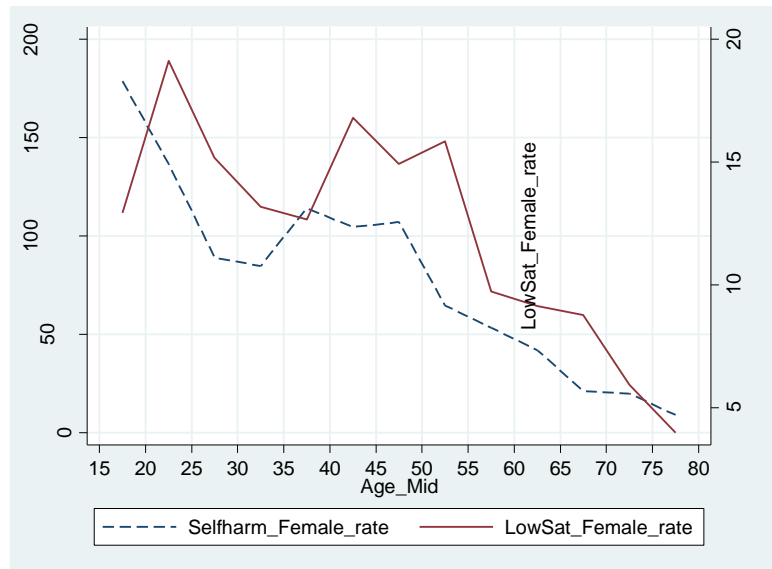
In the case of females it is the (much lower) suicide rate, which shows the greater variability over the age domain although both the suicide and Low Satisfaction rate decline with age (Figure 4.5a). When it comes to the way the probability of self-harm varies with reported levels of Low Satisfaction with Life we see a close but not exact correlation; self-harm is higher than expected given Low Satisfaction rates among females under 20 as it is among women in their thirties (Figure 4.6b).

**Figure 4.6 Age-specific self-harm rates and the proportion of each age group expressing of Low Satisfaction with Life, male and female, New Zealand, 2006**

**a. Male**



## b. Female



Source: Quality of Life Survey, 2006.

In summary, the international evidence confirming the close relationship between Low Satisfaction, suicide and self-harm both across countries and over time, cross-section, and longitudinally is also present across the age domain in cross-section here in New Zealand. The empirical associations presented here are admittedly quite preliminary and are not based on the ideal series. Nevertheless they are sufficiently consistent to make it worth my while paying closer attention to Low Satisfaction as I do in the following chapter.

## 8. Conclusions

The previous chapter on suicide documented the reversal or switch that appears to have taken place in the relationship between suicide risk and age. With suicide rates falling among the older population and rising among the young corresponding cross sectional observation of suicide risk will shift from being positive to negative in age. Subjective well-being can and does correlate very highly with the risk of suicide. Therefore in this chapter I have sought evidence for the way low well-being changes with age and found that in most cases, for men and women and for the Māori and non-Māori population *Low* well-being is *convex* in age, the inverse of well-

being in general which is positive and U shaped in age. At the same time the sub-populations vary and in general these differences, such as the case for Māori and non-Māori are quite consistent with findings in a literature using many other methods of enquiry.

Returning to suicide after considering well-being has allowed me to appreciate that while both relate negatively with age in the contemporary period the relationship is not identical. The fact that low levels of well-being peak in their 30s coincides with early child rearing years, when life can be particularly stressful for both family and career reasons, and just as stressful for those without partners, career opportunities or prospects of family. However, for reasons we have yet to fully understand, suicide rates do not exactly follow the shape of low subjective wellbeing as they relate to age, instead it appears as though suicide is most likely to do so in the early years of adulthood and in old age. Both are periods in life where social integration levels are likely to be at their weakest and dependencies and responsibilities to others are relatively low and personal identities are most heavily challenged.

With this empirical evidence in place I will now turn to the role of place as a possible modifier of the relationship between subjective well-being and age. In particular I want to extend Girard's concept of identity realization and ask how that might be translated into the choice of location. Such an approach is particularly worthwhile in light of the difficulty previous approaches to understanding the geography of suicide have had in grappling with area selection effects – the fact that people are not randomly distributed over space and therefore cannot simply be correlated with attributes of those places in order to draw inferences about place effects. People and places self select, and if we are to understand how suicide specifically, and well-being more generally interacts with place it will probably have to come from understanding the ways in which the quest for identity relate to choice of location. Such an approach I believe also helps us better understand the geography of suicide.

## **Chapter 5**

### **Subjective well-being and place**

“The changing geography of despair [suicide] can be shown to be largely the product of changing economic, social and demographic geographies...stories of suicide in Britain were more than the sum of thousands of individual acts of misery [for they also] reflected the changing social structure of the country” (Dorling and Gunnell, 2003; p. 442).

My aim in this thesis has been to document and understand the gap that has opened up between the propensity of young and old to take their own lives. In chapter four I showed how the contemporary age patterning of suicides and self-harm is reflected in the much more common relationship between age and subjective well-being – how the chances of low satisfaction with life rise from the late teens into early adulthood, reach a peak in people’s early 30s and then decline gradually thereafter. The much larger number of people whose subjective well-being we can measure means that we can extend our understanding of the relationship between age and well-being by including its geography. This step has been precluded in many small countries by suicide being a rare event.

I therefore want to use the Quality of Life Survey to explore the much richer data on subjective well-being as to provide a better understanding in the way place of residence might be related to well-being and by extension, suicide and self-harm. The Quality of Life Survey with over 7500 observations in any given year offers considerably greater scope for analysis of geographical variations in well-being than the 500 or so suicides that are recorded each year. Even if we just focused on the 10 to 15 percent who return low subjective well-being (750-1125 observations) this still exceeds the number of observations typically available when only suicide counts are used. In addition, we have much greater information of the demographic and socio-economic attributes of the subjects as well as learning where they live.

I begin by arguing for a general geography of subjective well-being based on the coincidence of identity and place and the notion of expectation and performance. My aim in doing so is to put identity, well-being, and place together in a way that will generate testable hypotheses about area specific differences in the subjective well-being.

The chapter is in six sections. Section one addresses the geography of suicide (and well-being) as it relates to New Zealand. Section two presents an alternative approach to that of health geographers and epidemiologists whose ecological orientation has encouraged them to approach the role of place through the study of 'neighbourhood effects.' My approach begins not with residents, but with migrants to the city where they locate, where and why. In other words, my focus is on the spatial sorting process. This enables me to apply Girard's theory of performance identity to the migration of people to rapidly growing urban regions - as the classic writers on suicide have done.

Section three presents descriptive evidence on the way levels of subjective well-being vary across New Zealand based on the 2006 Quality of Life survey. I then ask in section four, whether inter-city differences in well-being vary by age, and I demonstrate the quite marked differences that prevail, especially among the young. At the same time however age is only one dimension of a person albeit one that is highly correlated with particular events that take place over the life course. In order to control for these, that is for partnership, education, employment and income, I run several multivariate models of life (dis)satisfaction on age. The results reveal a similar convex relationship between age and subjective well-being as presented in chapter four.

In section six I ask whether, after taking the demographic and socio-economic characteristics of people into account, their place of residence is associated with a higher or lower likelihood of low levels of reported well-being. The answer is yes, and I relate these results back to people's location decisions.

Section seven tests inferences typically made about those places which appear positively correlated with *low* subjective well-being, notably whether they are characterized by relatively lower levels of social capital and weaker indices of connectedness than those places which appear to actually enhance people's well-being.

Finally I ask, in section eight whether young adult's well-being is more sensitive to place than the remaining older section of the population. I find that it is, and relate the results back to the ideas on identity and performance. The chapter concludes in section nine.

### *1. The geography of suicide and well-being*

In chapter two I suggested that taking an ecological approach to analyzing the geography of suicide had gone about as far as it could without obtaining new data. Statistics on the incidence of suicide, date and place of domicile have allowed epidemiologists and health geographers to link suicide rates in particular periods to areas of residence. By linking causes of death to census measures that proxy attributes of place researchers have been able to test whether suicide rates differences across the measured attributes of places after controlling for a range of personal attributes (Blakely and Woodward, 2000). Only some of those exercises undertaken internationally have yielded consistent results, notably the association with deprivation and high urban density (and growth). Those attempting to link the attributes of people and places have been far less successful.

It may well be that suicide is more likely to occur in deprived areas, in places where people live alone and have fewer material possessions than average, but many measures are simply proxies for undeveloped, weak or broken social relationships that form the substance of the sociological theory of suicide (Collings et al., 2009). At worst such proxies are simply inputs to unidentified outputs with little theory connecting the two. Objective measures of places - such as the presence of a high



proportion of people living alone – is unlikely to be an adequate proxy for the complicated and dynamic social relationships we know prevail in suicide cases.

Not only are census based measures *not* relationship based, but they remain unfiltered by peoples *subjective* perceptions of the relationships that do prevail in their localities.<sup>43</sup> At highly aggregated scales, across states of the USA for example, it has been possible to demonstrate relatively close statistical relationships between *subjective* well-being (satisfaction with life, happiness etc) and *objective* measures of well-being – such as wage premiums required to compensate for living in places with poor amenities (Oswald and Wu, 2010). At smaller scales such as the neighbourhood, there is only a very weak correlation between the subjective and objective measures (Cummins, 2000, McCrea et al., 2006, Pacione, 1982). It is unlikely therefore that any given objective measure(s) of a place (a quality of life index for example) can capture differences in the prevailing pattern of social relationships, let alone capture the way these social relationships in different places are viewed by subjects.<sup>44</sup>

## *2. Extending identity theory to place*

The other weakness in ecological approaches is the lack of theory linking the characteristics of places to people's local behavior. By contrast in much of the suicide literature there is a theme that can be traced back to the nineteenth century, linking social change and regional growth more specifically with suicide. The social upheaval that accompanied the growth of urban settlements in Europe in the 1800s lead the Italian professor of psychological medicine, Henry Morselli to write how:

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<sup>43</sup> In addition of course they are also quite static, representing conditions at one a point in time with no history of other background as context. Unfortunately New Zealand has yet to develop a longitudinal survey that allows the kind of testing of personal history effects found elsewhere.

<sup>44</sup> Where the objective measures may come in is primarily in relationship to policy responses particularly those that seek to address levels of deprivation, accessibility and the delivery of a public support infrastructure. Knowing the relationship between them and perceptions then becomes important but that particular question lies beyond the scope of this thesis.

“The proportion of suicides in all Europe is greater amongst the condensed population of urban centres than amongst the more scattered inhabitants of the country” (Morselli, 1881; p. 169).

Morselli went on to note how:

“Town life is a powerful modifier of the human will, but it does not neutralize all the other social and individual factors” (Morselli, 1881; p.169).

Although Morselli drew contrasts between the ‘active and progressive element’ of cities and the, ‘persevering, peaceful, patient, continually struggling’ people of the countryside (Morselli, 1881), he did not make explicit a central feature of the process, namely that migration links people to places in a highly selective manner.

Opportunities for personal growth in expanding cities differentially attracts those with the abilities, and the will to exploit them and that it is this selective nature of internal migration which alter the social characteristics of origins and destinations. In Girard’s terminology, it is more often those with strong performance identities who migrate and become inhabitants of rapidly growing cities. Such migrants are disproportionately young and place considerable personal stake on their ability to succeed at the new location. In other words, their performance identity is closely tied to the expectations that accompany the selection of place.

In reality, not all succeed in what becomes a highly competitive environment, and as a result there is also a strong correlation between migration and suicide in very large urban centres (Potter et al., 2001). Moreover, this correlation between migration to centres of growth applies at both ends of the process, in the suicide rates of those who are left in slower growth, often depressed regions, and those who have experienced the rapidly growing, highly competitive, migration magnets. Both origin and destination are therefore characterized by high rates of social disruption that accompany migration streams.

In a small country like New Zealand, as well as the wider Pacific region, contemporary opportunities for advancement are tied closely to a few large growth centres. Within New Zealand certainly, but in the context of the Asia-Pacific region more generally the Auckland region constitutes *the* primary locus for advancement. One might therefore expect this part of the country to disproportionately attract the young and the ambitious – a group who are prepared to open up a large gap between expectations and achievement. As a result I would expect to find higher levels of dissatisfaction in such destinations and the potential for higher suicide rates.

In summary, the hypothesis that emerges from this line of argument is that the strong selection effects exercised in rapidly growing, dense (and relatively expensive) regions are likely to exert disproportionate pressure on new as well as existing residents, to the point where satisfaction with life is reduced and the probability of low satisfaction rises above that of other centres in the country. It is this thesis that I wish to test in this chapter. (Left unexplored, due to time constraints, is the possibility that areas of net migration *loss* will also disproportionately accumulate those vulnerable on other grounds and, as a result, also display lower levels of subjective well-being.)

### *3. The statistical influence of place on subjective well-being*

Figure 5.1 shows the location of the settlements from which samples are drawn in the biennial Quality of Life Surveys. In order to ensure a dataset of sufficient size for regional and city analysis approximately 500 interviews are typically undertaken in each of these twelve cities/districts.<sup>45</sup>

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<sup>45</sup> The maximum margin of error on a sample size of 500 is +- 4.4% at the 95% confidence level. Up until 2010 the Ministry of Social Development funded an additional sample of 1500 from the 'rest of New Zealand' to ensure coverage of the country as a whole.

**Figure 5.1 The location and 2006 population size of the twelve cities included in the Quality of Life project, New Zealand**



1.Rodney 2. North Shore 3. Waitakere 4. Auckland 5. Manukau 6. Hamilton  
7. Tauranga 8. Porirua 9. Hutt 10. Wellington 11. Christchurch 12. Dunedin

Source: <http://www.bigcities.govt.nz/>

I begin by applying a logit model of the form used in chapter four (equation 1) but this time with the purpose of assessing the effect of living in different cities on the odds of returning Low Satisfaction in Life. The dependent variable takes a 1 if the respondent is unable to say they are either Very Satisfied or simply Satisfied with their life in general, and 0 Otherwise. About 15 percent fall into this Low Satisfaction category.

Table 5.1 presents the estimated odds in favour of respondents in the 12 settlements reporting a lower (-) or higher (+) likelihood of Low Satisfaction compared to Auckland City.<sup>46</sup> Those cities with a *larger* proportion of sampled residents reporting Low Satisfaction (than Auckland City) carry an estimated odds

<sup>46</sup> These odds ratios are derived from regressing the log odds (logits) of the binary dependent variable Low Satisfaction on dummy variables representing each settlement type. The base against which Low Satisfaction in each city is compared is that of Auckland City.

ratio of greater than one, and those with a smaller proportion of such residents are preceded by coefficients of less than one. For example, Table 5.1 shows that the odds in favour of Rodney residents exceeding the proportion of dissatisfied residents held by Auckland city is 0.81 to 1. By contrast, the odds of those living in the Northshore expressing Dissatisfaction is 1.31 for every 1 Auckland City resident likely to be less than Satisfied with *their* life in general. The statistical significance of the difference between each city and Auckland is judged by the z score. The span of the confidence interval for each estimate at the 95 percent confidence level is given in the last two columns of Table 5.1.

