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DOES MONEY MATTER? DETERMINING THE HAPPINESS OF CANADIANS

CSLS Research Report No. 2010-09
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Abstract

This report explains why people living in certain regions or cities in Canada experience higher levels of life satisfaction or happiness. We make use of micro-level data from the Canadian Community Health Survey for 2007 and 2008. After a descriptive analysis of the data on happiness in Canada, the report identifies, through an econometric analysis of both individual and certain variables in a societal context, the factors that are the most statistically and economically significant determinants of individual happiness. We find that household income is a relatively weak determinant of individual happiness. Perceived mental and physical health status as well as stress levels and sense of belonging are better predictors of happiness. We then use these estimates to account for variation in happiness at the provincial, CMA (Census Metropolitan Area), and health region level, given the characteristics of the population in these geographical units. We find that the most important reason for geographical variations in happiness in Canada is differences in the sense of belonging to local communities, which is generally higher in small CMAs, rural areas, and Atlantic Canada.

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Executive Summary

The objective of this report is to ascertain whether persons living in certain regions or cities in Canada experience higher levels of life satisfaction or happiness, and if so why? To address this question, the report uses micro-data from the Canadian Community Health Survey (CCHS) for 2007 and 2008. After a descriptive analysis of the data on happiness in Canada, the report identifies, through an econometric analysis of both individual and societal variables, the most statistically and economically significant determinants of individual happiness. It then uses this information to explain the variation in happiness at the provincial, CMA, and health region level, given the characteristics of the population in these geographical units. A key finding is that the most important reason for geographical variation in happiness in Canada is differences in the sense of belonging to local communities, which is generally higher in small CMAs, rural areas, and Atlantic Canada.

There is relatively little variation in average happiness in Canada both over time and across space. Statistic Canada's Canadian Community Health Survey has since 2003 provided estimates of the proportion of the population that consider themselves satisfied or very satisfied with their lives. In 2009, this proportion for the population 12 and over was 92.1 per cent, up from 91.4 per cent in 2008 (91.9 per cent in 2007, 91.8 per cent in 2005, and 91.3 per cent in 2003).

Based on a scale of 1 to 5, the average level of the happiness of the Canadian population 20 and over in 2007-8 was 4.26. At the provincial level, it ranged from a high of 4.33 in Prince Edward Island to a low of 4.23 in Ontario, a total range of 0.10 points (2.5 per cent) out of a potential maximum variation of four points. At the level of the 32 CMAs, average happiness ranged from a high of 4.37 in Sherbrooke, Quebec to a low of 4.15 in Toronto, Ontario, a range of 0.22 points or 5.5 per cent. At the level of the 121 health regions, average happiness ranged from a high of 4.42 in Kings County, Prince Edward Island to a low of 4.12 in the City of Toronto Health Unit, a range of 0.30 points or 7.5 per cent.

Based on 70,192 observations for Canada from the 2007 and 2008 CCHS, an equation was estimated, using happiness as the dependent variable and both individual and societal variables as independent variables. The individual level variables produced the most statistically significant results, and the largest coefficients. The societal variables added little explanatory power to the equations, were in most cases not statistically significant, and had small coefficients. It appears that happiness in Canada is primarily determined by the individual characteristics of the people in the population, not the average characteristics of the geographic unit in which the people live.

The following variables were found to be the most economically and statistically significant determinants of individual happiness in Canada:

- An individual's perceived mental health was measured on a scale from 1 (poor mental health) to 5 (excellent mental health). A one-unit increase from the average of perceived mental health for the Canadian population increases the proportion of individuals that are very satisfied with life by

17.0 percentage points. Said another way, for the average person the effect of a one-unit increase in mental health on happiness is equivalent to the effect of a 309 per cent increase in household income. Thus, perceived mental health has a very significant effect on individual happiness

- Perceived health status was also an economically significant determinant of happiness. A one-unit increase in health status (measured on a 5-point scale) increases the proportion of individuals that are very satisfied with life by 8.8 percentage points. Alternatively, a one-unit increase in health status is equivalent to a 157 per cent increase in household income for the average person on happiness.

- High levels of stress level were associated with lower life satisfaction. Specifically, a one-unit increase in stress (measured on a 5-point scale) decreases the proportion of individuals that are very satisfied by 7.7 percentage points. For the average person, this change in stress level is equivalent to the effect of a 136 per cent decrease in household income on happiness.

- An individual's sense of belonging to their local community was also an important determinant of individual life satisfaction. A one-unit increase in sense of belonging (measured on a 4-point scale) increases the proportion of individuals that are very satisfied with life by 6.5 percentage points. Relative to the effect of household income, a one-unit increase in sense of belonging is equivalent to a 116 per cent increase in income for the average person.

- We found that being unemployed has a negative impact on people's happiness. Relative to household income, moving from unemployment to employment has the same impact on happiness as a 151 per cent increase in income for the average person.

- Although household income was statistically significant at the one per cent level, it carries less economic significance for happiness. Specifically, a ten per cent increase in household income from the mean increases the proportion of individuals that are very satisfied with life by only 0.6 percentage points.

- At the societal level, average household income across a health region was found to be negatively associated with individual happiness. A ten per cent increase in the average household income of a health region (holding individual household income constant) would decrease the proportion of individuals that are very satisfied by 0.7 percentage points. This suggests that relative income is slightly more important than individual income but overall, its effect is not profound. One caveat for this result is that due to lower variation in average household income across health regions compared to variation in individual income, the marginal effect is not as robust for the societal income measure.

- Marital status and immigration status were also found to be important determinants of individual happiness. Married persons are happier compared to people who have never been married. Recent immigrants are less happy compared to non-immigrants.

The regression results were used to calculate the expected happiness, that is the average happiness for an individual or group when all other variables for that individual or group assume average values. These expected happiness estimates were then compared to actual happiness estimates. In all cases, these controls reduced the variation to varying degrees between the categories with the highest and lowest average level of happiness. For example, the observed or actual estimates show a 1.92 point difference in happiness between the life satisfaction

of those with poor mental health (2.65) and those with excellent mental health (4.57). But once all other factors such as income are controlled for the gap drops to 0.92 points. Nonetheless, this is still a very large gap and by far the greatest of any variable.

The next largest gap, again after controlling for all other variables, was for health (0.46 points between poor and excellent health), followed by stress (0.40 points between no stress and extreme stress), sense of belonging to the local community (0.25 points between very weak and very strong), household income (0.20 points between the bottom and top decile), marital status (0.18 points between married and never married), immigration status (0.13 points between non-immigrants and recent immigrants), and visible minority (0.09 points difference between visible minority and the majority). All other variables had variation in happiness between the top and bottom categories of 0.06 points of less, after controls were applied.

Geographical variation in happiness in Canada arises for two main sources: differences in the means of variables associated with life satisfaction and the importance of those variables in the life satisfaction regressions. To explain geographical variation, we derive weights for each variable based on the regression coefficient and use them to account for the deviation in happiness for each geographical unit from the national average. It was found that differences in the sense of belonging to the local community are the most important explanation for the geographic variation of happiness in Canada. Although sense of belonging was not the most economically significant variable in our models of life satisfaction, the variation in this variable across geographical units was quite large. For example, on a standardized scale from 1-5, sense of belonging ranged from a low of 3.22 in Quebec to a high of 3.81 in Newfoundland and Labrador at the provincial level. The range in means for this variable across provinces contributed to its ability to explain geographical variation in happiness. While mental health status was the most economically significant variable in our regression models, the differences in mean mental health status across provinces are small. British Columbia had the lowest mean mental health status at 3.97 while Quebec had the highest mean mental health status at 4.16. This represents a range of 4.8 per cent compared to a range of 14.8 per cent for sense of belonging.

One of the key reasons for the limited geographical variation in happiness is that factors often offset one another. That is, although sense of belonging may be higher in one province, that province may also have a lower average mental health. Quebec is a good example as it has the lowest mean sense of belonging but the highest mean mental health status.

This report provides strong support for the recommendations of the Stiglitz Report, which was commissioned by President Nicolas Sarkozy of France and released in September 2009, to put greater emphasis on happiness relative to GDP in the development of public policy.

Does Money Matter? Determining the Happiness of Canadians

I. Introduction and Motivation[1]

The objective of this report is to ascertain whether persons living in certain regions or cities in Canada experience higher levels of life satisfaction or happiness, and if so why? To address this question, the report uses micro-data from the Canadian Community Health Survey for 2007 and 2008. After a descriptive analysis of the data on happiness in Canada, the report identifies, through an econometric analysis of both individual and contextual variables, the most statistically and economically significant determinants of individual happiness. It then uses this information to explain variation in happiness at the provincial, CMA, and health region level, given the characteristics and state of the population in these geographical units. A key finding is that the most important reason for geographical variation in happiness in Canada is differences in the sense of belonging to local communities, which is generally higher in small CMAs, rural areas, and Atlantic Canada.

The concept of subjective well-being (SWB) has garnered much interest among economists and social scientists in recent years. For example, the Stiglitz Commission report, released in September 2009, recommended greater attention be given to the issue of subjective well-being.[2] The UK Government has recently announced that it will be monitoring the happiness of its citizens and using this information in for policy development. It is being increasingly recognized that how individuals rate their happiness or life satisfaction matters.

There is a large literature on the determinants of subjective well-being, happiness, and life satisfaction.[3] Society, personality, and individual experience and circumstances have all been found to be important. Personality has been shown to vary genetically, and the differences between personalities have been found to be associated with variations in subjective well-being at the individual level, (Inglehart and Klingemann, 2000). Personality and genetic traits are closer correlates of individual well-being, while cultural and societal practices and norms are determinants of well-being at a group level.