**Table 5.1 Estimated odds ratios of Low Satisfaction with Life by across mainly settlements in New Zealand, 2006**

**a. Individual settlements**

Logistic regression				Number of obs	=	7527
				LR chi2(12)	=	39.47
				Prob > chi2	=	0.0001
Log likelihood = -2917.9045				Pseudo R2	=	0.0067
-----						
	SWB	Odds Ratio	Std. Err.	z	P> z	[95% Conf. Interval]
-----						
	Rodney	.8122482	.1565785	-1.08	0.281	.5566743 1.185158
	North_Shore	1.314948	.2336121	1.54	0.123	.928293 1.862653
a hundreds came and wentwere . I,						
0.055	.9923184	1.969414				waitakere   1.397958 .24445 1.92
	Manukau	1.144319	.2001261	0.77	0.441	.8122377 1.61217
	Hamilton	1.024189	.1884338	0.13	0.897	.7141233 1.468883
	Tauranga	1.01171	.1867379	0.06	0.950	.7046023 1.452672
	Porirua	.6911149	.1353307	-1.89	0.059	.4708388 1.014445
	Lower_Hutt	.7853526	.1512397	-1.25	0.210	.5384483 1.145474
	Wellington	.759432	.1491087	-1.40	0.161	.516847 1.115876
	Christchurch	1.078801	.1967684	0.42	0.678	.7545469 1.542399
	Dunedin	.6267476	.1284299	-2.28	0.023	.419439 .9365188
	Outside_12~s	.9785218	.1480083	-0.14	0.886	.7274787 1.316197
-----						

**b. Auckland region**

Logistic regression					Number of obs	=	7527
					LR chi2(1)	=	13.37
					Prob > chi2	=	0.0003
Log likelihood = -2930.9557					Pseudo R2	=	0.0023
-----							
SWB		Odds Ratio	Std. Err.	z	P> z	[95% Conf. Interval]	
-----							
AuckRegnR		1.28287	.087474	3.65	0.000	1.122387	1.4663
-----							

Source: Quality of Life Survey, 2006

Although the odds ratio in column one of Table 5.1 shows considerable departure from the Auckland proportion who report Low Satisfaction, only the coefficient for

Dunedin residents exhibits a difference which is statistically significant at the 0.5 percent level. That odds ratio implies that for every 10 people reporting Low Satisfaction in Auckland, Dunedin will record only 6 or 60 percent. Other cities which come close to that gap, are Porirua with 69 percent, Wellington with 75.9 percent and Rodney with 81.2 percent.

At the same time there are some locations, mainly those adjoining Auckland City in which much *higher* proportions of their population returning Low Satisfaction with life, notably Waitakere with 13.9 for every 10 in Auckland City residents, Northshore with 13.1, Manukau with 11.4. Both Hamilton and Tauranga exhibit odds ratios only slightly higher than Auckland City. Of all towns with higher probabilities of residents returning low satisfaction only Christchurch with 10.7 lies outside the broad commuter belt of Auckland. This suggests the existence of a broad Auckland region effect, which I test for explicitly in Table 5.1b. While coefficients on the individual cities were rarely significant residents in this broad Auckland commuter belt as a whole have a much higher odds of returning low satisfaction as a group - almost one third above that of the rest of the country.

The above result confirms my theoretical expectation of lower levels of satisfaction with life in the primary growth region, that is within Auckland's sphere of geographical influence as a metropolitan centre, a result which is also consistent with evidence presented from the 2004 Quality of Life Survey (Morrison, 2010). As noted in my supervisor's paper, such a result is consistent with the presence of diminished subjective well-being in the largest cities of many countries - being the case for New York (Oswald and Wu, 2010), Dublin (Brereton et al., 2008), Sydney (Cummins et al., 2005) to name but three. The important point is that, "residents in larger urban areas tended to express greater dissatisfaction with the quality of life even though it is better by objective standards" (Wish, 1986; p. 6).

By collapsing the results of the Satisfaction with Life question into the binary variable LowSat I have been able to focus specifically on who judges their life as unsatisfactory. However in reducing the number of categories of Satisfaction from 5

to 2 I have also lost the additional information carried by the other categories in the original Satisfaction scale. This loss of information may be important because cities may differ in their average level of well-being, not just because they vary in the proportion of dissatisfied but also because of differences at the positive end of satisfaction scale. Some cities may limit the chances of being Very Satisfied as opposed to just Satisfied for example. In order to make use of in this expanded version of the Satisfaction measure, but to also continue to prioritise *low* well-being, I have reordered the coding of the five category version to run from Very Satisfied to Very Dissatisfied. In this way, the signs of the estimated coefficients will also be consistent with those of the binary logit results in Table 5.1.

The distribution of responses to the reoriented Satisfaction variable is as follows:

Dissatisfaction   with life	Freq.	Percent	Cum.
-----+-----			
Very Satisfied	2,623	34.85	34.85
Satisfied	3,910	51.95	86.79
Neither	678	9.01	95.80
Dissatisfied	254	3.37	99.18
Very Dissatisfied	62	0.82	100.00
-----+-----			
Total	7,527	100.00	

Source: Quality of Life Survey, 2006.

Regressing the five-category version of this well-being across the cities. The effect is to render more of the city coefficients in the model statistically significant, a difference which arises primarily from the fact that cities also differ in their ratio of Satisfied and Very Satisfied. In addition to having a larger proportion of dissatisfied residents in Auckland the region also contains relatively fewer Very Satisfied residents. Waitakere and Northshore continued to exhibit lower levels than Auckland City on the five category measure. The shift to the full range of variation within the Satisfaction with Life variable therefore clarifies rather than alters the foregoing results (see Table 5.2).

**Table 5.2 Estimated odds ratios of Satisfaction with Life by 'City' in New Zealand, 2006. Five categories**

**a. Individual 'cities'**

Ordered logistic regression	Number of obs	=	7527
	LR chi2(12)	=	65.71
	Prob > chi2	=	0.0000
Log likelihood = -8083.4901	Pseudo R2	=	0.0040

LowSatS	Odds Ratio	Std. Err.	z	P> z	[95% Conf. Interval]	
Rodney	.6090711	.0739704	-4.08	0.000	.4800553	.77276
North_Shore	1.057384	.1288411	0.46	0.647	.8327505	1.342613
Waitakere	1.114553	.1351155	0.89	0.371	.8788427	1.413483
Manukau	.95458	.1116699	-0.40	0.691	.7589898	1.200573
Hamilton	.8166495	.0988629	-1.67	0.094	.6441543	1.035336
Tauranga	.7183955	.0873404	-2.72	0.007	.5660789	.9116963
Porirua	.6811664	.0805889	-3.25	0.001	.5401911	.8589323
Lower_Hutt	.7543957	.090274	-2.36	0.019	.5966793	.9538002
Wellington	.6734606	.0816549	-3.26	0.001	.531015	.8541175
Christchurch	.9204165	.1111779	-0.69	0.492	.7263852	1.166277
Dunedin	.6516909	.0785429	-3.55	0.000	.5145806	.8253344
Outside_12~s	.7554569	.0745041	-2.84	0.004	.6226774	.9165503
/cut1	-.8512411	.0856922			-1.019195	-.6832875
/cut2	1.674278	.0879685			1.501863	1.846693
/cut3	2.922234	.0993854			2.727442	3.117026
/cut4	4.58673	.1511284			4.290523	4.882936

**b. Auckland region**

Ordered logistic regression	Number of obs	=	7527
	LR chi2(1)	=	15.52
	Prob > chi2	=	0.0001
Log likelihood = -8108.5882	Pseudo R2	=	0.0010

LowSatS	Odds Ratio	Std. Err.	z	P> z	[95% Conf. Interval]	
AuckRegnR	1.190685	.0527876	3.94	0.000	1.091591	1.298775
/cut1	-.5452482	.0315834			-.6071505	-.4833459
/cut2	1.967353	.0404511			1.888071	2.046636
/cut3	3.21307	.0615916			3.092353	3.333788
/cut4	4.876617	.1294516			4.622897	5.130338

Source: Quality of Life Survey, 2006.

In the results of Table 5.2 I find that Dunedin, Porirua and Wellington exhibit less dissatisfaction with life than those living in and around Auckland City. (As in all Quality of Life Surveys, the exception is Rodney, which technically resides within the Auckland region, exhibits subjective returns, which regularly exceed those of other settlements). Those living in Wellington City return 67.3 percent of the dissatisfaction expressed by those living in Auckland City. And, once again, all those living south of Tauranga (except Christchurch), and to the north of Northshore show



lower levels of satisfaction than those living in the Auckland region. Applying the single region test, as in Table 5.2b, shows that Auckland exhibits a significantly greater odds ratio of greater dissatisfaction relative to the other settlements covered by the survey (a logit of 1.19, and a z of 3.94).

In summary, places do vary in terms of the average levels of subjective well-being returned by their residents. Those cities in the Auckland region are home to residents who are not either Neutral, Dissatisfied or Very Dissatisfied with their life but are also less likely to be Very Satisfied. These results are consistent not only with the international evidence on very large cities, but also the historical literature on suicide as it relates to rapidly growing urban regions and the theory of performance identity.

The interesting question at this point is whether living in certain types of settlements is likely to modify the convex relationship of Low well-being to age. There are two specific questions I want to ask: do the young show evidence of being *more* sensitive to the particular cities in which they live than older residents, and are those cities which appear to reduce life satisfaction of their populations as a whole those associated with lowering satisfaction levels of the young only?<sup>48</sup>

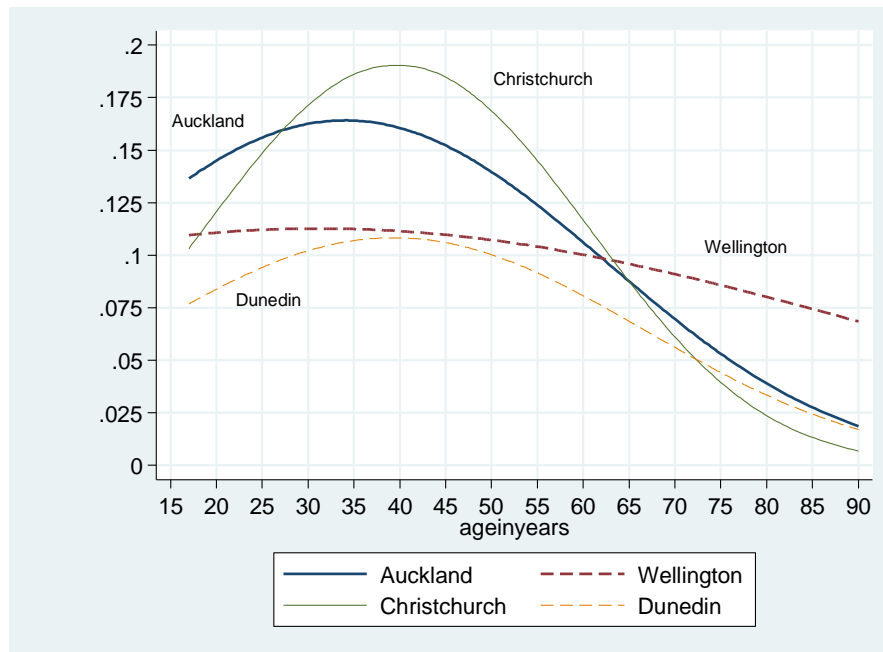
#### *4. Do inter-city differences in well-being apply across the age range?*

One way of addressing the first of the above questions is to take cities which exhibit marked differences in levels of well-being for their population as a whole such as Auckland and Dunedin and compare rate of low subjective well-being by age. In this and the examples to follow I fit the logit equation introduced in chapter four (relating Low Satisfaction to age) to the four main cities, and then graph a smoothed version of the predicted probabilities by age for each. The result is Figure 5.2.

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<sup>48</sup> The other question I asked at this stage was whether the results for Satisfaction also apply to the other three measures of well-being: Happiness, Quality of Life and Stress. The answer broadly speaking is yes.

**Figure 5.2 The difference in the probability of reporting Low Satisfaction with life in Auckland compared to Wellington, Christchurch, and Dunedin, 2006**



Source: Quality of Life survey, 2006.

Two important points emerge from Figure 5.2. Firstly, it is among the young adults in these two cities that the chances of Low Satisfaction levels tend to be highest. Well over 15 percent of the 'thirty-somethings' in Auckland City say they are less than satisfied with their life in general compared to just over 10 percent of those living in Dunedin.

The second point to note in Figure 5.2 is the different levels of convexity exhibited by the residents of each city, and the different ages at which Low Satisfaction reaches its peak in each. Christchurch shows the greatest contrast followed by Auckland then Dunedin. Wellington by contrast shows remarkably little variation in the probability of low satisfaction across age groups.

The relationship between age and Low Satisfaction in these four cities is also apparent in the different ages at which the proportion of the population dissatisfied is highest. Lack of satisfaction seems to peak among those in their 30s in Auckland,

compared to those entering their 40s in Dunedin, along with Christchurch. By contrast, Wellington shows relatively little convexity; dissatisfaction rises ever so slightly to peak in residents' middle 20s, then declines very slowly with age. However, while levels of dissatisfaction in the cities gradually converge with age outside the Capital, the older age groups who remain in a hilly and windy, but also a status conscious Wellington after retirement, appear to report relatively higher rates of life dissatisfaction.

While the above results are consistent with my overall thesis connection life satisfaction and place it is also true that place alone accounts for only a minor variation in subjective well-being (Stock et al., 1983b). Although an imperfect measure, the pseudo  $R^2$  reported in Table 5.2 are indicative of that fact. When it comes to accounting for interpersonal variations in subjective well-being many other factors come into play, mental, physical and social. Therefore without statistically controlling for many of these other influences I cannot be sure that the influence I am attributing to place in the above discussion is not misplaced or exaggerated. I turn therefore to the application of controls.

### *5. The statistical influence of non-age attributes on subjective well-being*

The presence of confounding effects in the study of subjective well-being (and suicide) is particularly likely in the case of place simply because people are not randomly scattered across cities. The vast majority of adults *choose* to live in particular locations; they 'self select' and for this reason we *should* expect different compositions of people in different cities. These differences in turn will influence how respondents in each city are distributed over the ordered categories of well-being.

The Quality of Life Survey contains a wide variety of attributes of people, which can be used as controls; characteristics such as ethnicity, health, education, labour force participation, housing tenure and income. Their averages for all respondents and young adults are presented in Table 5.3, from which I can construct a picture of the

'average' respondent. The most likely respondent is someone who is middle aged (46 years), female (59 percent), European (74 percent), in Very Good Health (41 percent) and living with a partner (73 percent). This most likely respondent will have an 'Other Qualification' between school and university (33 percent), and be equally likely to either be working fulltime (22 percent) or not looking for work (23 percent). They are likely to own or jointly own their own home (84 percent), have an average income of between \$20 and \$30,000 per annum and, given the way the sample is structured, they are equally likely to live in any of the 12 settlement types.

In addition to the standard set of socio-economic characteristics the Quality of Life Survey also asks a variety of what are often called 'social capital' questions from which I conclude that the typical respondent is likely to usually trust others (59 percent), be highly likely to say they belong to a club or church or similar society (31 percent). Most will agree it is important to feel a sense of community (72 percent) but considerably less (61 percent) actually can report feeling this way.

**Table 5.3 Mean values of variables used in multivariate analysis of subjective well-being. Total sample from the 2006 Quality of Life Survey**

Qn	Type	Variable	Variable description	Sample mean N = 7531	Young adult mean N = 1278
S2	Demographic	ageinyears	Age	46	22
		agesq	Age(squared)	2338	497
S3		Female	Female	0.59	0.55
S1			European	0.74	0.53
		Maori	Maori	0.13	0.18
		Pacific-Island	Pacific	0.06	0.16
		Asian	Asian	0.06	0.12
Q20	Health	Poor-Health	Poor	0.21	0.02
		Fair-Health	Fair	0.82	0.07
		Good-Health	Good	0.26	0.26
		Very-Good Health	Very Good	0.41	0.42
			Excellent	0.22	0.23
Q39	Partner present	Partner	Partner	0.73	0.30
Q41	Education	Less_than-80	Less than school certificate or less than 80 credits for NCEA level 1 (no formal qualifications)	0.11	0.11
		Schoo_Certificate	School certificate or NCEA level 1	0.11	0.11
		NCEA2_or_HSC	Sixth for certificate or NCEA level 2		
			Higher School certificate/higher leaving certificate		
			National certificate/NZQA		
			University entrance from bursary exam	0.10	0.19
		HCEA3_or_5	NZ A or B Bursary or NCEA level 3		
			University Scholarship or NCEA level 4	0.09	0.14
			Overseas School Qualifications		
			Trade certificate		
			National diploma		
		Other_post	Teaching or nursing certificate/diploma	0.33	0.23
			Bachelors degree	0.16	0.16
		Post-grad_	Postgraduate degree (Honours, Masters, PhD)	0.06	0.03
			Other	0.04	0.04
Q16	Employment		Employed fulltime (for 30 or more hours per week)	0.51	0.41
		Employed_Part-time	Employed part-time (for less than 30 hours per week)	0.22	0.25
		Looking_for_work	Not in paid employment and looking for work	0.04	0.09
		Not_looking for work	Not in paid employment and not looking for work	0.23	0.23
Q40	Housing tenure		Owned house or apartment as individual	0.72	0.03
			Jointly owned or family trust or parents or other family owned	0.12	0.05
		Rented-private	Private landlord who is not related owns	0.11	0.21
		Rented_publics	Public landlord (local authority, city council or Housing New Zealand or other State landlord)	0.04	0.05
Q42	Income	Minus_or...	Annual personal income before tax - minus or zero	0.82	0.12
		Income_unknown	Income unknown		
		Income_u_20k	....Income under \$20k	0.06	0.36
		Income_20-30k	....Income \$20<\$30k	0.23	0.12
		Income 30-40k	....Income \$30<\$40k	0.14	0.12
		Income 40-60k	....Income \$40<\$60k	0.14	0.12
			....Income \$60k plus	0.15	0.04
Q29	Trust	Trust 1	You almost always can't be too careful in dealing with people	0.06	0.07
		Trust 2	You usually can't be too careful in dealing with people	0.18	0.22
		Trust 3	People can usually be trusted	0.59	0.55
			People can almost always be trusted	0.17	0.17
Q26	Connectedness	Club	<u>Not</u> belong to sports club, church or spiritual group, hobby or interest group, community or voluntary group, online community or interest group, network of people from school or work, other.	0.31	0.07
Q24	Local communities (believe)	ComImp	Do <u>not</u> agree or strongly agree that it is important to feel a sense of community with people in my local neighbourhood	0.28	0.36
Q24b	Local communities (sense)	ComFeel	I do not feel a sense of community with others in my local neighbourhood	0.39	0.52
Q15	Influence public has on Council decisions	InfliCouncil	Public has no influence (incl. don't know)	0.43	0.34

Source: Quality of Life Survey, 2006.

The typical *young* adult by contrast is 22 years old, female (55 percent) and contrary to the whole population considerably less likely to be European (53 percent), reporting closer identification with Māori (18 percent) or the Pacific population (16 percent). The typical young adult in the sample will exhibit no greater likelihood of being in good health than respondents in general but because of their age they will be far less likely to have a partner (30 percent) and any tertiary education. A larger proportion will be studying which is why their full-time employment rates are much lower (41 percent), and why a higher proportion are in part-time work (25 percent).

Significantly, a much smaller proportion of young adults will belong to a club or society, believe local communities are important or actually feel a sense of community and far fewer believe the public has the power to influence council decisions. With these characteristics entered as controls in the model I then test for the additional statistical influence of the urban settlement in which the respondent lives.

#### *6. The conditional influence of place on people's well-being*

The independent variables listed in Table 5.4 are entered in a sequence of the models of Low Satisfaction beginning with those variables least likely to be endogenous - those characteristics present which could not possibly be influenced by whether they experienced Low Satisfaction or not - such as their age and gender.

The results in Table 5.4 are structured in such a way that readers can observe not only the impact of each new set of categorical variables on the odds of not being satisfied, but also the impact of subsequent independent variables on the coefficients of those previously entered. Such comparisons are particularly instructive because they allow me to see how a variable previously influencing Low Satisfaction can have its degree of influence, and even its sign in some cases, modified by another variable entered in the model.

**Table 5.4 The odds of reporting Low Satisfaction with Life in General.  
New Zealand, 2006**

Models of Attribute and Place effects on Low Satisfaction

Variable	model01	model02	model03	model04	model05	model06	model07
ageinyears	1.04**	1.04**	1.07***	1.09***	1.09***	1.09***	1.1***
agesq	.999***	.999***	.999***	.999***	.999***	.999***	.999***
Female		.973	1.04	.992	.98	.985	.983
Māori		1.11	1	.953	.954	.982	1.07
Pacific_Is-r		.961	.842	.805	.805	.813	.971
Asian		1.35*	1.32*	1.3	1.25	1.25	1.44*
Poor_Health			7.41***	7.23***	7.17***	6.14***	5.85***
Fair_Health			4.78***	4.5***	4.45***	4.23***	3.95***
Good_Health			2.45***	2.36***	2.35***	2.22***	2.11***
Very_Good_h			1.29*	1.26	1.25	1.23	1.18
Partner			.529***	.566***	.571***	.576***	.584***
Less_than~80				1.07	1.04	1.01	1.01
School_Cer~1				1.06	1.02	.977	.973
NCEA2_or_HSC				1.14	1.11	1.09	1.1
NCEA3_or_4~S				.859	.839	.825	.811
Other_post~1				.933	.914	.901	.924
Post_grad~e				.759	.754	.78	.801
Other				.845	.81	.841	.808
Employed_P~e				.758*	.76*	.763*	.81
Looking_fo~k				1.83***	1.83***	1.91***	2.1***
Not_Lookin~k				.834	.837	.855	.923
Rented_pri~e				1.08	1.1	1.09	1.04
Rented_pub~c				.784	.795	.78	.789
Income_unk~n				1.45	1.45	1.42	1.37
Minus_or~ze				1.53*	1.49	1.48	1.46
Income_u~20k				1.75***	1.75***	1.7**	1.73**
Income_2~30k				1.77***	1.77***	1.74***	1.74***
Income_3~40k				1.24	1.24	1.23	1.24
Income_4~60k				1.42*	1.4*	1.38*	1.4*
Rodney					1.1	1.12	1.32
North_Shore					1.4	1.45	1.49
Waitakere					1.49*	1.44	1.45
Manukau					1.22	1.2	1.25
Hamilton					1.19	1.22	1.23
Tauranga					1.24	1.26	1.27
Porirua					.816	.815	.929
Lower_Hutt					.837	.873	.941
Wellington					.853	.92	.972
Christchurch					1.13	1.18	1.23
Dunedin					.795	.833	.914
Outside_12~s					1.04	1.07	1.2
Trust1						2.2***	1.93***
Trust2						2.32***	2.15***
Trust3						1.49**	1.45**
Club							1.57***
ComImp							1.18
ComFee1							1.81***
Inf1Counci1							1.18*
_cons	.102***	.0959***	.0375***	.0201***	.0185***	.0126***	.00625***
N	7513	7513	6752	6752	6752	6700	6700
df_m	2	6	11	29	41	44	48
chi2	46.1	52.3	342	394	418	459	549
r2_p	.00785	.00892	.0671	.0773	.0819	.0907	.108

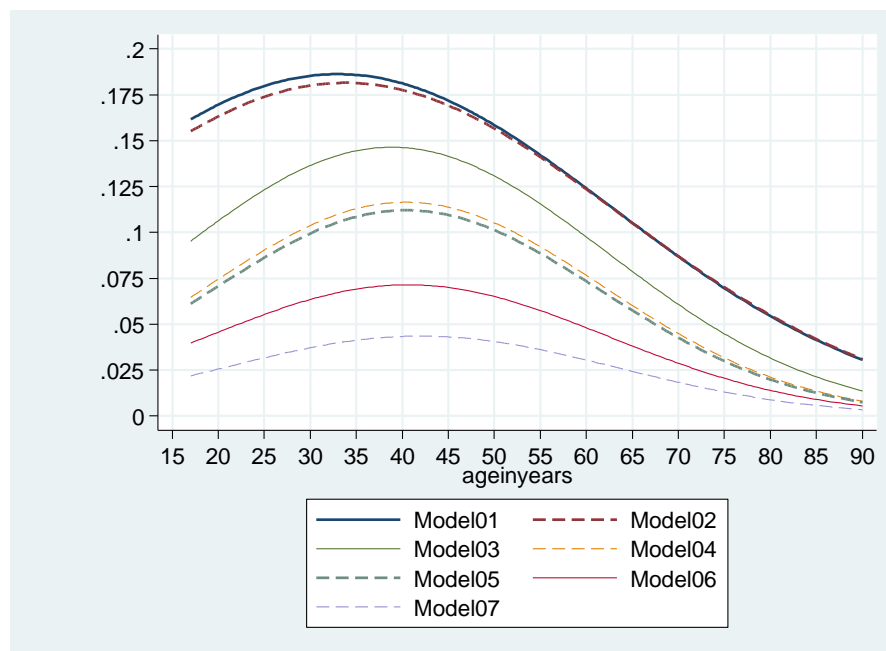
Legend: \* p<0.05; \*\* p<0.01; \*\*\* p<0.001

Source: Quality of Life Survey, 2006.

Several points emerge from the coefficients reported in Table 5.4. The first column labeled 'model01' captures just the impact of age (in its quadratic form) on the chance of not being Satisfied with Life at the moment. This is the same equation I introduced 1 in chapter four, and used to generate Figure 4.1 showing the way the predicted probabilities of Low Satisfaction change with age.

The noteworthy feature of the first two rows of Table 5.4 is the way the coefficients on the linear term age in years increase with successive controls while the age squared term remains almost constant. Since the age reaches its maximum at  $-b/2l$  (recall footnote 38 in chapter four) then if the coefficient 'l' increases over successive models and 'b' remains the same as both do here then the age at which the probability of Low Satisfaction reaches its maximum will increase as shown in Figure 5.3. The falling value of the constant produces the successively lower predicted probabilities of Low Satisfaction attributable to age.

**Figure 5.3 The impact of controls on the influence of age on the probability of Low Satisfaction in Life. New Zealand, 2006**



Source: Quality of Life Survey, 2006.

The primary message from Figure 5.3 showing the effect of age on the probability Low Satisfaction is that, regardless of the attributes of respondents, satisfaction diminishes with the onset of adulthood, reaches a peak between ages 30 and 40 years and declines thereafter. What the controls appear to do is to delay the age at



which peak dissatisfaction occurs. In other words some of the demographic as well as socio-economic features of people help account for low satisfaction among the young, including ethnicity, health, education, employment and incomes, and when their effect is 'removed' by adding them to the equation we find low satisfaction reaches a maximum at older ages.

So what effect do these other attributes actually have on the probability that someone will say they are not satisfied with their life? From the estimated coefficients reported in Table 5.4, I learn for example that that being female increases the chances of Low Satisfaction (the sign is positive) but not significantly; identifying as Māori, Pacific or Asian increases the probability of not being satisfied although significantly only in the case of Asian (where the odds are 1.3 times those of Europeans). Even after all the other controls are entered, as in model07, being Asian remains positively associated in a statistically significant way with Lower Satisfaction with Life.

One important dimension which is fairly immune to the effect of other variables is physical self reported health. Well documented for its influence on Satisfaction (Halpern, 2005, Marmot, 2005) it is quite clear in these results as well that those in Poor Health are much more likely to report Low Satisfaction. For example, being in Poor Health (relative to excellent Health increases the respondents chance of not being satisfied by over seven times, being in only Fair Health by 4.7 times and so on). I also learn how important partnership is in lowering, by almost half, the chances of low well-being (Winkelmann, 2002).

Education level has no clear effect on well-being which is a very common result in happiness studies but note how those with post-graduate qualifications carry the lowest coefficient indicating they at least are less likely to report low satisfaction, although these coefficients are not actually statistically significant (at  $z = 0.05$ ).

As I have also learned to expect, those who are unemployed and looking for work are more likely to express Low Satisfaction (Winkelmann, 2009a). In my data the

unemployed show a 1.8 to over two times the chance of Low Satisfaction relative to the full-time employed.

Rental tenure has no significant effect, although there is a suggestion that those in public rental are less likely to experience Low Satisfaction than those renting in the private sector. And, those with the highest incomes are also less likely to report Low Satisfaction, while those on the lowest incomes are over seven times more likely to do so.