Many studies have analyzed international differences in subjective well-being, but comparatively few have analyzed differences within a country, due in part to sample size limitations. And most studies that have

[1] The authors would like to thank David Gray, Jim Milway, and John Helliwell for their helpful comments and express gratitude to Benjamin Evans for the data development of this project. The Centre for the Study of Living Standards would like to thank the Institute for Competiveness and Prosperity for financial support for this study. An earlier version of this report was presented at the annual meeting of the Canadian Economics Association at Université Laval in Quebec City, May 28-30, 2010.

[2] The tenth recommendation of the Stiglitz commission was "measures of both objective and subjective well-being provide key information about people's quality of life. Statistical offices should incorporate questions to capture people's life evaluations, hedonic experiences and priorities in their own survey". For a discussion of the Stiglitz Commission recommendations, see Osberg and Sharpe (2010).

[3] There are differences between these three concepts, but they are all strongly correlated. The data used in this report are for life satisfaction, but the three terms will be used interchangeably.

explored within-country differences in happiness have been for the United States (e.g. Pluat *et al.* (2002) and Florida *et al.* (2009)).

To our knowledge, there has been no comprehensive study of the geographical variation in happiness in Canada. This may be due to the lack of existence of a large micro-data set. The inclusion of a question on happiness in the Canadian Community Health Survey (CCHS), which has a large sample size, now makes such a study possible.

The objectives of this report are two-fold: one, to document the pattern of geographical variation in subjective well-being in Canada, and two, to explain this pattern. As well, does the variation across space reflect just individual differences affecting happiness (e.g. age, income, education, marital status, and ethnicity) or does it also reflect the societal environment (e.g. size of community, sense of belonging, trust)? In addition, what are the social and economic characteristics of individuals and communities that lead to geographical variation in subjective well-being?

II. Background and Literature Review

This section provides a discussion of a number of issues related to subjective well-being.

A. Well-Being: Origins of the Concept and its Evolution

The origins of the study of happiness can be traced to Aristotle and his famous discussion on eudemonia.[4] Aristotle opposed the notion that happiness came from pleasure derived from a person's body and material possessions. According to him, happiness resulted from a good birth accompanied by a lifetime of good friends, good children, health, wealth and a contented old age. He emphasized the importance of a lifetime of virtuous activity, which in turn required a sufficient supply of material goods to sustain it. (Aristotle, Rhetoric, 1360b, 14–23 cited by Helliwell, 2003).

In the late 19th century economists were very interested in the connection between happiness and economic success. They considered a person's happiness as, in principle, measurable. Like temperature, one person's happiness could be compared with another person's happiness. They also theorized that extra income brought less and less extra happiness as a person got richer. According to Alfred Marshall in the *Principles of Economics*, "… the influence exerted on a person's character by the amount of his income is hardly less, if it is less, than that exerted by the way in which it is earned. It may make little difference to the fullness of life of a family whether its yearly income is £1000 or £5000; but it makes a very great difference whether the income is £30 or £150: for with £150 the family has, with £30 it has not, the material conditions of a complete life."

Psychologists began to test the theories of happiness in the 1920s. Their approach was seemingly based on the belief that measuring social and psychological states of individuals in society is the key to understanding the quality of their life. The era of Behaviorism took place in the 1930s as classic free-market economists began to believe that individuals are rational, or at least act rationally: thus free decisions in a free market deliver optimal economic results. This brought the scientific study of feelings of happiness to an end as emphasis was increasingly placed on income and wealth as key components of happiness. The scientific study of the feelings of happiness re-emerged in 1960s. Wilson (1967) surveyed the real components of happiness. His list of indicators influencing happiness was similar to the one proposed by Aristotle; he attributed happiness to the

[4] Stanford Encyclopaedia of Philosophy. http://www.seop.leeds.ac.uk/entries/aristotle-ethics/

young, healthy, well-educated, well-paid, extroverted, optimistic, worry-free, religious married person with high self-esteem, job morale, and modest aspirations, of either sex over a wide range of intelligence. Wilson's determinants of happiness defined a composite dimension of well-being that would later serve to be a pathway for most studies in contemporary literature.

Recent studies see subjective well-being closely linked to a positive self-reflection or an assessment of one's own life. Diener *et al*. (2009) suggest that "happiness is a state of contented pleasantness and is one of many specific emotions that people can feel in response to life events and daily experiences." Layard (2005) has put forth a similar definition of happiness. According to him happiness is "feeling good, enjoying life and wanting that feeling to be maintained." He studied the World Values Surveys and found that the response rates for the happiness question were very high, showing that people are in touch with their feelings of happiness and are able to express them. However, happiness is a very specific emotion compared to the term 'life satisfaction' that is laden with a greater sense of judgment. According to Helliwell and Putnam (2004), self-rated happiness is a function of an individual's short-term emotions and mood whereas self-rated life satisfaction is a broader construct and a global evaluation of well-being. There is also a need to differentiate between domain specific measures of subjective well-being. For instance, for health related studies, well-being, with the quality of life, could be defined as being healthy. In the economic realm, higher well-being could be associated with more wealth. The subjective well-being that we refer to in this report is closer to life satisfaction which is a holistic assessment of an individual's well-being that encompasses feelings of pleasure and emotional responses that are not domain specific.

B. Subjective vs. Objective Well-Being

The distinction between subjective and objective well-being depends on the perspective from which lives are being evaluated. Objective well-being requires a detached point of view that is independent of an individual's own subjective values and norms. Evaluation of objective well-being would be based on certain norms and would include features that would be considered ideal rather than personal. In contrast, subjective well-being refers to an individual's own interests, needs, preferences or desires. Subjective well-being is a more personalized assessment and captures both beneficial and adverse life experiences. Just as health has positive elements beyond disease, the absence of disease, or disability, subjective well-being has both negative and positive components (Eisdorfer, 1981).

A subjective definition of well-being is essentially identical to the concept of utility. Utility is the satisfaction derived from the consumption of goods. Just like subjective well-being, utility is defined exclusively from the perspective of an individual. Economic theory tends to rely on the amount of money a person is willing to spend on a good as a useful measure of utility that he or she derives from that good. Standard economic theory assumes that well-being is achieved by using wealth for consumption, not simply by accumulating it, and that people spend their money in exchange for market goods to realize their preferences (Osberg, 1985).

C. Subjective Well-Being and the Conventional Methods of Utilitarianism and Income Approach

Utilitarianism, as originally put forward by Bentham, considers the well-being of a society to be the sum of individual utilities. The development of microeconomic theory has been strongly influenced by this tradition. However, there are structural weaknesses in the utilitarian concept of measuring a society's welfare. If a given level of consumption produces the same level of utility for everyone, then utilities can be compared across individuals and aggregations can be made to arrive at a welfare estimate. However, individual utility cannot be measured in such an objective manner. There exists a distinct possibility that two individuals will not derive the same level of utility and satisfaction from the last dollar of consumption.
The origins of individual preferences (which help gauge utility) need to be explored as preferences may change according to circumstances. For instance, when income is low, human aspirations are also low. When incomes are high, new tastes emerge. Preferences are sometimes argued to be adaptive, and tastes may be consciously manipulated (Osberg, 1985).

Sen (1999) also argues that due to its informational base, the utilitarian method tends to measure well-being without accounting for any distributional inequalities in happiness of individuals. He stresses the importance of accounting for the welfare of those at the lower economic strata of society. This group, according to him, is traditionally disadvantaged and will suffer the most from the utilitarian approach as it comes to accept 'deprivation' and lacks courage and resources to demand any sort of change. By adapting to conditions in society, the economically challenged do not provide accurate feedback of their well-being. Therefore, this utilitarian approach does not give 'intrinsic importance' to other immeasurable components of utility such as individual freedom and rights. He lays particular emphasis on the well-being of these people and the need for it to be taken into account when formulating policy on basic health, education and employment. Therefore, there is a need to broaden the information base to take the limitations of the utilitarian approach into account and provide equality and opportunity for all (Sen 1999: 61-63). If taking inequalities into account and addressing them are disentangled, then there is a weakness in Sen's argument as he ignores the possibility that people could care about other people's income or welfare for both empathetic and comparative reasons (Leigh and Helliwell, 2008).

The role of income and wealth in well-being has been of particular interest to economists in the post-Behaviourism era of the 1930s. Layard (2005) believes that people have a tendency to compare incomes across a reference group where an individual's reference group is comprised of people close to the individual in question in terms of income and status. Standard economics states that when a person's income rises and no one else's falls, things have improved (Pareto improvement). If individuals are driven by a desire to keep up with their reference group, then social comparisons will be important. Layard refers to this as a "status race." Frank (1985) has developed a model, echoing the work of Dusenberry (1949), showing how people's concerns for their relative position in the income hierarchy of an organization can lead to wage compression. The role of income, along with financial status, as a determinant of subjective well-being is discussed, with other determinants, in Appendix I.

D. Measurement Scales and Methods

Subjective well-being is assessed mainly in surveys where people are asked to provide an overall evaluation of their lives, a particular aspect of life, or their emotional state. Such information is relatively easy to collect. Since these surveys are conducted in the local language of a country, one could question whether the word 'happy' or 'satisfaction' could signify the same thing in different languages. If this is the case, using the same term in surveys across different countries will lead to measures of different concepts. As a check, responses to questions on happiness and satisfaction in two bilingual countries have been compared, and they do not show a linguistic bias (Veenhoven 2002 and Layard 2005).

The questions used to survey life satisfaction are relatively straightforward and usually require simple answers. Below are some standard questions used in subjective well-being surveys.

"Taken all together, how would you say things are these days--would you say that you are: 1) Very happy 2) Pretty happy or 3) not too happy?" – United States General Social Survey (GSS)

"Taking all things together, would you say you are: *1) Very happy 2) Quite happy 3) Not very happy 4) Not at all happy 9) Don't know"* – World Values Survey

"All things considered, how satisfied are you with your life as a whole these days? Please use this card to help with your answer." (The respondents are asked to rank their satisfaction on a scale of 1 to 10 with 1 being the lowest 10 being the highest level of satisfaction with an additional option for 'Don't Know') – World Values Survey

"All things considered how satisfied are you with life as a whole these days? Use a 0-10 scale, where 0 is dissatisfied and 10 is satisfied." – Gallup World Poll

''Taking all things together, how would you say things are these days—would you say you are: 1) very happy 2) fairly happy 3) not too happy these days?'' – Eurobarometer

"How satisfied are you with your life in general? 1) very satisfied 2) satisfied 3) neither satisfied nor dissatisfied 4) dissatisfied 5) very dissatisfied)" – Canadian Community Health Survey (CCHS)

"Using a scale of 1 to 10 where 1 means "Very dissatisfied" and 10 means "Very satisfied", how do you feel about your life as a whole right now?" – General Social Survey (GSS) Canada

E. Issues in Geographical Comparisons of Happiness

An individual's external environment, personality, and individual circumstances are important factors in determining levels of well-being. Individual characteristics and circumstances have been shown to affect the self-assessments of well-being and to influence how an individual responds to unfolding events. On the other hand, regional or societal differences in subjective well-being can be explained by differences in the regional average levels of their individual circumstances.

Most of the studies that have explored geographical differences have undertaken cross country comparisons. Lack of surveys with adequate sample size has been the main obstacle in exploring life satisfaction at a more localized level. By using micro-data sets from surveys such as the World Values Survey, and Gallup and Eurobarometer, researchers have used a cohort of countries to explore the determinants of life satisfaction at the individual level and a combination of political, economic, institutional and human development factors at the national level.[5] However, for such studies, specific sub-groups within a country's population, such as recent immigrants, cannot be distinguished and compared with other groups. Another problem with cross-country surveys is that they may be influenced by cultural and social traits. Some poor countries are very happy when their average life satisfaction is measured, as individuals in some of these countries are naturally jovial and cheerful when responding to survey questions (Graham, 2010).

There are significant differences in economic and social indicators within a country. Do these differences lead to differences in happiness? For instance, ethnically diverse cities will have people from different cultural backgrounds and different belief systems – factors that may play an important role in the regional variation of happiness. In terms of economic factors, in Canada there are significant differences with median household income as high as $72, 329 for Oshawa and as low as $40, 617 for Trois-Rivières.[6] The cost of housing also varies to a great extent, with prices of newly completed units as high as $628,900 for Vancouver and as low as $125,000 for Sherbrooke.[7] A geographical study of subjective well-being will shed light on questions such as: Are people happier where average household income is higher?

Pluat *et al.* (2002) examined well-being in mid-life in the nine regions of the United States. They used various metrics of well-being and sense of self used by psychologists from the Midlife Development in the United States (MIDUS) survey to examine the distinctive regional features of well-being and self. Specifically, they developed portraits of well-being in five of the regions. They hypothesized that well-being is dependent on cultural context, which is a composite of the American context, and the specific regional context. They were able to show this to some extent, as their results demonstrated that some regions like New England (that includes Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, and Connecticut) had higher levels of psychological, social and physical well-being than the East South Central region (that includes Kentucky, Tennessee, Mississippi and Alabama).

However, Plaut *et al.*'s work did not attribute these regional differences to any social, cultural or even economic indicators of well-being. Florida *et al.* (2009) have partially filled this gap in their study on the "Happy States of America: A state level analysis of psychological, economic and social well-being." Using Gallup's

[5] Some of the studies are by Diener *et al.* (1995, 2003), Schyns (1998), Helliwell (2003), Bjornskov *et al.* (2006), Steveson and Wolfers (2008) Barrington - Leigh and Helliwell (2008), Inglehart *et al.* (2008).
[6] Data from the Canada Census Profiles (2006).
[7] Data on Median Prices of Newly Completed and Absorbed Single-Detached and Semi-Detached Dwellings - Canadian Mortgage and Housing Corporation – February 2010.

Well-being Index that is comprised of six sub-indices – life evaluation, emotional health, physical health, healthy behaviour, work environment and basic access, they studied the correlates of well-being with four categories of state level indicators that were based on personality, inclusiveness, economic and educational, and occupational outcomes. They found that average well-being at the state level was positively correlated with output (Gross Regional Product per capita), average income levels, median housing value, human capital, tolerance of diversity, and emotional stability.

Florida *et al.*'s study revealed some interesting results. Their analysis is a useful contribution to a very scant literature on well-being differences within a country. This report is largely motivated by the fact that there is a lack of comparable research done in Canada.

III. The Happiness Landscape in Canada

This section provides a comprehensive discussion of the happiness landscape in Canada. It uses data on 116,569 individuals aged 20 years or older from the combined waves of the 2007-2008 Canadian Community Health Survey (CCHS) to explore the variation of happiness across three layers or levels of geography: provinces, census metropolitan areas (CMAs), and health regions. It also examines levels of life satisfaction in terms of an individual's situation and personal characteristics.

A. Sources of Data on Happiness in Canada

There are two major surveys for studying life satisfaction in Canada, the Canadian Community Health Survey (CCHS) and the General Social Survey (GSS)[8]. This sub-section will discuss and compare the merits of both these surveys for this study along the lines of data availability, sample size, scale consistency of the life satisfaction question, and flexibility that will allow for a geographical analysis of well-being.

i. General Social Survey (GSS)

The General Social Survey is one of the main Statistics Canada surveys that include questions on the quality of life of Canadians. There have been numerous cycles of the GSS from 1985 to present. The life satisfaction question has been asked a number of times, but unfortunately, the scales have not been kept constant over time. For example, in the 1980s, the questions were on a five point scale with options for 'no opinion' and 'not stated'. In 1996, the response choices were limited to 'satisfied' and 'dissatisfied', and they were again changed to a four point and five point scale in 1998 and 2002. Since 2002, the GSS life satisfaction question has been on a 10 point scale (see Table 1).[9] The GSS provides data at the provincial level and for a few major Census Metropolitan Areas. Given that our research initiative is to explore happiness and life satisfaction at as detailed a geographical level as possible, the GSS is not the best source due to its relatively small sample size. Until 1998, the target sample size was approximately 10,000 persons. It increased to 22,000 in 2010.

[8] The Ethnic Diversity Survey (EDS) conducted by Statistics Canada only once in 2002 and the Equality, Security and Community (ESC) Survey conducted twice in 1999 and 2002 are two other Canadian surveys that included a question on life satisfaction. We discuss the GSS and CCHS due to their advantages in sample size and extent of geographical coverage that allows for a regional analysis.

[9] It must be noted that from 2010 onwards, the 0-10 scale for life satisfaction will be the norm for all Statistics Canada Surveys.

Table 1: GSS Canada, Life Satisfaction, Historical Questions and Response Choices

1985	1986	1989	1991	1996	1998	2002	2003, 2005-2008
Very Satisfied		Strongly satisfied	Very Satisfied			Excellent	Scale of 1-10 where '1' is least satisfied and '10' is most satisfied, with an option for 'no opinion'
Somewhat Satisfied		Somewhat satisfied	Somewhat Satisfied			Very good	
Somewhat Dissatisfied		Somewhat dissatisfied	Somewhat Dissatisfied			Good	
Very Dissatisfied		Strongly dissatisfied	Very Dissatisfied			Fair	
						Poor	

ii. Canadian Community Health Survey (CCHS)

The CCHS is a large survey conducted by Statistics Canada on various health issues and quality of life at the detailed health region level. The survey began in 2001 and continued for 2003, 2005, 2007,2008 and annually since then. Prior to 2007, when the survey was biannual, the CCHS collected data from 130,000 persons aged 12 and over. This was changed and from 2007 onwards, the sample size has been 65,000 respondents per year. To help researchers, the CCHS produces an annual micro-data data file combining two years of data. In all the survey waves, there was a five-scale question asked about satisfaction with life in general (SWL). The consistency of this question across all waves allows us to use the combined public use micro-data file for 2007 and 2008 for our study. The first version of this report was based on the public use micro-data files. In the fall of 2010, access was obtained to the full data set.