Of particular interest is what is suggested by the coefficients on the place variables. As already observed from Table 5.1 and 5.2, if entered alone, people living in cities in the Auckland region show a greater likelihood of returning Low Satisfaction relative to areas outside the Auckland region (except Christchurch). In Table 5.4, these same signs also apply in the highly controlled model but with diminished relative influence. Respondents living in cities, which in Table 5.1 were more likely than Auckland City to house residents with Low Satisfaction, become in Table 5.4 more comparable to Auckland residents. Those whose dissatisfaction levels were lower than Auckland residents become more like Auckland City. This may be in part explained by the different demographic and socio-economic mix of these areas, as I now show.

### *7. The impact of place-specific social capital on well-being*

What is the role of place-specific social capital in raising or lowering subjective well-being? Two indicators are of particular interest in answering this question, the first is the widely used measure of trust.

The Quality of Life Survey presented respondents with four possible statements to do with how much they can trust people. As recorded in Table 5.3, most people are quite trusting, with over three quarters saying that people can usually be trusted. However, responses to this question vary noticeably across the population as well as by place: different urban communities, like countries (Helliwell and Wang, 2011), exhibit different levels of trust.

The close relationship between trust and subjective well-being has been well documented in the literature and it is no surprise to find that very low levels of trust are experienced at double the rate by those reporting Low Satisfaction with life (see model06, Table 5.5). Even those who trust only slightly less are half as likely to return a low level of satisfaction.

Residents in cities like Wellington and Dunedin report lower levels of dissatisfaction (and higher levels of satisfaction) partly because levels of social capital are higher in those two cities. One would expect, therefore, that if trust itself is entered into the equation that the city variables in the case of cities experiencing high trust, would diminish. The distance between Dunedin and Wellington place coefficients and Auckland would be expected to fall for example. This is exactly what happens: Wellington by 0.067 (0.92-0.0853) and Dunedin by 0.038 (0.833-0.795). Therefore, people's satisfaction levels in different places *are* affected by the prevailing trust levels.

By the same argument, those cities with lower levels of trust than Auckland City, e.g. Manukau, would have some of the trust components of that difference removed when the trust variable is entered, and its coefficient gap would also diminish: by 0.02 in this case (1.22 – 1.2). Similar results apply to Waitakere (0.05=1.49-1.44). While neither of these differences are statistically significant their coefficients change in the expected direction.

Similar results apply when I introduce measures of lack of community engagement. The presence of the lack of engagement in the equation is significantly related to higher odds of low satisfaction as the corresponding coefficients in Table 5.5 show (model07 in Table 5.4). Not belonging to a community group increases the odds of returning low satisfaction by one half a percent. Not actually feeling a sense of community raises the chance of reporting a low level of satisfaction even further.

In the results that parallel those of trust, the stronger sense of community in Wellington and Dunedin for example, means that entry of these characteristics independently reduces the Satisfaction gap between these two cities, and Auckland

(the City coefficient moves towards 1.0 in both cases). Similar effects take place in other cities in their expected direction, but only to the extent to which social capital in these cities is related to lower levels of Low Satisfaction.

This partial effect is what one would expect if one of the reasons these cities raise or lower the probability of Low Satisfaction is the absence of social capital. The presence of higher than average social capital – trusting others, being in a club, valuing and feeling a sense of community - is one the reasons places like Wellington City are associated with relatively *low* proportions of dissatisfied residents. If these social capital variables are themselves entered in addition to the presence of Wellington, then some of the Wellington effect can be expected to be absorbed and its negative effect on Low Satisfaction reduced. This is exactly what happens in model07 of Table 5.4.

On the other hand, in cases like Northshore, Waitakere and Manukau, where the proportion of residents with Low Satisfaction exceeds that of Auckland City, when social capital variables are controlled for, their positive rating in favour of Low Satisfaction relative to Auckland should rise. This too is also what happens.

The most valuable returns to this modeling exercise therefore lie in the last three columns of Table 5.4, in which changes in the City effect can be observed. First, the demographic and socio-economic characteristics of respondents are controlled, and then the social capital variables are entered. Careful inspection of the way the coefficients on the City dummies change across the columns suggests a great deal about the way the social relations in those cities influence subjective well-being. Similar and corroborating results apply when I change the dependent variable to anyone of the other dimensions: Low Happiness, Low Quality of Life, and High Stress. I now examine the sensitivity of young adults to the places in which they live.

## 8. Are young adults' well-being more sensitive to place?

Are young adults any more sensitive to place effects and to the quality of social relations that prevail in different cities? This question goes to the heart of my thesis that I advanced in chapter one, namely that the vulnerability of contemporary youth stems in part from their lower levels of social connection, particularly in large growing cities where performance identity plays such an important role in subjective well-being. Is there is indeed a geography to this sensitivity?

To test this possibility I apply the five-category model of dissatisfaction to young people only, those between the ages of 18 and 30, comprising a total of 1237 respondents. The results shown in Table 5.6 exclude the age squared term because of the restricted age range involved. The remaining variables in the model are the same as those applied in Table 5.4. As a comparison, I also apply the same full model to mature adults (ages 30+), as shown in Table 5.6.

**Table 5.5 The odds of young adults reporting Low Satisfaction with Life.  
New Zealand, 2006**

Ordered logistic regression				Number of obs = 1237	
				LR chi2(40) = 140.00	
				Prob > chi2 = 0.0000	
Log likelihood = -1293.2605				Pseudo R2 = 0.0513	
LowSats	Odds Ratio	Std. Err.	z	P> z	[95% Conf. Interval]
ageinyears	1.042124	.0203467	2.11	0.035	1.002998 1.082775
Female	.8826664	.1046715	-1.05	0.293	.6996105 1.113619
Māori	1.047137	.1647293	0.29	0.770	.7693029 1.42531
Pacific_Is~r	.9407237	.1678441	-0.34	0.732	.6631176 1.334546
Asian	1.571491	.2902173	2.45	0.014	1.094246 2.256881
Poor_Health	8.379165	3.428643	5.20	0.000	3.757512 18.68535
Fair_Health	3.601737	.9133791	5.05	0.000	2.19105 5.920681
Good_Health	3.112128	.5183196	6.82	0.000	2.245387 4.313439
Very_Good_~h	1.595002	.2353471	3.16	0.002	1.194439 2.129896
Partner	.7689017	.1093424	-1.85	0.065	.5818686 1.016054
Less_than~80	1.130319	.2910086	0.48	0.634	.682422 1.872185
School_Cer~1	1.465282	.3588803	1.56	0.119	.906657 2.368097
NCEA2_or_HSC	1.09462	.2277399	0.43	0.664	.7280608 1.645732
NCEA3_or_4~5	.8071623	.1727866	-1.00	0.317	.5305752 1.227933
Other_post~1	1.067845	.2047019	0.34	0.732	.7333915 1.554821
Post_grad_~e	.7309102	.2663981	-0.86	0.390	.3577856 1.493156
other	.8442848	.2904792	-0.49	0.623	.4301601 1.657097
Employed_P~e	.9126496	.1612435	-0.52	0.605	.6455307 1.290301
Looking_Fo~k	1.365481	.3308079	1.29	0.199	.8493168 2.19534
Not_Lookin~k	.8547889	.1622978	-0.83	0.409	.5891722 1.240154
Rented_pri~e	1.088539	.1560595	0.59	0.554	.821884 1.441708
Rented_pub~c	.6462866	.1708357	-1.65	0.099	.3849669 1.084993
Income_unk~n	1.258636	.4456152	0.65	0.516	.6288329 2.519212
Minus_or_z~e	1.495304	.5563161	1.08	0.280	.7211847 3.100361
Income_u~20k	1.243124	.41551	0.65	0.515	.6456592 2.393457
Income_2~30k	1.257493	.4192955	0.69	0.492	.654158 2.417287
Income_3~40k	.903452	.295508	-0.31	0.756	.4758691 1.715231
Income_4~60k	1.096953	.3530423	0.29	0.774	.5837652 2.061285
Rodney	.4198451	.1597887	-2.28	0.023	.1991272 .8852125
North_Shore	1.077649	.2936825	0.27	0.784	.6316934 1.838434
Waitakere	1.007694	.2796594	0.03	0.978	.5849245 1.736032
Manukau	.5665003	.1452429	-2.22	0.027	.3427392 .9363464
Hamilton	.7708282	.2194002	-0.91	0.360	.441246 1.346587
Tauranga	.5719105	.1788095	-1.79	0.074	.3098827 1.055501

Source: Quality of Life Survey, 2006.

**Table 5.6 The odds of mature adults reporting Low Satisfaction with Life.  
New Zealand, 2006**

Source: Quality of Life Survey, 2006

While being female had no statistically significant influence in diminishing Low Satisfaction among the young, it clearly did so in the case of the older adults. The influence of identifying with Māori had little apparent influence among the young, where Māori are a much larger proportion of the population, (18%>13%, from Table 5.3) and being Māori reduces the chances of low satisfaction among the over 30s. Pacific backgrounds showed no such difference, but being Asian did. And it was the young Asian group in particular whose subjective well-being was lower than that of Europeans, being one and a half times more likely to experience Low Satisfaction. The comparative reaction among Asians over 30 was considerably less significant.

The impact of self assessed health on the odds of dissatisfaction were similar in both age groups although poor health lowered well-being more obviously in the older population. On the other hand the presence of a partner had a more positive effect among the over 30s where 73 percent were partnered, than among the young where only 30 percent were partnered.

Perhaps not surprisingly, education levels had very little effect on the chances of dissatisfaction among the young, but in later years, among the more mature, such differences began to be felt more keenly. Similar results also held with respect to employment status and housing tenure. Renting (on the private market) while young where it is more likely (21%) had far smaller a negative influence on Satisfaction than renting did as a member of a mature age group, where it is less likely (11 %).

Young adults have a far smaller percentage of their number in higher income brackets and the influence of income on Satisfaction is correspondingly weaker than in the case of those aged 30+ where it clearly raises Satisfaction levels.

Much of the above results are intuitively consistent, yet an unexpected observation was the impact of place on the under and over 30s. Results from the last two tables

suggest that sensitivity to place is much higher among the younger than the older adults. But surprisingly, although the odds ratios are higher, the young are sensitive to the *same* cities as the more mature adults.

Young adults are clearly more sensitive on average to location, with those in several cities outside Auckland showing noticeably lower levels of Low Satisfaction. Young adults in Manukau and Porirua – both with large Māori and Pacific youth populations – show far less dissatisfaction than youth living in Auckland City, Northshore and Waitakere for example. Showing statistically insignificant differences compared to Auckland City were Hamilton, Lower Hutt, and Christchurch. Young adults in Wellington and Dunedin (and Rodney) display up to half the level of dissatisfaction with life than those living in Auckland City – (and this is after controlling for the suite of demographic and socioeconomic variables across both the under and over 30 years old samples).

By contrast, residents aged *over* 30 across New Zealand showed far weaker responses to where they lived. Not only did the coefficient of each of the city variables suggest less variation in dissatisfaction with life compared to Auckland but none reached the usual criteria of statistical significance, the closest being Wellington City.

In summary, not only are young adults most likely to experience a growth in dissatisfaction as they age (as documented in chapter four) but their level of dissatisfaction was considerably more responsive to *where* they lived. The marked reduction in Satisfaction of young Māori and Pacific adults relative to the Auckland base was quite telling, suggesting the possibility of stronger social support and community bonds in those centres, notwithstanding the lower income and higher unemployment levels in those centres. The need for closer attention to these inter-place differences is one of the messages that comes out of this chapter along with the need to further test the importance of performance identify given youth's greater emotional sensitivity to place.



## 9. *Conclusions*

The aim of this fifth chapter has been to extend the idea of performance identity to account for the observed positive correlation between suicide and rapidly growing, highly urbanized areas, a correlation featuring in the literature since the nineteenth century. I have argued that migration is highly selective and, therefore, different places end up with different types of people. Certain places, as the geography of suicide has revealed, reflect the attraction of certain places to people more prone to suicide than others. It is this argument rather than one based simply on neighbourhood effects, which has motivated my analysis.

Drawing on the high correlation between suicide and low subjective well-being as documented in chapter two, I expected to find Low Satisfaction more closely associated with rapid urban growth, which in the New Zealand context is a feature primarily of the Auckland region.

Using data from the Quality of Life Survey, I was able to show not only that there are statistically significant differences in the chance of dissatisfaction with life in residents of different New Zealand cities, but that the largest and most enduring was the lower levels of well-being present among residents of the Auckland region. Particularly interesting in light of the negative relationship between dissatisfaction and age documented in chapter four is the emergent observation that young adults appear most sensitive to differences between cities. However, the blanket Auckland vs. The Rest distribution was insufficient as a characterization. While this still prevails, the buffers provided by the strong Māori and Pacific communities in Manukau and Porirua were also important. These results may reflect the fact that young adults are more constrained to location through limited resources and dependence on the family, and are therefore less capable of acting on their dissatisfaction by moving to alternative places.

## Chapter 6

### Conclusion

By using the Quality of Life Surveys I have shown that young adults in New Zealand report lower levels of life satisfaction than the older population. This is a major departure from the distribution of well-being observed in the decades following the Second World War. At the same time, findings from the World Values Survey show that these low rates of youth well-being found in New Zealand are not statistically different from young adults in economically comparable countries. Contemporary youth in the UK, Australia, Canada and the USA all show much lower levels of subjective well-being than their parents' generation – a feature which is reflected in their higher suicide rates. At the same time, the question remains: if youth around the world report the same level of low life dissatisfaction, why are youth in New Zealand taking their lives more than other places (as reported in the international suicide statistics)?

The extent to which young people believe they are valued by their community is a well-documented theme in suicide research and I have argued from the life stories of Tom, Mike and Kevin that suicide can be thought of as a social disease related to isolation, stress, and uncertainty rather than inborn traits of mental illness. In other words, social conditions in the places where young people live matters a great deal; they affect both well-being and the chances that people will take their own lives.

Suicide and subjective well-being measures are closely linked, as several international studies have demonstrated. After reviewing the literature on subjective well-being, youth and suicide, I explored the differences between age, sex, and Māori/non-Māori suicide rates in New Zealand. Similar to trends overseas, the age-specific rates of suicide have nearly tripled among youth in the period between the 1970s and late 1990s. Furthermore, there are over twice as many youth parasuicides for every completed youth suicide. I have drawn on the Ministry of

Health database to examine how Māori are much more likely than non-Māori to commit suicide, and show that this difference is considerably more marked among young adults. I showed that youth female suicide is on the rise, a feature of suicide rates which also holds internationally, and I demonstrated the greater rise in self-harm rates among young female Māori.