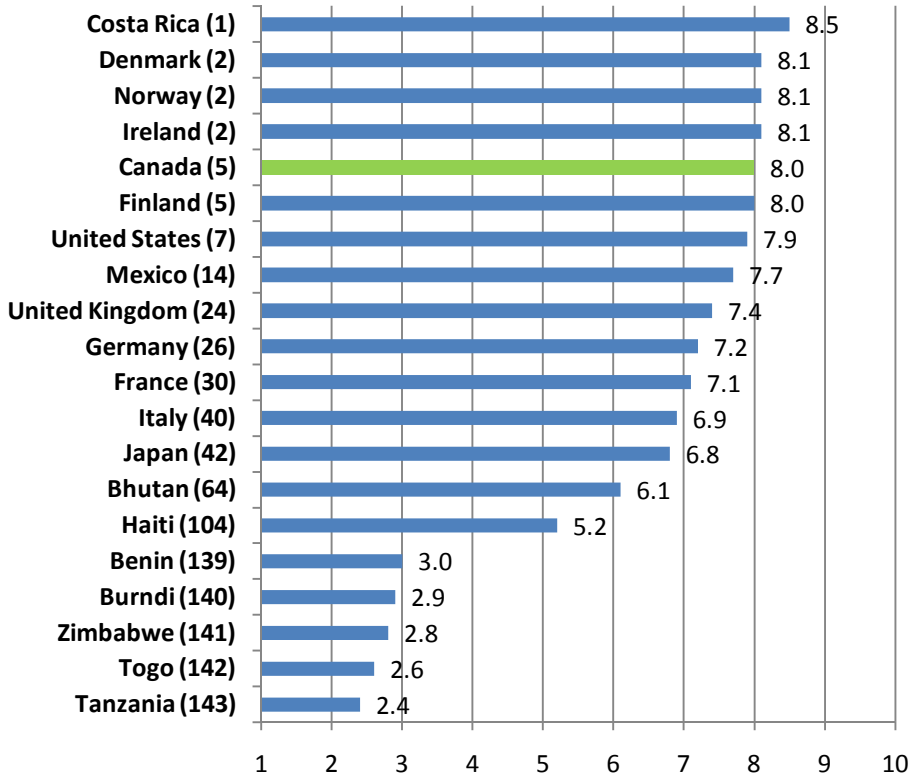
The GSS would in principle be better suited for the purposes of this study as it has various modules on social issues. For instance, a key weakness of the CCHS is the poor articulation of the labour market variables in the public use micro-data files. No distinction in the 'not working' category has been made between the unemployed and persons out of the labour force. However, the larger sample size of the CCHS does make it easier to obtain reliable estimates about some small groups within the population such as persons with disabilities and people belonging to visible minorities. In addition, an additional geographic unit of the CCHS is the Health Region (HR). The use of CCHS will therefore enable variation in happiness to be studied at an additional geographical layer. For this report, we have also attempted to look at the distribution of happiness at the Census Metropolitan Area (CMA) level. Even though there is no perfect concordance between a Health Region and a CMA, we have undertaken a mapping scheme through which we have roughly aligned the HRs onto the geographical limits of the CMAs.

B. Life Satisfaction in Canada: International and Historical Perspectives

Canada has consistently ranked as one of the happiest nations in the world. The *Happy Planet Index* (New Economics Foundation, 2009) reported Canada's life satisfaction in 2007-8 at 8.0 on a scale of 1-10 using the Gallup World Poll. Only Costa Rica (8.5), Denmark (8.1), Norway (8.1) and Ireland (8.1) had happier populations.

Canada was the happiest country in the G-7. While the United States was close behind at 7.9, other G-7 countries were significantly unhappier: United Kingdom (7.4), Germany (7.2), France (7.1), Italy (6.9) and Japan (6.8). Many African countries exhibited very low levels of happiness. Tanzania was the lowest at 2.4 - less than one third the level of happiness enjoyed in Canada.

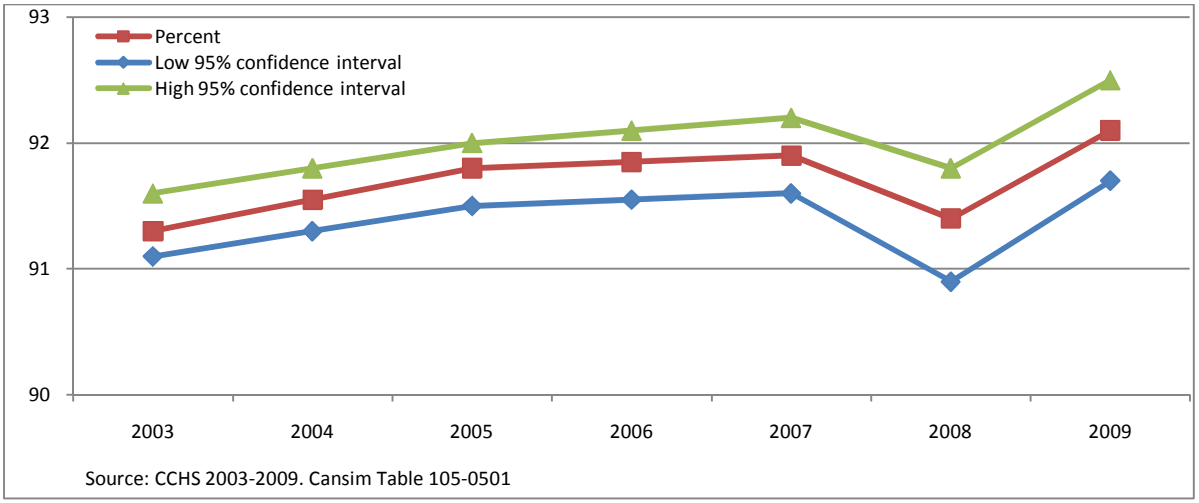
Chart 1: Average Life Satisfaction at the International Level, 2007-8



Source: 2009 Happy Planet Index Report of the New Economics Foundation using Gallup World Poll.

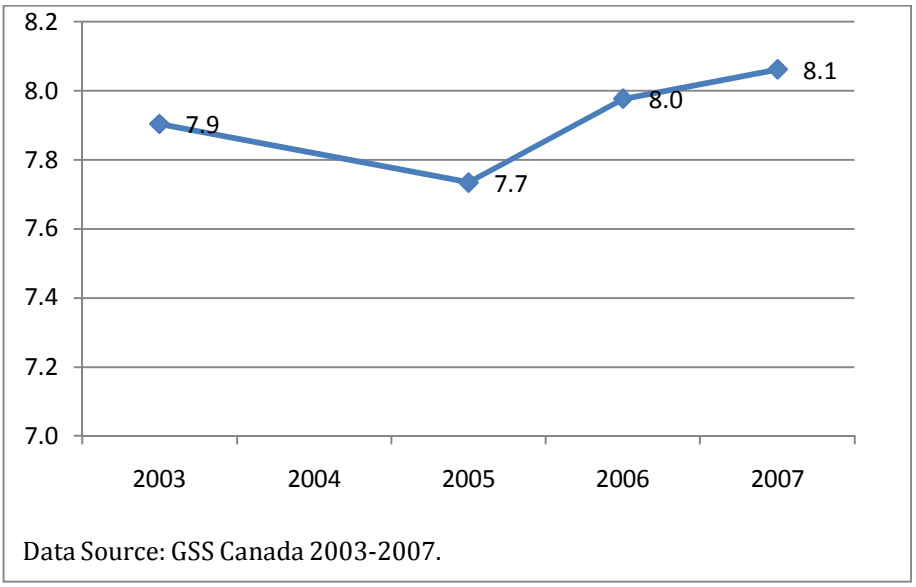
The consistent scale of the life satisfaction question used in the CCHS provides a consistent time series on happiness in Canada for the 2003-2009 period (Chart 2). It appears that there has not been much variation in happiness over this period. In 2009, 92.1 per cent of Canadians aged 12 or older reported that they were satisfied or very satisfied with life, almost identical to the 91.2 per cent in 2003.

Chart 2: Percentage satisfied or very satisfied with life, household population aged 12 and older, Canada, 2003 to 2009.



The level of average life satisfaction from the GSS is also high, at 8.1 in 2007 on a scale of 1 to 10. It was up from 7.9 in 2003 and had increased in both 2006 and 2007 (Chart 3).

Chart 3: Average Life Satisfaction on a 10 point scale, household population aged 15 and older, Canada, 2003 to 2007.



Hill (2002) studied happiness in Canada since World War II and found that it followed a a positive trend, like in most of the other developed countries. Using data from 25 surveys from 1946 to 1998, he found that this trend amounted to 0.4 on a scale of 0-10 between 1946 to 1998. This can be interpreted as an increase in happiness by 1 point on a 0-10 point scale by 40% of the population. It must be noted that his analysis makes use of a large number of surveys on Canada, most of which have different wording and scales on the life satisfaction and happiness questions. However, he does state that changes in the wording of the question are much less of an issue than changes in the choices of those questions. For instance, the surveys are comparable if the question changes from “how are happy are you.” to “how satisfied are you...”, but not when the choices for the answer or

the scale changes. Therefore, some sort of meaning can be derived from his analysis, which is summed up by Chart 4 below. His findings show that post-1985, life satisfaction in Canada has hovered around 8 on a scale of 0-10. This is largely consistent with cross-sectional data collected over the past decade from global surveys like the Gallup World Poll and the World Values Survey.[10]

Chart 4: Trend of Happiness in Canada

Source: Hill (2002: 116).

C. Life Satisfaction at Different Levels of Geography

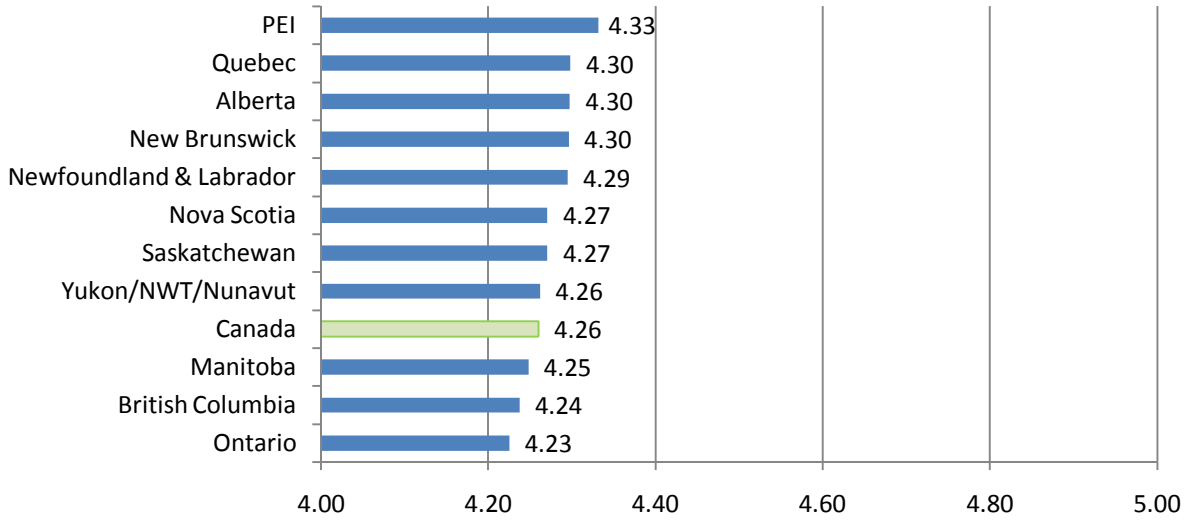
This sub-section will present a cross-sectional analysis of life satisfaction in Canada at three levels of geography – provincial, CMA, and Health Region (HR). Two measures have been used to present the statistics. The first method looks at the average life satisfaction utilising the full scale of survey responses. The second method, looks at the percentage of the population that is satisfied and very satisfied. Both methods were also found to be closely correlated, with a correlation coefficient of 0.89 for the provinces, 0.80 for the CMAs and 0.73 for the health regions. While the second method provides the degree of geographical disparity only amongst the proportion of the population with relatively high satisfaction levels, it also provides an interesting comparison with the first method.

i. Provinces

Chart 5 shows on a scale of 1-5 the average life satisfaction by province. In 2007-2008, Prince Edward Island had the highest level of happiness at 4.33, followed by Quebec (4.30) and Alberta (4.30). The lowest average life satisfaction was found in Ontario (4.23), followed by British Columbia (4.24) and Manitoba (4.25). One is struck by the small range of 0.10 (in a scale of 1 to 5), which represents a 2.5 per cent difference between the happiest province, Prince Edward Island, and the least happy province, Ontario.

[10] The average life satisfaction for Canada from the World Values Survey is 7.84 (Wave 1, 1981-1984), 7.88 (Wave 2, 1990-1994) and 7.80 (Wave 4, 1999-2004). In his empirical work, Hill (2002) used the first two waves of the World Values Survey.

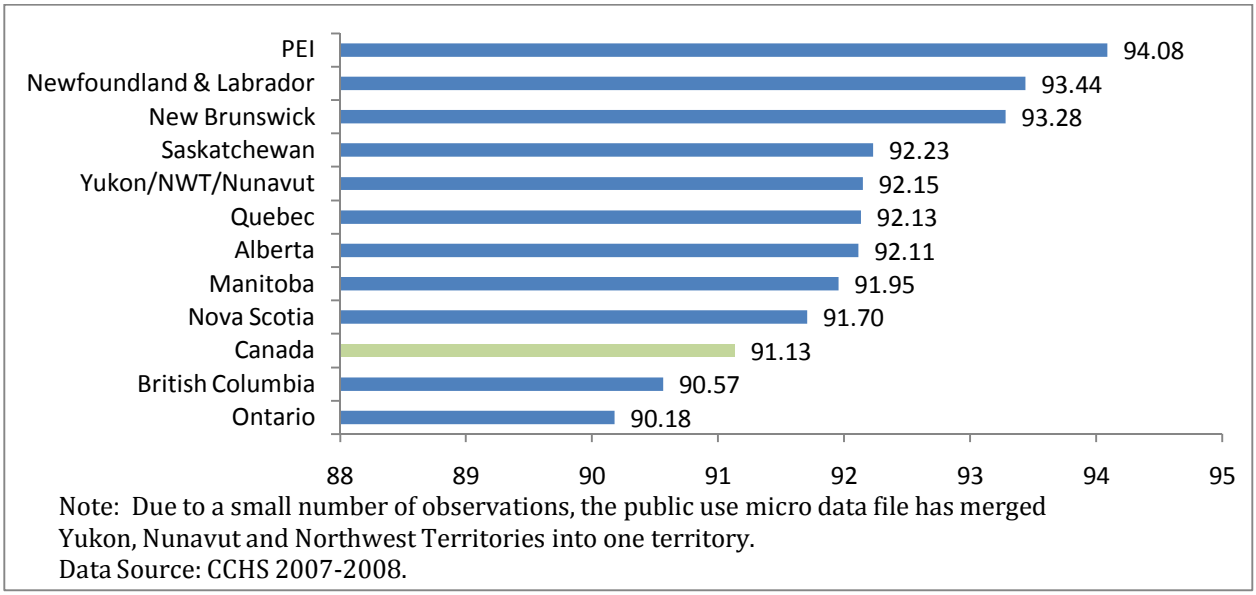
Chart 5: Average Life Satisfaction Level of the Canadian Provinces on a Scale of 1 to 5, 2007-2008



Note: Due to a small number of observations, the public use micro data file has merged Yukon, Nunavut and Northwest Territories into one territory.
Data Source: CCHS 2007-2008.

We used an alternative method that ranks the life satisfaction of the provinces according to the percentage of the population that was 'satisfied' and 'very satisfied'. Chart 6 shows that there is a range of 3.9 percentage points between the top and bottom ranked province. This method also sees considerable change in rankings at the top compared to the bottom. Prince Edward Island (94.08 per cent) is still the top-ranked province, but is now followed by Newfoundland and Labrador (93.44 per cent, previously fifth) and New Brunswick (93.28 per cent, previously fourth). Quebec (92.13) drops from second place to sixth place in the happiness leagues with this change in metric. At the bottom, Ontario still ranks the lowest (90.18 per cent) and British Columbia (90.57 per cent), still retains its second last position. Nova Scotia, previously sixth last (91.70 per cent) is now third last. When compared with the weighted measure for the whole Canadian population (91.13 per cent), only the bottom two provinces of Ontario and British Columbia fare worse.

Chart 6: Percentage 'Satisfied' and 'Very Satisfied' with life in Canada's Provinces, 2007-2008



Note: Due to a small number of observations, the public use micro data file has merged Yukon, Nunavut and Northwest Territories into one territory.
Data Source: CCHS 2007-2008.

ii. CMAs

Chart 7 presents average happiness ratings for 33 CMAs on a scale of 1 to 5. The three happiest CMAs using this approach are Sherbrooke (4.36), Brantford (4.36), and Trois-Rivieres (4.35). The least happy CMAs are Toronto (4.15), Vancouver (4.20) and St.Catharines (4.21). Two of these CMAs, Toronto and St. Catharines fall in the least satisfied province (Ontario), while Vancouver falls in the province (British Columbia) that is second from bottom on the list of most satisfied provinces. The range between the most happy and least happy CMA is relatively small, 0.22 on a scale of 1 to 5 (or 5.5 per cent) and statistically significant at the 1 per cent level.

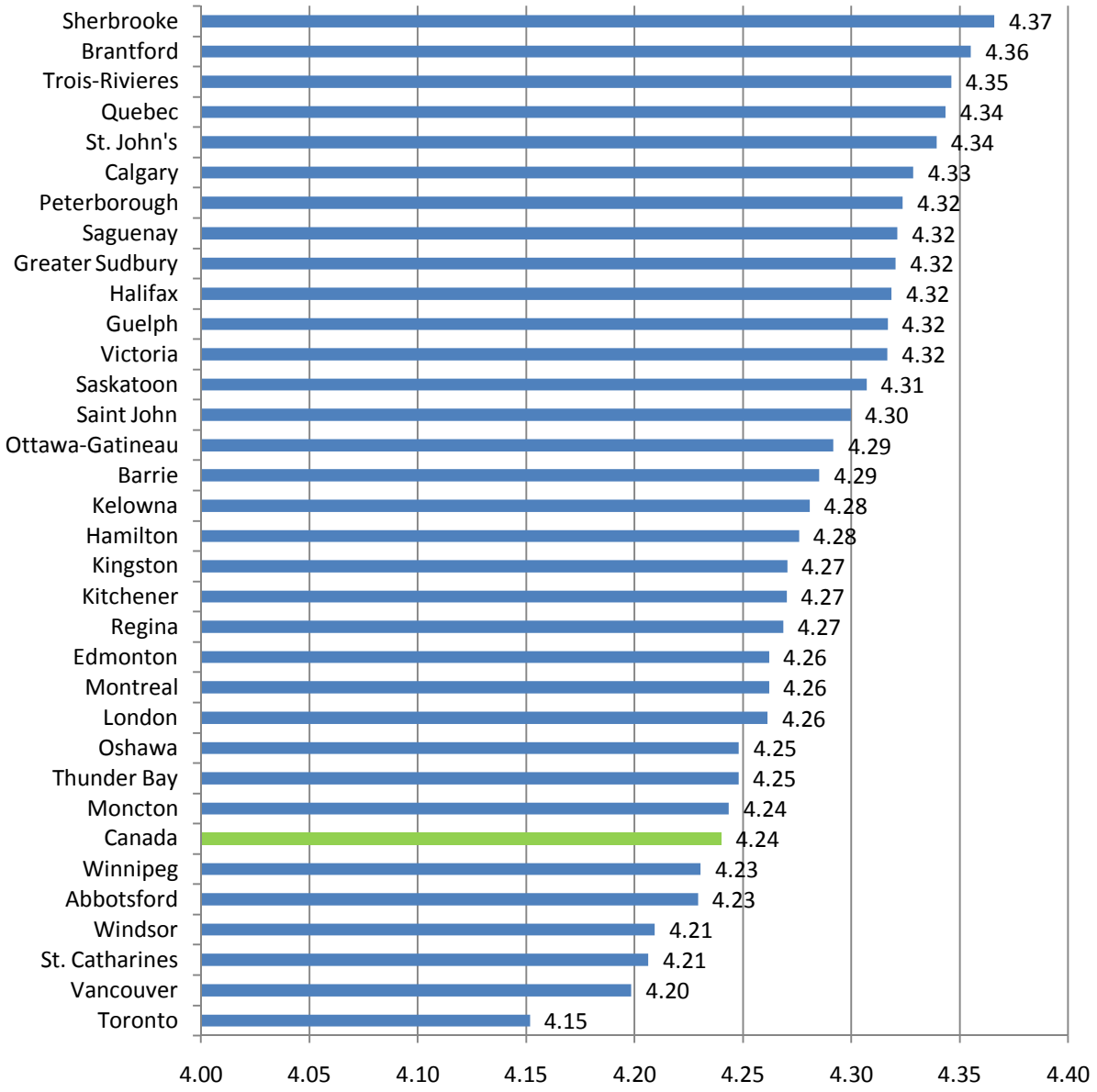
To look at the variation at the top, we ranked the CMAs based on the percentage of the population that chose the top two categories of the life satisfaction question: 'satisfied' and 'very satisfied'.