In order to learn more about both the demographic, social and geographical conditions that constitute risk factors for suicide I have made use of the fact that most suicides are preceded by low levels of satisfaction with life. This has opened up the possibility of using responses to questions on subjective well-being as a way of tapping into the underlying conditions – social and geographic – which have potential for understanding patterns of suicide.

A central feature of my argument is what I call the ‘generational switch’ in suicide rates, the fact that in the space of only two generations, New Zealand (along with many of OECD countries) experienced a rise in youth rates of suicide at the same time as the rates of suicide were falling among those 65+. I then went on to show that the reversal of fortunes, which underpin the switch in suicide rates, could also be found in differences in subjective well-being across the present age groups. My 2006 cross-sectional data show that levels of satisfaction with life, happiness and quality of life, while initially relatively high among teenagers, fall as they enter adulthood, reach a low point among adults in their 30s and early 40s, and then rise again slowly as they age.

A fundamental aspect of youth suicide also reflected in these well-being figures is the conflicting evidence that although life is better than 50 years ago in an objective or material sense, subjectively, young people report lower levels of happiness, life satisfaction, and quality of life. Possible explanations for this great contradiction include the fact that that youth and young adults, particularly in lower socioeconomic groups entering the work place for the first time have found it much more difficult to find jobs.

Of particular interest to me as a human geographer is the possibility that exposure to the social correlates of suicide and low well-being varies by place. Those communities characterised by relatively low levels of trust and community connectedness would be expected to be accompanied by lower levels of life satisfaction, particularly in the case of young adults. Not only did I find from the Quality of Life Survey, 2006 that there *were* statistically significant differences in the chance of dissatisfaction across New Zealand cities, but that the largest and most enduring was the lower levels of well-being found among residents of the Auckland region. This result is consistent with Girard's notion of performance identity and the way in which decisions to live in large metropolitan centres to increase success can be associated with a greater fear of failure.

This led me to investigate an urban selection effect on youth suicides and low subjective well-being, and why, since WWII, youth have become more vulnerable to suicide than older populations. Alternatively, acknowledging that suicide is connected to notions of modernization, is there something deeper involved, perhaps a growing sense of unease as to how we become contributing adults, and what it actually means to progress individually?

### *Limitations*

Following the notion that modernization leads to individualism, and in turn individualism leads to suicide, I have argued that the reasons for low levels of life satisfaction may be also be connected to pressures of conforming to what are perceived as adult behaviours in a climate that is difficult to achieve this goal. I explored the literature on subjective well-being and suicide as a backdrop to the social environment of a place, and possible explanations for why life might be different for younger cohorts. Longitudinal studies have demonstrated this link overseas. However, I was unable to establish an empirical connection between life satisfaction and suicide in New Zealand due to the lack of databases linking national mortality information to Quality of Life Surveys.

While I found that suicide attempts peak in ages 15-19, and completed suicides peak in the mid 20s, chapter four showed that low life satisfaction is most likely to peak among people in their 30s. The discrepancy between these observations lends itself two potential explanations. First, the high number of youth suicide and attempted suicide in the 1980s and 1990s may be a reflection of the low life satisfaction reported by people now in their 30s. If New Zealand had collected subjective well-being measurements throughout the second half as the twentieth century then we could properly test whether or not life became collectively less happy and satisfactory (and concentrated in the cities) for young people in the last quarter century.

The second possibility is that responsibility and the dependency of others upon your actions actually insulates people from suicide, this being one of the main arguments as to why suicide rates among mothers is so low. Raising young families and the growing dependency this implies among those in their 30s, both men and women, could be one of the reasons why, despite lifetime lows in life satisfaction, suicides do not also peak at this age.

The use of responses to subjective well-being questions as a guide to the social conditions which are likely to be correlated with suicide has only a few precedents in the literature, and the study of *subjective* well-being in geography is still only in its infancy. Therefore, many of my findings must be regarded as tentative. But along with the considerable volume of writing on youth and well-being in New Zealand, my work raises questions about efforts currently being made to address what is still a matter of considerable concern despite recent falls in suicide rates.

### *Summary*

*"How well a society cares for its weak and vulnerable is a measure of how civilised it is;  
a society that fails to cherish its youth, fails"*

*- Dr. Richard Eckersley*

Young people have been overrepresented in suicide rates for nearly 30 years, and have shown less satisfaction in life for the past decade than older populations. It may be that suicide in New Zealand is the byproduct of too few trusted institutions and individuals in a young person's life. This includes mental health resources, employers, community gatekeepers, family and friends, governments as well as universities. Whatever the case, as a generation of young people more vulnerable to suicide we must sustain and protect what's most important – each other.

# Appendices

## ***Appendix 1. Current state of children's health and youth mental health***

Although youth suicide (15-24 years) in New Zealand has decreased from 120 deaths in 1999 to 94 in 2007, it is of great concern that young people are still committing suicide at a higher rate than older populations. Taking the higher rate of youth suicide into consideration the state reports from the UN show that New Zealand's children health over the past decade has been consistently poor. Among 32 OECD countries New Zealand is ranked 21<sup>st</sup> for infant mortality rates, 20<sup>th</sup> for measles immunizations rates, 20<sup>th</sup> for the percentage of children living in poor households, 17<sup>th</sup> for children in overcrowded houses, 29<sup>th</sup> among all 32 OECD countries for injury deaths of one-to four year olds. Also, rates of whooping cough and pneumonia are 5-10 times greater in New Zealand than in the UK or US. Perhaps of greatest significance the rate of child-maltreatment death which is *four* to *six* times higher in New Zealand than other OECD countries (Easton, August 21, 2010).

In terms of youth health, reports from the New Zealand Youth 2007 survey state that far more females than males ages 12-18 are hurting themselves deliberately (26.0% females to 6.1% males), and about one in twenty youths (4.7% of the total sample population) reported that they had tried to kill themselves over the past 12 months.

## ***Appendix 2. Suicide prevention in New Zealand***

Although genetics are an important determinant in suicidal behaviour, neurobiology and behaviour genetics do not explain the variation in suicide rates between countries and subpopulations within countries. This is why suicide prevention cannot be left entirely to clinical interventions, for although pharmacological therapies have all demonstrated efficacy in term of treating the disorders in question, they have not been found to prevent suicide (Collings and Beautrais, 2005).

For example, there is little evidence that pharmacological treatments with mood stabilizing and anti-convulsant reduce suicidality in patients with mood-disorders (Collings and Beautrais, 2005). Furthermore, research shows that anti-anxiety agents do not have any evident effect on reducing suicide or suicide attempts in patients with depression and anxiety. This is because medication is intended to help individuals manage and prioritize their responsibilities while suffering from depression and anxiety.

For the above reasons social capital is also being used to improve the effectiveness of clinical care. Reports from the 2004 World Health Organization conference on suicide recently acknowledged the helpful links of social capital, and the possible effects of societal characteristics on mental health (WHO 2004a). As a result population-based programs that address depression and alcohol abuse, as well as programs that educate the greater community on mental well-being are currently being researched worldwide.

For example, one study from USA found that continual contact with the same therapist after being discharged was associated with higher rates of outpatient appointments, and higher rates of taking medication, which is evidence that high frequency and quality of contact with therapist increases the chances of taking medications consistently (Hawton et al., 2000).



### ***Appendix 3. Suicide postvention in New Zealand***

Research clearly states that those who have attempted suicide, or have experienced a suicide within the family are at greater risk of suicide (Council, 1997, APA, 2000, Fine, 1997). Therefore postvention<sup>49</sup> support was created to help those directly affected by the suicide or suicide attempt of a loved one (Ministry of Health, 2009). This support includes information about suicide and mental health problems, as well as social and emotional support from the community.

Researchers consistently cite community support and internally focused support as the most important aspects in postvention approaches (Dunne, 1992), and have been found to reduce overall suicide rates. For example Danish suicide rates fell by more than one third between 1980 and 2000, during a period in which there were many experiments and changes in the analysis and treatment of depression, including an increase in community awareness programs (Rihmer et al., 1998).

The background to suicide postvention in New Zealand is directly related to the seminal publishing of, *In Our Hands*, and *Kia Piki Te Ora O Te Taitamariki: Strengthening Youth Well-being* in 1998, compiled by Dr. Annette Beautrais and Barry Taylor, who outlined the need for a youth suicide prevention program specific to New Zealand (Ministry of Youth Affairs, 1998, Ministry of Youth Affairs, 1998). From these reviews 15 community action initiatives were created by the Ministry of Youth in order to help combat the effects of cannabis and other illicit drugs, which were considered at the time the greatest contributing factors of youth suicide (Anderton, 2003).

As research from this thesis shows, youth suicide rates reduced in the early 2000s. However, the suicide survivors of the peak in the late 1980 and 1990 spoke out against the lack care provided by the government. And in response to the demands of those affected by suicide the Ministry of Youth commissioned more suicide research in 2003, this time with a focus on postvention. Dr. Annette Beautrais was

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<sup>49</sup> Term expressing efforts to reduce suicide rates in an area where a suicide has recently occurred.

again, asked to compile the evidence for the revision and creation of a new postvention strategy that would help suicide survivors as well as the suicidal. This research was also intended to assess the types of support services and resources needed by families, whānau and significant others bereaved by suicide.

One of the most important aspects of this new postvention strategy included a two-phase approach in the research and distribution of, *Guidelines for Assessment and Management of People at Risk of Suicide in Emergency Departments and Mental Health Settings*. This guideline was meant to be the background information for the progressive budget announcements in relation to youth suicide and the national drug policy.

Phase one of the implementation determined the extent to which the strategy of the previous prevention frameworks, *In Our Hands*, and *Kia Piki Te Ora O Te Taitamariki*, achieved their primary aims through qualitative work, including interviews and hui carried out with program providers, as well as those directly working with youth at risk of suicide. Phase two was meant to critique community action initiatives created to address issues of mental illness and addiction. However, both phases have experienced severe funding cuts for reasons mainly due to budget constraints and of lack of public interest.

At best the postvention support services provided by the government of New Zealand are experimental. In 2007 the Ministry of Health created and contracted Victim Support and Clinical Advisory Services Aotearoa (CASA) to provide postvention suicide services. After being 'evaluated' in 2008, suicide postvention was then reconfigured into three parts: 1. The Initial Response Service, which provides immediate emotional support and information for those bereaved by suicide 2. The Community Postvention Response Service, which provides a national support through CASA for communities where there are indications or actual cases of suicide clusters, and lastly, 3. The Specialist Counseling Service,<sup>50</sup> which is

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<sup>50</sup> I was waitlisted for a year in Wellington area for any free suicide bereavement group counseling (and it took four phone calls to actually make it to the waitlist).

considered to be a professional network of specialist counseling for suicide survivors.

These services are only available in Canterbury, Nelson, Marlborough, Hawkes Bay, Tairāwhiti, Counties Manukau, Waitamata, and Auckland district health board. In order to get a hold of these programs one must contact, Clinical Advisory Service Aotearoa ([www.casa.org.nz](http://www.casa.org.nz)) or Victim Support ([www.victimsupport.org.nz](http://www.victimsupport.org.nz)). Furthermore, suicide survivors outside of the seven areas listed above will find it more difficult to contact bereavement support, and must travel to one of these regions for (non-religious) group counseling.

As if it were not difficult enough to find help, financial support has recently cut for suicide survivors. As of 2009 families of those who committed suicide or acts of self-harm are no longer eligible for compensation from ACC. Furthermore, compensation will also be automatically withdrawn for those who are convicted of committing a serious crime and imprisoned (Chapman, 2009).

In my personal experience as a suicide survivor looking for help after a my Father's suicide I have found that New Zealand does not have a strong collective response to suicide survivors in terms of support groups and guidance. There seems to be nothing in terms of free in-person counseling available to young adults in the Wellington area, outside of university counselors and religious groups. All resources<sup>51</sup> for the ages 15-24 years have shifted to on-line help, phone counseling, and text counseling which rely heavily on volunteer service.

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<sup>51</sup> Youthline: 0800 376 633, Lifeline: 0800 211 211, Samaritans: 0800 726 666, Victim Support: 0800 842 846, Skylight: 0800 299 100, [www.thelowdown.com](http://www.thelowdown.com) (text counseling available here).

#### ***Appendix 4. Modeling correlates of subjective well-being<sup>52</sup>***

Categorical data analysis is commonly used over a range of social sciences for the analysis of survey responses in which respondents are asked select one category out of several in order to express the level or degree to which they agreed or disagreed with a particular statement. The statement I draw on from the 2006 Quality of Life survey asks respondents to choose one out of the five categories listed their response to the question:

“Taking everything into account, how satisfied or dissatisfied are you with your life in general these days?

Response options are: Very Dissatisfied, Dissatisfied, Neither satisfied nor dissatisfied, Satisfied or Very Satisfied”

One could simply tabulate these responses but that would not take us very far. Most researchers want to understand *how* the choice of any one of these categories is related to attributes of the respondent e.g. their age, gender and income etc, as well as the particular context in which they are making such a decision e.g. the place they live in or set of social relations they are embedded in. In other words they want to relate responses to a set of independent variables most of which will also be captured by the survey itself.

Human geographers were introduced to the analysis of categorical data over twenty years ago in a very comprehensive text (Wrigley, 1985). Ironically the dissemination of these very flexible methods came at a point in the methodological evolution of the discipline when there was a widespread reaction against the application of quantitative methods and as a result most contemporary geographers are not trained in either their use or in the interpretation of their applications. This is unfortunate because these methods are the main stay of the current wave of analytical work on subjective well-being and human geography remains quite marginalized from this wave of international research as a result.

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<sup>52</sup> I wish to acknowledge the considerable assistance I received from my supervisor in writing this technical appendix.

Fortunately, a new generation of human geographers are now active in adding to a literature which is heavily populated by their colleagues in economics (notably those who write on the economics of happiness). An example of this recent geographic work is by Lu whose account I draw on in my description below (Lu, 1999). He applies his application to the study of post-move satisfaction (Lu, 2002).

Several statistical models have been proposed to deal with ordered dependent variables like subjective well-being (Hosmer and Lemeshow, 1989). I have adopted the prevailing practice in the economics of happiness literature of focusing on the significance and magnitude of the fitted coefficients (McKelvey and Zovoina, 1975).

For example, I define subjective well-being  $SWB_i^{k*}$ , as the *latent* or unobserved continuous variable from responses to a question on well-being experienced along dimension  $k$  (e.g. satisfaction with life, happiness or quality of life), by sampled individual  $i$ . The *observed* dimension of well-being is defined as  $SWB_i^k$  and  $l_t$  is an estimated threshold (increasing in  $t$ ) which governs the relationship between  $SWB_i^{k*}$  and  $SWB_i^k$ . These thresholds are known as cut points and they link the observed categorical dimensions to the latent dimensions. In this way the ordinal response variable may be viewed as the discrete realization of an underlying, unobservable (latent) continuous random variable.