Chart 7 is different especially with regards to top ranked CMAs. Peterborough (94.47 per cent, previously ranked 7th), Saint John (93.70 per cent, previously ranked 14th) and Trois-Rivières (93.55 per cent, previously ranked third) are now ranked the highest. Sherbrooke, previously ranked number one, now becomes eleventh.

The comparisons at the bottom are relatively similar: St. Catharines (88.08 per cent, previously ranked third from last), Toronto (88.58 per cent, previously ranked fifth from bottom) and Windsor (90.20 per cent, previously ranked third from bottom). All three of these CMAs fall in the bottom ranked province – Ontario.

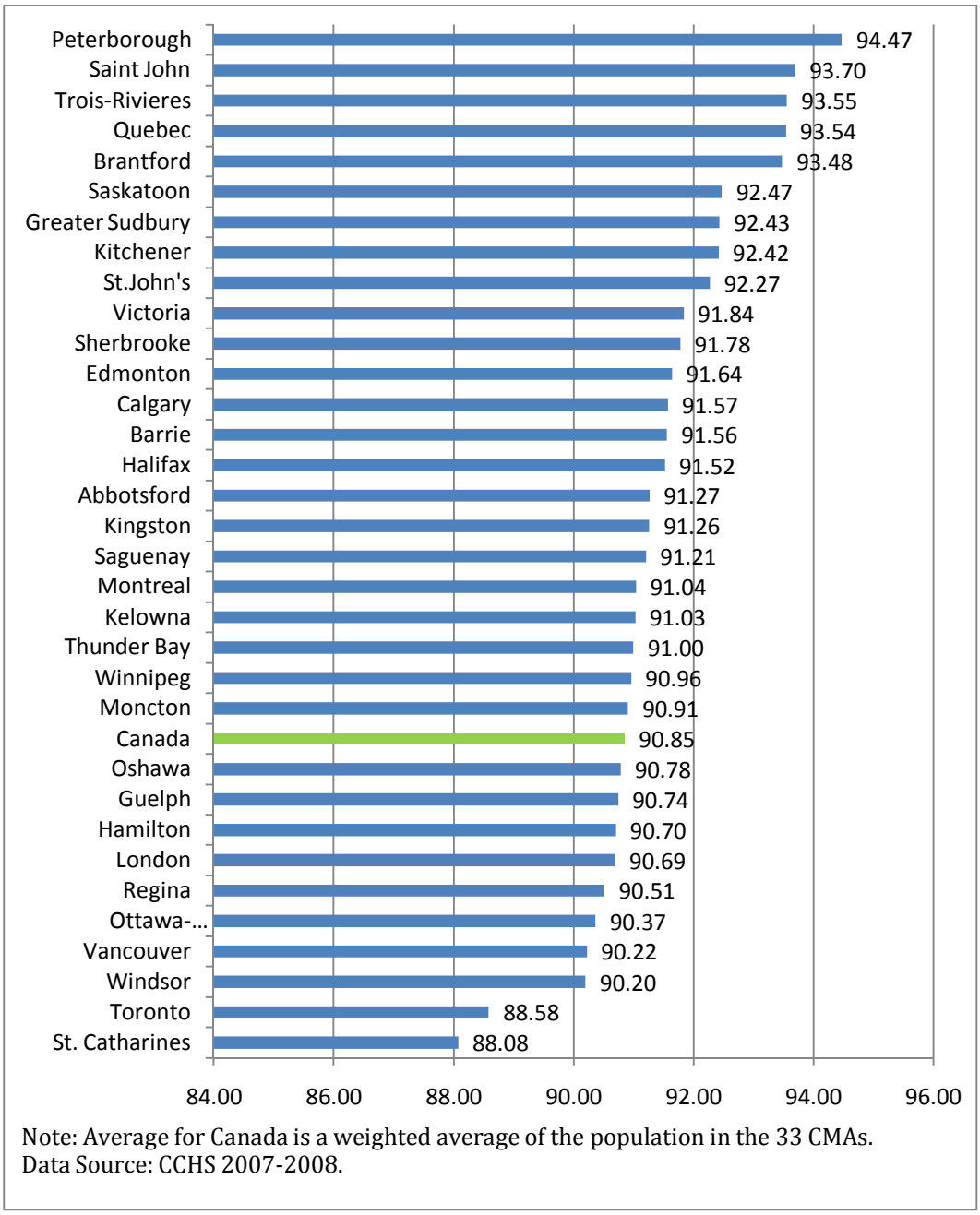
The difference between the happiest CMA, Saint John, and the least happy CMA, Toronto, is 6.39 percentage points. Given the scale from 0 to 100 for this metric, this is equivalent to 6.39 per cent. Similar to the ordering based on average life satisfaction, the ranking of CMAs based on percentage of satisfied and very satisfied is characterized by very low variation with a standard deviation of 1.02 per cent.

Chart 7: Average Life Satisfaction Level of Canada's 33 Census Metropolitan Areas (CMAs) on a Scale of 1 to 5, 2007-2008



Note: Average for Canada is a weighted average of the 33 CMAs.
Data Source: CCHS 2007-2008.

Chart 8: Percentage 'Satisfied' and 'Very Satisfied' with Life in Canada's 33 Census Metropolitan Areas (CMAs), 2007-2008



Note: Average for Canada is a weighted average of the population in the 33 CMAs.
Data Source: CCHS 2007-2008.

Table 2: Average Life Satisfaction and Percentage Satisfied and Very Satisfied by Canada's Census Metropolitan Area (CMA) Population

CMA (1)	Population (2)	Average Life Satisfaction for the Group (3)	Percentage Satisfied and Very Satisfied in the Group (4)
Average for CMA Grouping Toronto (5,113,149) Montreal (3,635,571) Vancouver (2,116581) Ottawa-Gatineau (1,130,761) Calgary (1,079,310) Edmonton (1,034,945)	x > 1,000,000	**4.25 (0.18)**	**90.57 (3.06)**
Average for CMA Grouping Québec (715,515) Winnipeg (694,668) Hamilton (692,911) London (457,720) Kitchener (451,235)	450,000 < x < 1,000,000	**4.28 (0.11)**	**91.66 (2.85)**
Average for CMA Grouping St.Catharines-Niagara (390,317) Halifax (372,858) Oshawa (330,594) Victoria (330,088) Windsor (323,342) Saskatoon (233,923)	200,000 < x < 450,000	**4.27 (0.11)**	**90.82 (4.39)**
Average for CMA Grouping Regina (194,971) Sherbrooke (186,952) St.Johns (181,113) Barrie (177,061) Kelowna (162,276)	160,000 < x < 200,000	**4.32 (0.10)**	**91.53 (1.76)**
Average for CMA Grouping Abbotsford (159,020) Greater Sudbury (158,258) Kingston (152,358) Saguenay (151,643) Trois-Rivières (141,529)	130,000 < x < 160,000	**4.30 (0.12)**	**91.79 (2.52)**
Average for CMA Grouping Guelph (127,009) Moncton (126,424) Brantford (124,607) Thunder Bay (122,907) Saint John (122,389) Peterborough (116,570)	100,000 < x < 130,000	**4.30 (0.12)**	**92.38 (3.47)**

Note: ( ) in column 1 contain population in 2006 and () in column 3 contain the range for the group.
Data Source: CCHS and Canada Census Profiles 2006.

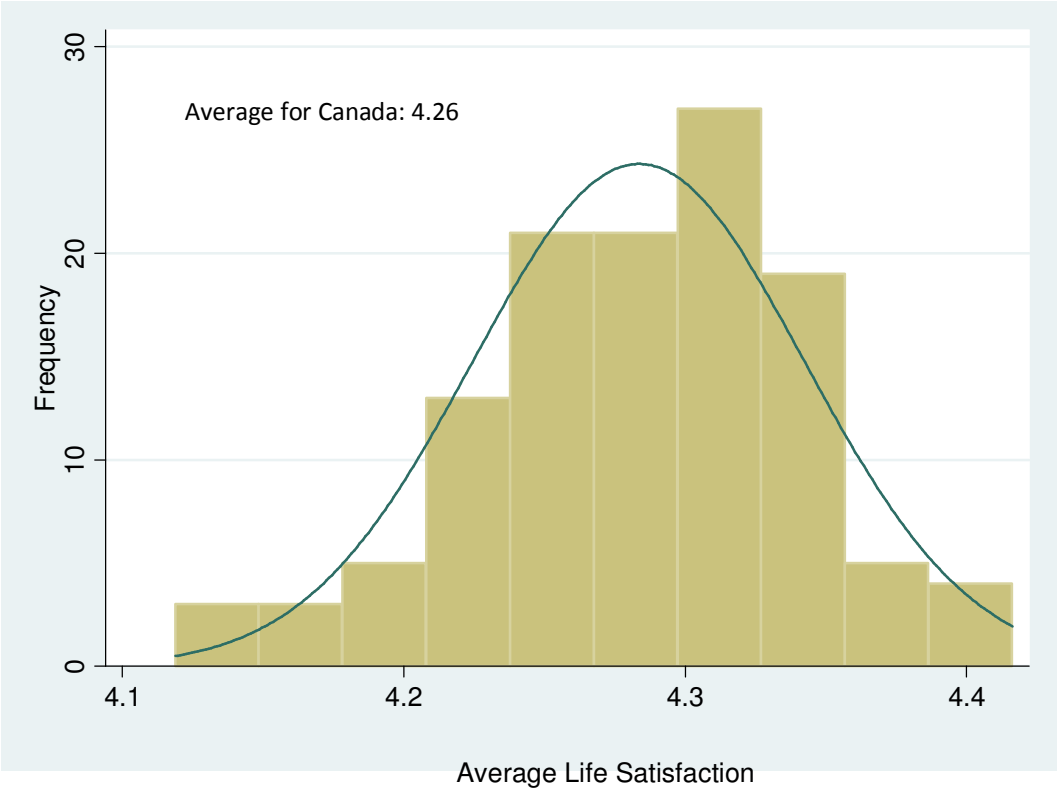
While we will look at socio-economic indicators in the following sections, a quick glance at both the rankings suggests that the more populated centers are the relatively less happy ones. To analyze this, we divided CMA population into six discrete categories.

Table 2 shows that the lowest group, containing a population between 100,000 and 130,000, has an average life satisfaction of 4.30 and 92.38 per cent satisfied and highly satisfied individuals, while the highest group, with a population of over 1,000,000, has an average life satisfaction of 4.25 and 90.57 per cent satisfied and highly satisfied individuals. The second lowest group, with a population of 130,000 and 160,000, is compared with the second highest group, with a population of 450,000 to 720,000, and we see that the less populated group fares better: 4.30 versus. 4.28 and 91.79 per cent vs. 91. per cent.

iii. Health Regions

As illustrated in Chart 9, the distribution of average life satisfaction among the 121 Health Regions of Canada is relatively even with very few outliers.[11] Kings County, Ontario (4.42), Nord du Quebec (4.41) and Renfrew (4.41) were found to be the happiest Health Regions. The City of Toronto Health Unit, Ontario (4.11), Sunrise Health Unit, Ontario (4.12) and Peel Health Unit (4.15) were found to be the least happy health regions. The most apparent difference between these health regions is that the least happy are the large urban centres while the happiest are relatively non-urban areas. The range in average life satisfaction between the most happy and least happy health region is 0.30 points on a maximum range of 4, equivalent to 5.9 per cent and this difference is significant at the 1 percent level.

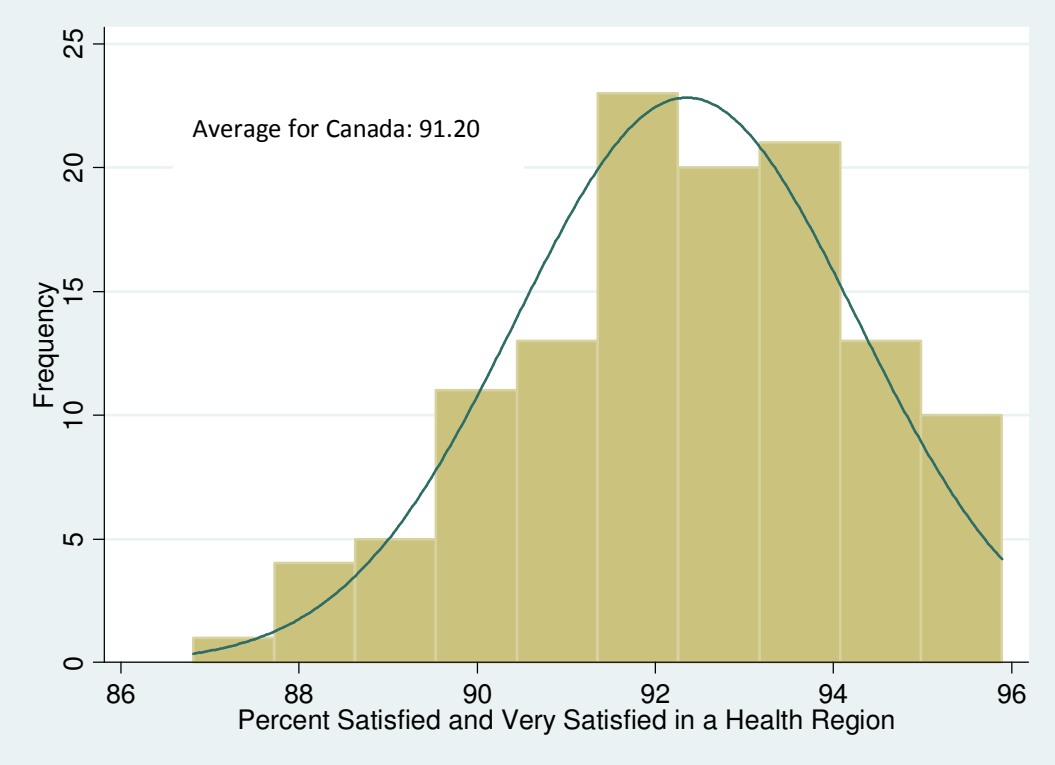
Chart 9: Distribution of Health Regions by Average Life Satisfaction on a scale of 1 to 5, 2007-2008



Note: Average for Canada is a weighted average of the Canadian Population aged 20 and over.
Source: CCHS 2007-2008.

[11] Data for all health regions can be found in Appendix Table 56.

Chart 10: Distribution of Health Regions by the Percentage of the Population 'Satisfied' and 'Very Satisfied', 2007-2008



Source: CCHS 2007-2008.

The distribution of Health Region using the percentage 'satisfied' and 'very satisfied' is similar to the one that was obtained using the average life satisfaction approach (see Appendix). The variation is very low (1.74 per cent) and the only visible outlier is the City of Toronto, Health Unit (86.81 per cent). At the bottom, the City of Toronto is followed by the Sunrise Health Region (87.74 per cent) and Mamawetan/Keewatin/Athabasca Parkland Health Region (87.77 per cent). At the top, Region 6 in New Brunswick (95.89 per cent) ranks first, followed by Nord-Du-Quebec (95.80) and Western Region (95.58 per cent) in Newfoundland and Labrador. The range in average life satisfaction (for 'satisfied' and 'very satisfied') between the most happy and least happy health region is 9.1 percentage points, equivalent to 9.1 per cent and this difference is significant at the 1 percent level.

D. Life Satisfaction by Individual Characteristics

In addition to geographical variation, happiness varies by the situation and personal characteristics of the individual, including marital status, age, sex, income, health, education and social connections. To study average satisfaction we take into account several individual characteristics: health, mental health, level of physical activity, difficulty with activities, income, student status, visible minority status, immigrant status, age, sex, employment status, education and language spoken at home.

Table 3 lists the differences in average life satisfaction within the different categories for variables that will be discussed in this section. These variables have been classified into: situational variables – those that

relate to an individual's state or situation at a point in time, and individual characteristics – the factors that closely reflect demographics.

Among the situational variables, the greatest difference is found in mental health (1.92) followed by health (1.32), stress (0.85), sense of belonging to the local community (0.54), difficulty with activities (0.42) and level of physical activity (0.24). The greatest disparities in average life satisfaction within individual characteristics are found in employment status (0.67), and household income (0.61), followed by marital status (0.29), language spoken at home (0.28), educational attainment (0.20), immigration status (0.19) and visible minority status (0.19). Age (0.07), student status (0.02) and sex (0.01) have negligible differences.[12]

The ranking of these characteristics or factors is done without accounting for other variables that may mitigate or enhance the impact on subjective well-being. The next section will explore the strength of the association of these variables with well-being using a framework based on a regression analysis that will enable such factors to be taken into account.

Table 3: Differences in Average Life Satisfaction by individual situational and demographic characteristics, Canada 2007-2008

Variable	Category with the highest average on Life Satisfaction	Category with the lowest average on Life Satisfaction	Difference between highest and lowest average
Individual Variables			
Mental Health	Excellent	Poor	1.92
Health	Excellent	Poor	1.32
Stress	Not at all	Extremely	0.85
Sense of Belonging to the local community	Very strong	Very weak	0.54
Difficulty with Activities	Never	Often	0.42
Level of Physical Activity	Highly Active	Completely Inactive	0.24
Household Income[13]	1st Decile	10th Decile	0.61
Employment Status	Employed	Unable to Work	0.67
Marital Status	Married	Never Married	0.29
Language Spoken at Home	Francophones	Allophones	0.28
Highest Educational Attainment	Post-Secondary Graduate	Less than Secondary	0.20
Immigration Status	Non-Immigrants	Recent Immigrants	0.19
Visible Minority Status	Majority	Visible Minority	0.19
Age	30s/60s	50s	0.07
Student Status	Student	Non-Student	0.02
Sex	Female	Male	0.01

Data Source: CCHS 2007-2008.

[12] All differences are statistically significant at the 1 per cent level.