The observable categorical variable,  $SWB_i^k$  in my case, is assumed to arise from  $SWB_i^{k*}$  as follows:  $SWB_i^k = a_{t-1} \leq SWB_i^{k*} \leq a_t$ ,  $t=1,2,...,T$ , where the  $a$ 's are unknown points (category boundaries or cut points) in the distribution of  $SWB_i^{k*}$ , with  $a = -\infty$  and  $a = \infty$ . In my case the subjective well-being dependent variable has five categories ranging from Very Satisfied to Very Dissatisfied, so the thresholds number up to five,  $T=5$  (in the Low to High Satisfaction ordering I use in the text).

To elaborate, suppose that the probability that one of my sampled individuals reports a certain level of well-being is  $P = P(SWB_i^k = i/\mathbf{x})$ . A common model that can be used to analyse ordinal responses is the proportional odds model, which involves fitting a set of equations for cumulative distribution probabilities of the response categories, that is,

$$\frac{P(SWB^{k_i} \leq j / \mathbf{x})}{P(SWB^{k_i} > j / \mathbf{x})} = \exp(a_j - b\mathbf{x}), \dots j = 1, \dots, 5,$$

Where  $P(SWB^{k_i} \leq j / \mathbf{x})$  denotes the conditional probability of having at most  $j$  level of satisfaction with life given a vector of covariates (such as age and gender...)  $\mathbf{x}$ ,  $P(SWB^{k_i} > j / \mathbf{x})$  is the probability of being satisfied above the level  $j$ ,  $b$  is a column vector of coefficients and the unknown parameters (the cut points)  $a$  satisfy  $-\infty = a_1 < a_2 < a_3 < a_4 < a_5 = +\infty$ .

In the above model, the regression coefficient  $b_r$  for the  $r^{\text{th}}$  explanatory variable  $X_r$ , is the log-odds ratio for the  $y$  by  $X_r$  association, everything else being the same. The model assumes that the relationship between  $x$  and the dichotomized  $SWB^{k_i}$  does *not* depend on the category  $j$ , the point at which the dichotomisation in the proportional odds model is made, which implies that  $b$  for the  $r^{\text{th}}$  explanatory variable  $X_r$  does not depend on  $j$ .

As Lu explains and Vani Borooah elaborates (Borooah, 2001), this is called the proportional odds model because of this assumption of identical odds ratios across the categories (McCullagh, 1980). The proportional odds assumption in my case means that the four cumulative odds ratios calculated from the five-level ordinal measure of subjective well-being are identical.

This assumption can be tested using the score test however most reported analyses do not take this step and they simply report one set of coefficients (on the assumption that the proportional odds assumption holds). I too have adopted this practice. However in retrospect there could be cases where failure to undertake this test could lead to misleading interpretation and were I to redo my analysis I would apply the test even if meant having to revert to the multinomial model (i.e. one in which ordering is not assumed). The cost in doing so is a more complicated model, one in which there are different coefficients for each comparison between the different levels of satisfaction.

Borooah gives the following useful example of the assumption of parallel slopes (proportional odds). The assumption of parallel slopes in essence,

“means that if there is a variable which affects the likelihood of a person being in the ordered categories (e.g. diet on health status) then it is assumed that the coefficients linking the variable value to the different outcomes will be the same across all the outcomes (a given diet will affect the likelihood of a person being in excellent health exactly as it will affect the likelihood of him or her being in poor health). If this assumption is invalid, so that the slope coefficients associated with a particular variable are different across the different outcomes (a given diet will affect the likelihood of a person being in excellent health differently than it will affect the likelihood of him or being in poor health), then the methods of ordered logit...are no longer appropriate and the model ought to be estimated using the methods of multinomial logit” (Borooah, 2001; p. 6).

To apply the same reasoning to the case of Low Satisfaction (see my chapter 5), by using the ordered logit model I am implicitly assuming that a persons age (the independent variable of greatest interest) for example affects the likelihood of a person being Very Satisfied exactly as it will affect the likelihood of him or her being Very Dissatisfied.

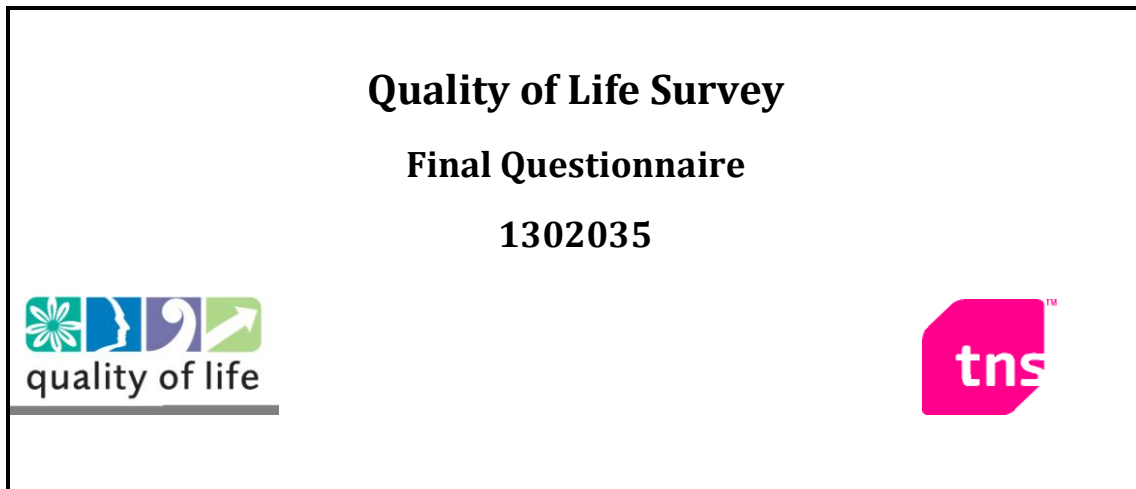
Until this assumption is tested explicitly (as it can be) I am unable to say with confidence that the proportional odds assumption holds. This will have to be a step for any future analysis however. What I can say at this point is that the vast majority of results I obtain are very similar to those estimated by others on other data sets who make the same assumptions. The wider question of course is that since so few authors actually present explicit tests of the parallel slopes assumption it just possible that all results are deficient in this respect. This is a big call however, but one I would like to test in any post-thesis work.

***Appendix 5. New Zealand degrees of deprivation 2001***

Deprivation Type	Description
Income	Aged 18-59 years receiving a mean-tested benefit
Employment	Aged 18-59 years unemployment
Income threshold	Living in households with equivalised* income
Communication	With no access to a telephone
Transport	With no access to car
Support	Aged less than 60 years living in a single parent family
Qualifications	Ages 18-59 years without any qualifications
Living Space	Living in households above equivalised* bedroom
Owned Home	Not living in own home



**Appendix 6. 2006 Quality of Life Survey**



Good morning/afternoon/evening. My name is ..... from TNS, an independent research company.

We're doing a nationwide survey to find out what people think of their city, healthcare, community, crime and safety and their local council. This information will be used by *[insert city name]* Council and the Ministry of Social Development to aid their decision making on issues that are important to New Zealanders.

TNS is offering everyone who takes part in the research the chance to win one of three cash prizes, one of \$2,000 worth of travel vouchers, and two travel vouchers of \$1,000 in appreciation for your time.

**READ TO EVERYONE:**

We recently sent your household a letter outlining the purpose of the survey.

To ensure we speak with a range of people, I would like to speak to the person living in the household aged 15 and over with the next birthday please.

**IF NOT AVAILABLE, ASK IF YOU CAN ARRANGE A CALL BACK TIME.**

**REPEAT INTRO IF INITIAL PERSON SPOKEN TO IS DOES NOT HAVE THE NEXT BIRTHDAY.**

It would be great if you could take part as your views are significant.

This survey will take up to 20 minutes. During the course of this interview, my supervisor may listen in to check the quality of my interviewing. However, your answers are totally confidential and will be combined with the responses from other people before being reported. There will be no way that your answers will be traced back to you personally.

**IF AGREE TO PARTICIPATE CONTINUE, IF DO NOT AGREE ARRANGE A CALL BACK OR THANK AND CLOSE IF CALL BACK IS NOT ACCEPTED.**

**Screener – Ethnicity and Age**

**S1** Can you please tell me which ethnic group or groups you belong to?

**DO NOT READ OUT. POSSIBLE MULTIPLE RESPONSE. FOR CODES 98 AND 99 SINGLE RESPONSE ONLY.**

New Zealand European	01
Māori	02
Samoan	03
Cook Island Māori	04
Tongan	05
Niuean	06
Chinese	07
Indian	08
Other Asian e.g. Malaysian, Japanese, Korean, Sri Lankan and Fijian Indian etc (please specify) <b>(DO NOT READ)</b>	09
Other Pacific e.g. Tokelauan, Fijian etc (please specify) <b>(DO NOT READ)</b>	10
Other European e.g. German, American, British, South African and New Zealander etc (please specify) <b>(DO NOT READ)</b>	11
Other e.g. Iraqi, Chilean and Somali etc (please specify) <b>(DO NOT READ)</b>	97
Don't know	99

Refused	98
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**QUOTAS EXIST FOR:**

**CODE 02 (MĀORI) n=1000**

**CODES 03, 04, 05, 06 AND 10 (PACIFIC ISLAND) n=500**

**CODES 07, 08, 09 n=500**

**S2** What is your date of birth?

**IF NEEDED:** We need this information so that we can correctly assess your age at the time when we analyse the results.

____/____/19____ (DD/MM/YYYY)		Go to S3
Refused <b>(DO NOT READ OUT)</b>	98	Go to S2a

**DATES SHOULD BE PRE-1992 OTHERWISE NOT ELIGIBLE.**

**S2a** Would you be happy to provide me with the year in which you were born?

00/00/19____		Go to S3
Refused <b>(DO NOT READ OUT)</b>	98	Go to S2b

**S2b** Can you please confirm that you are aged 15 years or over.

Yes	01	Go to S3
No	02	Screenout

**S3** INTERVIEWER RECORD GENDER. DO NOT READ OUT.

Male	01
Female	02

## LOCATION

### ASK ALL

**Q0A.** Can you please tell me where in New Zealand do you live?

**INTERVIEWER PROBE - FOR AUCKLAND, CLARIFY:** Is that central Auckland, North Shore, Waitakere or Manukau?

**INTERVIEWER PROBE - FOR WELLINGTON, CLARIFY:** Is that central Wellington, Lower Hutt or Porirua?

**SINGLE RESPONSE. DO NOT READ OUT.**

Rodney	01	Go to Q1e
North Shore	02	
Waitakere	03	
Auckland	04	
Manukau	05	
Hamilton	06	
Tauranga	07	
Porirua	08	
Lower Hutt	09	
Wellington	10	
Christchurch (including Banks Peninsula)	11	
Dunedin	12	

Outside of 12 cities	13	Go to 1a
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**QUESTIONS Q1A, Q1B AND Q1C SHOULD ONLY BE ASKED OF PEOPLE OUTSIDE THE 12 CITIES.**

**Q1a.** And which region do you live in?

**SINGLE RESPONSE.**

Northland	01
Auckland	02
Waikato	03
Bay of Plenty	04
Gisborne	05
Hawke's Bay	06
Taranaki	07
Manawatu-Wanganui	08
Wellington	09
Marlborough	10
Nelson	11
Tasman	12
West Coast	13
Canterbury	14
Otago	15
Southland	16
Other <b>(PLEASE SPECIFY)</b>	97

Don't know	99
Refused	98

**Q1b.** And how many years have you lived there?

**READ OUT IF NECESSARY EXCEPT CODES 9. SINGLE RESPONSE.**

Less than 1 year	1
1 year to just under 2 years	2
2 years to just under 5 years	3
Five years to just under 10 years	4
10 years or more	5
Don't know <b>(DO NOT READ)</b>	9

**Q1c.** Which of the following best describes where you live?

**SINGLE RESPONSE. READ OUT STATEMENTS EXCEPT CODES 98 AND 99.**

Mainly urban	01
Mainly rural	02
Other (please specify)	97
Don't know <b>(DO NOT READ OUT)</b>	99
Refused <b>(DO NOT READ OUT)</b>	98

**QUESTION Q1E SHOULD ONLY BE ASKED OF 12 CITIES RESIDENTS.**

**Q1e.** And how many years have you lived in this city?

**FOR AUCKLAND, SAY:** By Auckland City I mean central Auckland not North Shore,

Waitakere or Manukau.

**FOR WELLINGTON, SAY:** By Wellington City I mean central Wellington not Hutt or Porirua.

**READ OUT IF NECESSARY EXCEPT DO NOT READ CODE 09. SINGLE RESPONSE.**

Less than 1 year	1
1 year to just under 2 years	2
2 years to just under 5 years	3
Five years to just under 10 years	4
10 years or more	5
Don't know <b>(DO NOT READ)</b>	9

**QUESTION Q2 SHOULD ONLY BE ASKED OF 12 CITIES RESIDENTS WHO ANSWERED CODES 02, 03, 04, 05, 08, 09 AND 10 FROM Q0A.**

**Q2.** Which area do you regard as your 'city centre'?

**DO NOT READ OUT. SINGLE RESPONSE.**

Albany	1
Botany Downs	2
Helensville	3
Highbury/Birkenhead village	4
Howick	5
Kumeu/Huapai village	6
Manukau City Centre	7
North City	8
Orewa	9
Queensgate / Westfield	10

Queen Street/Downtown Auckland	11
Silverdale	12
Takapuna	13
Wellington CBD/Lambton Quay/Cuba Street	14
West City/Henderson	15
Westgate	16
Whangaparaoa/Pacific Plaza	17
Other <b>(PLEASE SPECIFY)</b>	97

## BUILT ENVIRONMENT

- Q3.** On a scale of one to five where one is strongly disagree and five is strongly agree rate your agreement with the statement 'I feel a sense of pride in the way **(INSERT CITY FROM OA / FOR NON CITY SAMPLE, INSERT 'YOUR LOCAL AREA')** looks and feels'?

**FOR AUCKLAND, SAY:** By Auckland city I mean central Auckland not North Shore, Waitakere or Manukau.

**FOR WELLINGTON, SAY:** By Wellington city I mean central Wellington not Hutt or Porirua.

### SINGLE RESPONSE.

Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5
Don't know	9



**Q4.** What is your main reason for saying this?

**DO NOT READ OUT. SINGLE RESPONSE.**

**IF CODES 1-3 IN Q3 USE CODES:**

Looks dirty / rubbish everywhere	01
Drab / dowdy / needs sprucing up / better maintenance	02
Poor planning / lack of forward planning	03
Old buildings pulled down / in-fill / unattractive new buildings	04
No sense of community	05
Graffiti / vandalism	06
Other <b>(PLEASE SPECIFY)</b>	97
Don't know	99
Refused	98

**IF CODES 4-5 IN Q3 USE CODES:**

Nice green city / beautiful parks and gardens / lots of gardens	07
Clean / no litter / clean and tidy	08
Helpful / friendly / welcoming people	09
Good facilities and services	10
Beaches / harbour – beautiful / good access	11
Other <b>(PLEASE SPECIFY)</b>	97
Don't know	99
Refused	98

**Q5.** In general, on a scale of one to five where one is very difficult and five is very easy, how easy or difficult is it for you to get to the following in **(INSERT CITY FROM OA / FOR NON CITY SAMPLE, INSERT 'YOUR LOCAL AREA')**?

**IF NECESSARY:** Answer this question based on the current modes of transport you use, and how you feel about travelling the distance you need to get to these services.

**ROTATE STATEMENTS AND READ OUT. SINGLE RESPONSE FOR EACH STATEMENT.**

	Very difficult	Difficult	Neither	Easy	Very easy	D/K
<b>5a</b> Local park or other green space	1	2	3	4	5	9
<b>5b</b> Public transport facility such as a bus stop, train station	1	2	3	4	5	9

**IF CODE ONE OR TWO FOR Q5B ASK Q6**

**OTHERISE SKIP TO Q7**

**Q6.** You told me you would find it difficult to get to public transport. Why is that?

**DO NOT READ OUT. MULTIPLE RESPONSES OKAY EXCEPT FOR CODES 98 AND 99. PROBE TO NO IF A RESPONDENT ANSWERS “BAD TRANSPORT” (OR SIMILAR) SO AS TO GAIN CLARIFICATION.**

Preference for private transport	01
Lack of full-time services	02
No services in area/too far away/live in isolated area	03
Transport does not go to desired destination	04
Other <b>(PLEASE SPECIFY)</b>	97
Don't know	99
Refused	98

**CRIME AND SAFETY**

- Q7.** Now thinking about issues of crime and safety, using a four point scale ranging from very unsafe, a bit unsafe, fairly safe to very safe, please tell me how safe or unsafe you would feel in the following situations...

**ROTATE STATEMENTS. READ OUT. SINGLE RESPONSE PER STATEMENT. ASK 7A TO 7D TO ALL. ONLY ASK 7E AND 7F FOR THE 12 CITIES SAMPLE. REPEAT SCALE IF REQUIRED.**

**IF NECESSARY: 7C REFERS TO ANYWHERE OUTSIDE OF YOUR HOME WITH OR WITHOUT OTHER PEOPLE.**

	<b>Very unsafe</b>	<b>A bit unsafe</b>	<b>Fairly safe</b>	<b>Very safe</b>	<b>D/K (DO NOT READ OUT)</b>
<b>7a</b> In your home during the day	1	2	3	4	9
<b>7b</b> In your home after dark	1	2	3	4	9
<b>7c</b> In your neighbourhood after dark	1	2	3	4	9
<b>7d</b> Walking alone in your neighbourhood after dark	1	2	3	4	9
<b>7e</b> In your city centre during the day	1	2	3	4	9
<b>7f</b> In your city centre after dark	1	2	3	4	9

**ASK Q8 IF RESPONDENT ANSWERED CODE 1 OR CODE 2 TO ANY STATEMENT IN Q7, OTHERWISE GO TO Q9.**

- Q8.** Thinking about the times you have said you feel unsafe in any of the previous situations, why do you say that?

**DO NOT READ OUT. MULTIPLE RESPONSE OKAY EXCEPT FOR CODES 98 AND 99. PROBE TO NO IF A RESPONDENT ANSWERS BAD/UNDESIRABLE LOCATION SO AS TO GAIN CLARIFICATION. A MORE SPECIFIC ANSWER IS REQUIRED.**

Dark / poor lighting	01
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People who feel dangerous to be around	02
Alcohol and drug problem in the area	03
Age of respondent	04
Gender of respondent	05
Other <b>(PLEASE SPECIFY)</b>	97
Don't know	99
Refused	98

- Q9.** On a scale of one to four, where one is very unsafe and four is very safe, can you tell me how safe or unsafe you think your local neighbourhood is for children aged under 14 years to play in while unsupervised?

**DO NOT READ OUT. SINGLE RESPONSE.**

Very unsafe	1
A bit unsafe	2
Fairly safe	3
Very safe	4
Don't know	9

**ASK Q10 IF RESPONDENT ANSWERED CODE 1 OR CODE 2 IN Q9, OTHERWISE GO TO Q11.**

- Q10.** And why is that?

**DO NOT READ OUT. MULTIPLE RESPONSES OKAY EXCEPT FOR CODES 98 AND 99 SINGLE RESPONSE ONLY.**

Traffic eg busy roads/heavy traffic/fast cars/lack of pedestrian crossings	01
Other environmental dangers eg unsafe playgrounds/rivers/beach/open drains/marshland	02
Stranger danger eg undesirable residents/strange people/unsavoury people/transients	03
Children should always be supervised	04
Bullying from other kids/teenagers	05
Other <b>(PLEASE SPECIFY)</b>	97
Don't know	99
Refused	98

- Q11.** Can you tell me which, if any, of the following issues have been a problem in your **(INSERT CITY NAME OR FOR NON CITY SAMPLE INSERT 'LOCAL AREA')** over the last 12 months?

**READ OUT STATEMENTS BUT DO NOT READ OUT CODING. SINGLE RESPONSE PER STATEMENT. ROTATE STATEMENTS.**

	Yes	No	D/k
Rubbish or litter lying on the streets	1	2	9
Graffiti	1	2	9
Vandalism, including broken windows in shops and public buildings	1	2	9
Car theft, damage to cars or theft from cars	1	2	9
Dangerous driving including drink driving and speeding	1	2	9
People who you feel unsafe around because of their behaviour, attitude or appearance	1	2	9
Air pollution	1	2	9
Water pollution including pollution in streams, rivers, lakes and in the sea	1	2	9
Noise pollution	1	2	9

<b>TRANSPORT</b>
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Now thinking about public transport.

**Q12.** In the last 12 months, how often did you use public transport?

**IF NECESSARY:** By public transport, I mean cable cars, ferries, trains and buses, including school buses. I do not mean taxis.

**READ OUT IF NECESSARY EXCEPT CODES 8 AND 9. SINGLE RESPONSE.**

5 or more times a week	1
2-4 times a week	2
Once a week	3
2-3 times a month	4
At least once a month	5
Less than once a month	6
Did not use public transport in the last 12 months	7
Not applicable, no public transport available in area. <b>(DO NOT READ). SKIP TO Q14</b>	8
Don't know <b>(DO NOT READ)</b>	9

**Q13.** Thinking about public transport in your **(INSERT CITY NAME OR FOR NON CITY SAMPLE INSERT 'LOCAL AREA')** on a scale of one to five, where one is strongly disagree and five is strongly agree, rate the following:

Public transport is

**ROTATE STATEMENTS. READ OUT. SINGLE RESPONSE PER STATEMENT.**

Strongly disagree	Disagree	Neither	Agree	Strongly agree	D/K
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<b>13a</b> affordable	1	2	3	4	5	9
<b>13b</b> safe	1	2	3	4	5	9
<b>13c</b> convenient	1	2	3	4	5	9

# **DEMOCRACY**

**Q14.** Thinking about your local City or District Council. On a scale of one to five, where one is strongly disagree and five is strongly agree, rate the following.

**ROTATE STATEMENTS. READ OUT. SINGLE RESPONSE PER STATEMENT.**

	Strongly disagree	Disagree	Neither	Agree	Strongly agree	D/K
<b>14a</b> Overall, I understand how my Council makes decisions	1	2	3	4	5	9
<b>14b</b> I would like to have more of a say in what the council does	1	2	3	4	5	9
<b>14c</b> Overall, I have confidence that the council makes decisions that are in the best interests of my city or district	1	2	3	4	5	9

**Q15.** Overall, how much influence do you feel the public has on the decisions the Council makes? Would you say the public has

**READ OUT EXCEPT FOR CODE 9. SINGLE RESPONSE.**

No influence	1
Small influence	2

Some influence	3
Large influence	4
Don't know <b>(DO NOT READ OUT)</b>	9

## WORK AND STUDY

Now a few questions about work and study.

- Q16.** Which of the following best describes your current employment status? By employed I mean you undertake work for pay, profit or other income, or do any work in a family business without pay.

**READ OUT. SINGLE RESPONSE.**

Employed full time (for 30 or more hours per week)	1	<b>GO TO 18a</b>
Employed part time (for less than 30 hours per week)	2	
Not in paid employment and looking for work	3	<b>CONTINUE</b>
Not in paid employment and not looking for work (e.g. full-time parent)	4	<b>GO TO 17c</b>
Refused <b>(DO NOT READ OUT)</b>	7	
Don't know <b>(DO NOT READ OUT)</b>	9	

- Q17a.** Did you actively seek work in the last 4 weeks?

**DO NOT READ. SINGLE RESPONSE.**

Yes	1
No	2



Don't know	9
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**INTERVIEWER INSTRUCTIONS: IF PROMPTED – LOOKING FOR PAID WORK INCLUDES:**

1. Looked at job advertisements
2. Wrote, phoned or applied in person to an employer
3. Contacted Work and Income to look for a job
4. Contacted friends or relatives for help in finding a job
5. Contacted career advisers or vocational guidance officers
6. Other method(s), for example:
  1. contacted other employment agency
  2. placed an advertisement about a job
  3. took steps to set up own business

**Q17b.** If a job had been available, could you have started last week?

**DO NOT READ. SINGLE RESPONSE.**

Yes	1
No	2
Don't know <b>(DO NOT READ)</b>	9

**Q17c.** Last week what was your MAIN activity?

**READ OUT. SINGLE RESPONSE.**

Retired	1
At home looking after children	2
At home not looking after children	3
Student	4
Other <b>(PLEASE SPECIFY)</b>	7

**ASK ALL**

**Q18a.** Are you currently attending, studying or enrolled at school or anywhere else in further education either full or part time?

**READ OUT. SINGLE RESPONSE.**

**IF CODE 4 IN Q17C THEN ASK**

In saying that you are a student, are you currently studying either full or part time?

Yes - Full-time (20 hours or more a week)	1
Yes - Part-time (less than 20 hours a week)	2
No - Neither of these	8

**ASK ALL**

**Q18b.** Overall how satisfied are you with the balance between your work and other aspects of your life such as time with your family or leisure?

**READ OUT EXCEPT CODES 8 AND 9. SINGLE RESPONSE.**

Very dissatisfied	1
Dissatisfied	2
Neither satisfied nor dissatisfied	3
Satisfied	4
Very satisfied	5
Don't know <b>(DO NOT READ OUT)</b>	9
Refused <b>(DO NOT READ OUT)</b>	8

**LEISURE-TIME**

- Q19.** Thinking about both the quality and quantity of leisure time, on a scale of one to five where one is very dissatisfied and five is very satisfied how satisfied or dissatisfied are you with your leisure time?

**DO NOT READ OUT. SINGLE RESPONSE.**

Very dissatisfied	1
Dissatisfied	2
Neither satisfied nor dissatisfied	3
Satisfied	4
Very satisfied	5
Don't know <b>(DO NOT READ)</b>	9

## HEALTH

Now a couple of health related questions.

- Q20.** In general how would you rate your health?

**READ OUT EXCEPT FOR CODE 9. SINGLE RESPONSE.**

Poor	1
Fair	2
Good	3
Very good	4
Excellent	5
Don't know <b>(DO NOT READ)</b>	9

- Q21a.** Has there been a time in the last 12 months when you wanted to see a GP or doctor about your own health, but did not see one?

**DO NOT READ OUT. SINGLE RESPONSE.**

Yes	1	<b>CONTINUE</b>
No	2	<b>GO TO Q22</b>
Don't know	9	

**Q21b.** And why was that?

**DO NOT READ OUT. MULTIPLE RESPONSES OKAY EXCEPT FOR CODES 98 AND 99 SINGLE RESPONSE ONLY.**

Too expensive/costs too much / symptoms don't justify cost	01
Too busy / couldn't take time off work	02
Got better on its own	03
GP too far away / difficult to get to / no transport	04
GP too busy / couldn't fit me in / long waiting time	05
Other <b>(PLEASE SPECIFY)</b>	97
Don't know	99
Refused	98

**Q22.** Thinking about ALL your physical activities (including any physical tasks you might do at work, doing housework or playing sports) on how many of the last 7 days were you active (by "active" I mean doing 15 minutes or more of vigorous activity (this is activity which makes you breathe a lot harder than normal e.g. running), or 30 minutes or more of moderate exercise (e.g. brisk walking)?

**DO NOT READ OUT. SINGLE RESPONSE.**

**IF PROMPTED: OTHER EXAMPLES OF MODERATE ACTIVITY INCLUDES CARRYING LIGHT LOADS, BICYCLING AT A REGULAR PACE, RECREATIONAL SWIMMING AND GARDENING.**

One day	1
Two days	2
Three days	3
Four days	4
Five days	5
Six days	6
Seven days	7
None	8
Don't know <b>(DO NOT READ)</b>	9

## **FINANCES**

**Q23.** Which of the following best describes how well your total income meets your everyday needs for things such as accommodation, food, clothing and other necessities?

**READ OUT. SINGLE RESPONSE.**

Have more than enough money	1
Enough money	2
Just enough money	3
Not enough money	4
Refused <b>(DO NOT READ OUT)</b>	8

## **LOCAL COMMUNITIES (BELONGING)**

Now some questions about your local community

**Q24.** On a scale of one to five where one is strongly disagree and five is strongly agree rate the following.

**FOR RURAL RESPONDENTS, CHANGE STATEMENTS TO SAY “LOCAL AREA” INSTEAD OF LOCAL NEIGHBOURHOOD.**

**DO NOT ROTATE STATEMENTS. READ OUT. SINGLE RESPONSE PER STATEMENT.**

	Strongly disagree	Disagree	Neither	Agree	Strongly agree	D/K ( )
<b>24a.</b> It's important to me to feel a sense of community with people in my local neighbourhood.	1	2	3	4	5	9
<b>24b.</b> I feel a sense of community with others in my local neighbourhood.	1	2	3	4	5	9

**ASK Q24c IF RESPONDENT ANSWERED CODE 1 OR CODE 2 TO STATEMENT Q24b, OTHERWISE GO TO Q25.**

**Q24c.** And why is that?

**DO NOT READ OUT. MULTIPLE RESPONSE OKAY. PROBE TO NO.**

New to the area / just moved in / haven't lived here for long	01
People have busy lives / working hard	02
Socialise with family and friends instead of community	03
Lack of communication / events within neighbourhood	04
People / neighbours are not welcoming / friendly / don't see the neighbours	05
Other (PLEASE SPECIFY)	97

Don't know	99
Refused	98

- Q25.** In the last 12 months, which, if any, of the following types of contact have you had with people in your neighbourhood?

**READ OUT STATEMENTS ONLY. DO NOT READ OUT CODES.**

	Yes	No	Can't Remember
Negative contact where there's outright tension or disagreement	1	2	8
Some negative contact such as not getting on with them	1	2	8
Some positive contact such as a nod or saying hello	1	2	8
Positive contact such as a visit, or asking each other for small favours	1	2	8

## CONNECTEDNESS

- Q26.** Thinking now about the social networks and groups you may be part of. Do you belong to any of the following?

**READ OUT. MULTIPLE RESPONSES EXCEPT FOR CODE 98 SINGLE RESPONSE ONLY.**

A sports club	01
A church or spiritual group	02
A hobby or interest group	03
A community or voluntary group such as Rotary, the RSA or Lions	04
Family	05
Online community or interest group	06

A network of people from work or school	07
Other social network or group <b>(PLEASE SPECIFY)</b>	97
None of the above <b>(DO NOT READ)</b>	98

**Q27.** Would you say that your main social networks are...

**READ OUT EXCEPT FOR CODES 4-9. SINGLE RESPONSE.**

Mostly based in the same local area where you live	1
Mostly based on shared interests or beliefs, but not necessarily based in the same local area where you live	2
A mixture of both	3
No social networks <b>(DO NOT READ)</b>	4
Family networks only <b>(DO NOT READ)</b>	5
Don't know <b>(DO NOT READ)</b>	9

**Q28.** Some people tell us they feel lonely or isolated while others say they don't. In the last 12 months how often, if ever have you felt lonely or isolated?

**READ OUT EXCEPT FOR CODE 9. SINGLE RESPONSE.**

Always	1
Most of the time	2
Sometimes	3
Rarely	4
Never	5
Don't know <b>(DO NOT READ)</b>	9



**Q29.** Which of the following statements about trust do you agree with the most?

**READ OUT EXCEPT FOR CODES 7 AND 9. SINGLE RESPONSE.**

You almost always can't be too careful in dealing with people	1
You usually can't be too careful in dealing with people	2
People can usually be trusted	3
People can almost always be trusted	4
Don't know <b>(DO NOT READ OUT)</b>	9
Refused <b>(DO NOT READ OUT)</b>	7

#### **WELL BEING**

Now some questions about your general well-being

**Q30.** In general how happy or unhappy would you say you are?

**READ OUT. SINGLE RESPONSE.**

Very unhappy	1
Unhappy	2
Neither happy nor unhappy	3
Happy	4
Very happy	5
Don't know <b>(DO NOT READ OUT)</b>	9

**Q31.** Taking everything into account, how satisfied or dissatisfied are you with your life in general these days?

**READ OUT. SINGLE RESPONSE.**

Very dissatisfied	1
Dissatisfied	2
Neither satisfied nor dissatisfied	3
Satisfied	4
Very satisfied	5
Don't know <b>(DO NOT READ OUT)</b>	9

At some time in their lives, most people experience stress.

**Q32a.** Can you tell me which statement best applies to how often, if ever, in the last 12 months you have experienced stress that has had a negative effect on you?

**READ OUT. SINGLE RESPONSE.**

**IF PROMPTED: STRESS REFERS TO THINGS THAT NEGATIVELY AFFECT DIFFERENT ASPECTS OF PEOPLE'S WORKING LIFE, THEIR FAMILY, THEIR ROUTINES FOR TAKING CARE OF HOUSEHOLD CHORES, LEISURE TIME AND OTHER ACTIVITIES.**

Always	1
Most of the time	2
Sometimes	3
Rarely	4
Never	5
Don't know <b>(DO NOT READ OUT)</b>	9

**FOR THOSE WHO ANSWERED CODES 1-4 IN Q32A ASK:**

**Q32b.** When you are feeling stressed, how often would you say there is someone you feel you can turn to for help or support?

**FOR THOSE WHO ANSWERED CODES 5 OR 9 IN Q32A ASK:**

If you were feeling stressed, how often would you say there is someone you

feel you can turn to for help or support?

**READ OUT. SINGLE RESPONSE.**

Always	1
Most of the time	2
Sometimes	3
Rarely	4
Never	5
Not applicable	7
Don't know <b>(DO NOT READ OUT)</b>	09

**CULTURE AND IDENTITY**

**Q33. FOR 12 CITIES SAMPLE ASK:**

Thinking about **(INSERT NAME OF CITY FOR 12 CITIES RESIDENTS)** as a place to live, on a scale of one to five where one is strongly disagree and five is strongly agree rate the following "**INSERT CITY NAME**" has a culturally rich and diverse arts scene".

**FOR AUCKLAND, SAY:** By Auckland City I mean central Auckland not North Shore, Waitakere or Manukau.

**FOR WELLINGTON, SAY:** By Wellington City I mean central Wellington not Hutt or Porirua.

**FOR THE NON 12 CITIES SAMPLE ASK:**

On a scale of one to five where one is strongly disagree and five is strongly agree rate the following "The area where I live has a culturally rich and diverse arts scene".

**DO NOT READ OUT. SINGLE RESPONSE. CODE 8 ONLY APPLICABLE TO THOSE OUTSIDE OF THE 12 CITIES.**

Strongly disagree	1
Disagree	2
Neither	3
Agree	4
Strongly agree	5
Don't know <b>(DO NOT READ OUT)</b>	9
Not applicable – rural, so no arts scene <b>(DO NOT READ OUT)</b>	8
Not application – other <b>(DO NOT READ OUT)</b>	7

**Q34a.** New Zealand is becoming home for an increasing number of people with different lifestyles and cultures from different countries.

**FOR 12 CITIES SAMPLE ASK:** Overall, do you think this makes **(INSERT CITY NAME)**...

**NON CITY SAMPLE ASK:** Overall, do you think this makes your local area...

**READ OUT. SINGLE RESPONSE**

A much worse place to live	1	<b>CONTINUE</b>
A worse place to live	2	
Makes no difference	3	<b>GO TO Q35</b>
A better place to live	4	<b>CONTINUE</b>
A much better place to live	5	
Don't know <b>(DO NOT READ OUT)</b>	9	
Not applicable/no different lifestyle or cultures here <b>(DO NOT READ OUT)</b>	8	

**Q34b.** And why is that?

**DO NOT READ OUT. MULTIPLE RESPONSES OKAY EXCEPT FOR 98 AND 99  
SINGLE RESPONSE ONLY. PROBE TO NO.**

**IF CODES 1, 2, 8 OR 9 IN Q34A THEN USE CODES:**

Lack of integration into NZ society / don't mix	01
Too many foreigners / too many different cultures	02
Taking us over / taking our shops etc.	03
Inability to communicate / speak English	04
Causes racial disharmony / racial tension	05
Other <b>(PLEASE SPECIFY)</b>	97
Don't know	99
Refused	98

**IF CODES 4, 5, 8 OR 9 IN Q34A THEN USE CODES:**

Diversity good/ broader perspective, outlook / brings new ideas	06
Good to learn about other cultures / stops racism / teaches tolerance	07
Makes the city more vibrant and interesting	08
More interesting food / more choice / better restaurants	09
Helps the labour force / more jobs / more workers	10
Other <b>(PLEASE SPECIFY)</b>	97
Don't know	99
Refused	98

<b>OVERALL QUALITY OF LIFE</b>
--------------------------------

**Q35.** The next question concerns your overall quality of life. Would you say that your overall quality of life is...

**READ OUT EXCEPT FOR CODE 9. SINGLE RESPONSE.**

Extremely poor	1
Poor	2
Neither poor nor good	3
Good	4
Extremely good	5
Don't know <b>(DO NOT READ OUT)</b>	9

**DEMOGRAPHICS**

Lastly, a few questions about you. This is so we can compare the opinions of different types of New Zealanders.

**Q36.** Were you born in New Zealand?

Yes	1	<b>GO TO Q38</b>
No	2	<b>CONTINUE</b>
Refused	9	<b>GO TO Q38</b>

**Q37.** How many years have you lived in New Zealand?

**DO NOT READ OUT. SINGLE RESPONSE.**

<b>Number of years</b>	<b>Respondent</b>
------------------------	-------------------

Less than 1 year	1
1 year to just under 2 years	2
2 years to just under 5 years	3
Five years to just under 10 years	4
10 years or more	5
Don't know	9
Refused	8

**Q38.** Currently, how many people live in your household, including yourself?

**DO NOT READ OUT. SINGLE RESPONSE.**

Number of people		
1	01	<b>GO TO Q40</b>
2	02	<b>CONTINUE</b>
3	03	
4	04	
5	05	
6	06	
7	07	
8	08	
9	09	
10	10	
11	11	
12	12	
13+	13	
Refused	99	<b>GO TO Q40</b>

**Q39.** And who lives in your household? E.g. siblings, children, partner, boarders etc

**DO NOT READ OUT. MULTIPLE RESPONSES EXCEPT FOR CODE 98 SINGLE RESPONSE ONLY.**

Partner (spouse, civil union partner, de facto, girlfriend, boyfriend)	01
Son(s) and/or daughter(s), or partners son(s) or daughter(s)	02
Mother	03
Father	04
Parent's partner	05
Sister(s) and/or brother(s)	06
Other family relative (grandmother, mother in law etc)	07
Boarders	08
Flatmates	09
Other unrelated adults	10
Other unrelated children	11
Refused	98

**Q40.** Who owns the residence you live in?

**DO NOT READ OUT. SINGLE RESPONSE.**

**IF PROMPTED: RESIDENCE MEANS A HOUSE, FLAT, OR APARTMENT.**

You own this house/flat/apartment	01
You jointly own this house/flat/apartment with other people	02
A family trust owns this house/flat/apartment	03
Parents or other family members own this house/flat/apartment	04
A private landlord who is NOT related to you owns this house/flat/apartment	05
A local authority or city council owns this house/flat/apartment	06
Housing New Zealand owns this house/flat/apartment	07
Other State landlord (such as Department of Conservation, Ministry of Education)	08
Don't Know	99
Refused	98



- Q41.** What is the highest qualification that you have completed that took longer than three months to finish?

**READ OUT IF NECESSARY. SINGLE RESPONSE.**

Less than school certificate or less than 80 credits for NCEA Level 1 (no formal qualifications)	01
School certificate or NCEA Level 1	02
Sixth form certificate or NCEA Level 2	03
Higher School certificate/higher leaving certificate	04
National certificate/NZQA	05
University entrance from bursary exam	06
NZ A or B Bursary or NCEA Level 3	07
University Scholarship or NCEA Level 4	08
Overseas School Qualifications	09
Trade certificate	10
National diploma	11
Teaching or nursing certificate/diploma	12
Bachelors degree	13
Postgraduate degree (Honours, Masters, PhD)	14
Other <b>(PLEASE SPECIFY)</b>	97
Refused <b>(DO NOT READ)</b>	98
Don't know <b>(DO NOT READ)</b>	99

- Q42.** Which best describes your annual personal income before tax?

**READ OUT. SINGLE RESPONSE. DO NOT READ OUT WEEKLY DOLLAR AMOUNTS – JUST THERE IF NEEDED.**

Loss	1
No income	2

Less than \$10,000 ( <i>\$1–\$192 a week</i> )	3
\$10,001 - \$20,000 ( <i>\$192–\$385 a week</i> )	4
\$20,001 - \$30,000 ( <i>\$385–\$577 a week</i> )	5
\$30,001 - \$40,000 ( <i>\$577–\$769 a week</i> )	6
\$40,001 - \$50,000 ( <i>\$769–\$962 a week</i> )	7
\$50,001 - \$60,000 ( <i>\$962–\$1154 a week</i> )	8
\$60,001 - \$70,000 ( <i>\$1154–\$1346 a week</i> )	9
\$70,001 - \$100,000 ( <i>\$1346–\$1923 a week</i> )	10
\$100,000 or more( <i>\$1923 and over</i> )	11
Refused ( <b>DO NOT READ</b> )	98
Don't know ( <b>DO NOT READ</b> )	99

**ONLY ASK FOR THOSE WHO HAVE MORE THAN ONE PERSON LIVING IN THE HOUSE (I.E CODE 02-09 AT Q38)**

**Q43.** Which best describes your household's annual income before tax?

**READ OUT. SINGLE RESPONSE. DO NOT READ OUT WEEKLY DOLLAR AMOUNTS – JUST THERE IF NEEDED. START READING FROM AMOUNT SAID IN Q42 E.G. IF PERSONAL INCOME IS CODE 6 IN Q43 THEN START AT CODE 6 IN CURRENT QUESTION.**

Loss	01
No income	02
Less than \$10,000 ( <i>\$1–\$192 a week</i> )	03
\$10,001 - \$20,000 ( <i>\$192–\$385 a week</i> )	04
\$20,001 - \$30,000 ( <i>\$385–\$577 a week</i> )	05
\$30,001 - \$40,000 ( <i>\$577–\$769 a week</i> )	06
\$40,001 - \$50,000 ( <i>\$769–\$962 a week</i> )	07
\$50,001 - \$60,000 ( <i>\$962–\$1154 a week</i> )	08
\$60,001 - \$70,000 ( <i>\$1154–\$1346 a week</i> )	09
\$70,001 - \$80,000 ( <i>\$1346–\$1538 a week</i> )	10
\$80,001 - \$90,000 ( <i>\$1538–\$1731 a week</i> )	11
\$90,001 - \$100,000 ( <i>\$1731–\$1923 a week</i> )	12

\$100,001 - \$150,000 ( <i>\$1923-\$2885 a week</i> )	13
\$150,001 - \$200,000( <i>\$2885-\$3846 a week</i> )	14
More than \$200,000 ( <i>\$3846 and over</i> )	15
Refused <b>(DO NOT READ)</b>	98
Don't know <b>(DO NOT READ)</b>	99

Thank you very much for your time. For the purposes of the draw which will be conducted in November can I please have just your first name.

In case you missed it, my name is ..... from TNS. If you have any queries regarding this survey you can contact Elizabeth Vink on our toll free number 0800 003 422. Thanks again and have a good afternoon/evening.

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