[13] Note household income is a continuous variable that has been split into deciles to differentiate between the life satisfaction of high income and low income groups. The same methodology has been applied to age of respondents.

Health affects all three aspects of an individual's well-being: social, mental and physical. As expected, data from CCHS shows that average life satisfaction is higher for a person in self reported good health. Table 4 and Chart 11 show that average life satisfaction is 3.23 for those in poor health, 3.83 for those in fair health, 4.11 for those in good health, 4.38 for those in very good health and 4.56 for those in excellent health. The difference between those in excellent health and those in poor health is 1.33 points.

The results are similar for self reported mental health (Chart 12 and Table 4). Those in poor mental health have very low average life satisfaction (2.65) and those in excellent mental health have high average life satisfaction (4.57). The difference between those in poor mental health and those in excellent mental health is 1.92 points and is mainly driven by the average score on poor mental health.

Table 4: Average Life Satisfaction at Different Levels of Perceived Health and Mental Health Status in Canada, 2007-2008

	Health		Mental Health	
	Average Life Satisfaction	% of Population	Average Life Satisfaction	% of Population
Poor (Lowest)	3.23	3.22	2.65	1.01
Fair	3.83	9.06	3.38	4.05
Good	4.11	29.75	3.95	20.85
Very Good	4.38	36.74	4.27	35.33
Excellent (Highest)	4.56	21.24	4.57	38.76
Difference between Highest and Lowest	1.33		1.92	

Chart 11: Life Satisfaction by Self Perceived Health Status in Canada, 2007-2008

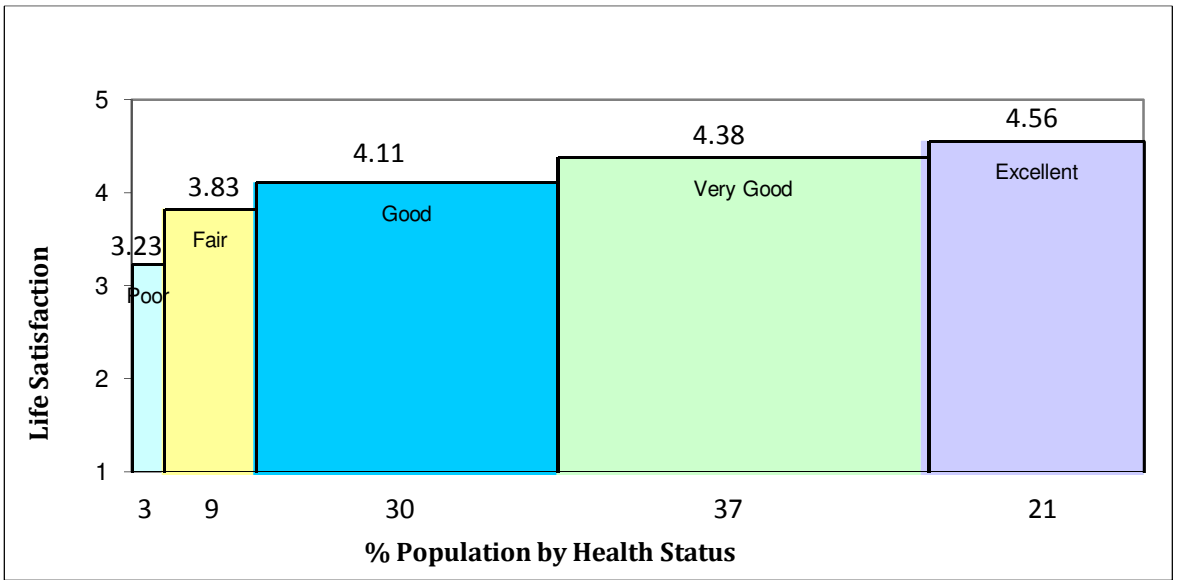
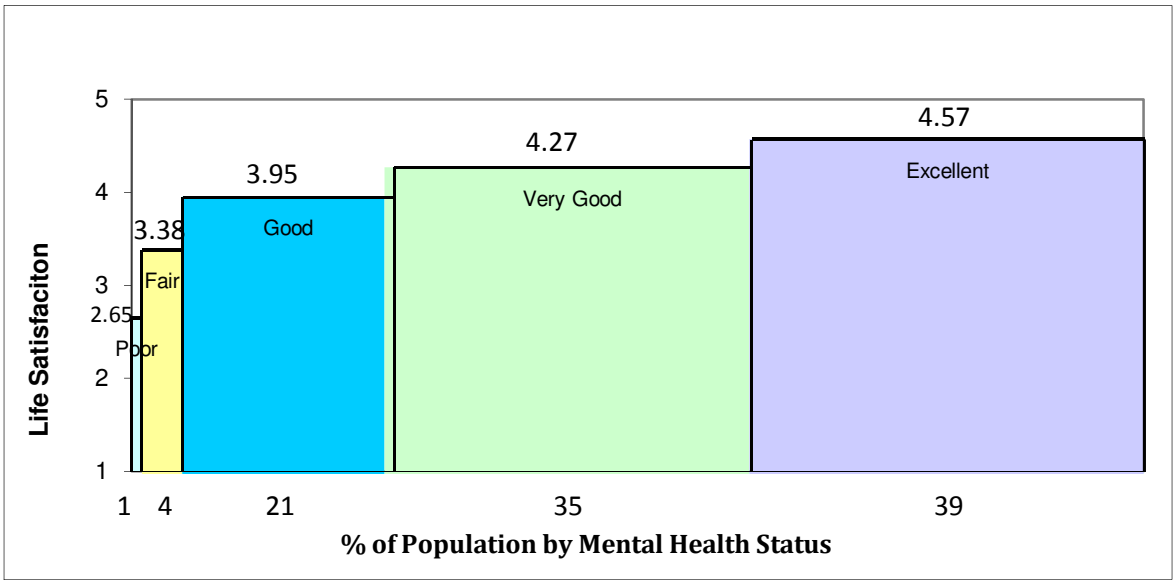


Chart 12 : Life Satisfaction by Self Perceived Mental Health Status in Canada, 2007-2008



The pattern for self perceived stress is similar to that of health. The higher the average stress in an individual's daily life the lower his average life satisfaction. On a scale of 1-5, individuals who are extremely stressed in their daily routines had an average life satisfaction of 3.67 while individuals who did not feel any stress had an average life satisfaction of 4.52 (Table 5 and Chart 13).

Table 5: Average Life Satisfaction at Different Levels of Stress in Canada, 2007-2008

Stress	Average Life Satisfaction	**%** of Population
Not at all (Lowest)	4.52	11.89
Not very	4.41	23.73
A bit	4.25	41.46
Quite a bit	4.05	19.16
Extremely (Highest)	3.67	3.76
Difference between Highest and Lowest	0.85	

Chart 13: Life Satisfaction by Self Perceived Stress Level in Canada, 2007-2008

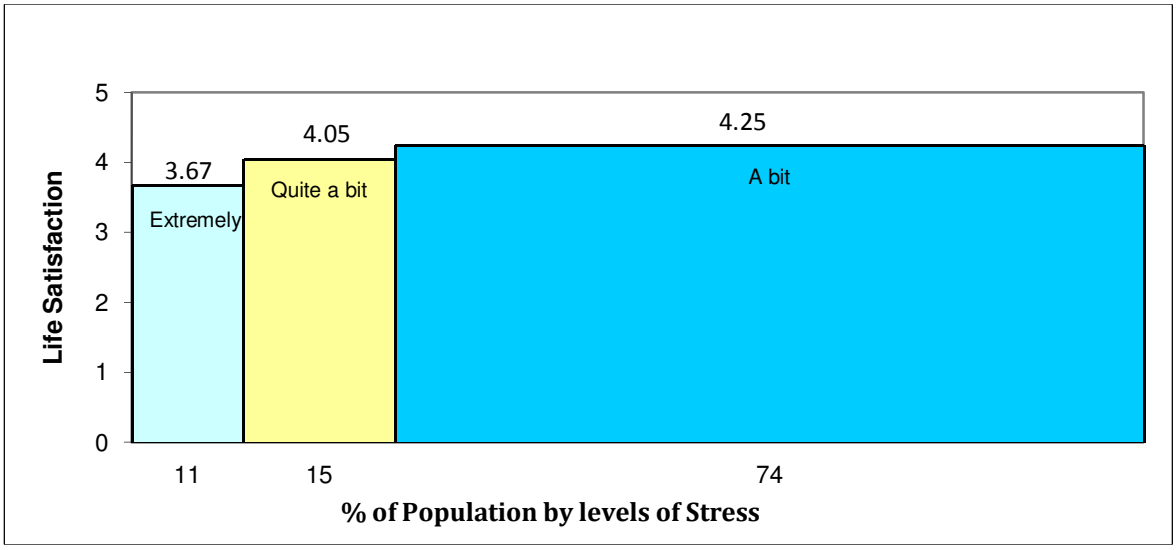


Table 6 and Chart 14 show that a higher sense of belonging to the local community results in higher average life satisfaction. Average life satisfaction increases from 3.93 for those with very weak sense of belonging to 4.16 for somewhat weak, 4.31 for somewhat strong and 4.47 for very strong sense.

Table 6: Average Life Satisfaction by Sense of Belonging to the Local Community, 2007-2008

Sense of Belonging to the Local Community	Average Life Satisfaction	**%** of Population
Very weak	3.93	10.24
Somewhat weak	4.16	26.37
Somewhat strong	4.31	46.12
Very Strong	4.47	17.28
Difference between very weak and very strong sense of belonging	0.54	

Chart 14: Life Satisfaction by Sense of Belonging to the Local Community in Canada, 2007-2008

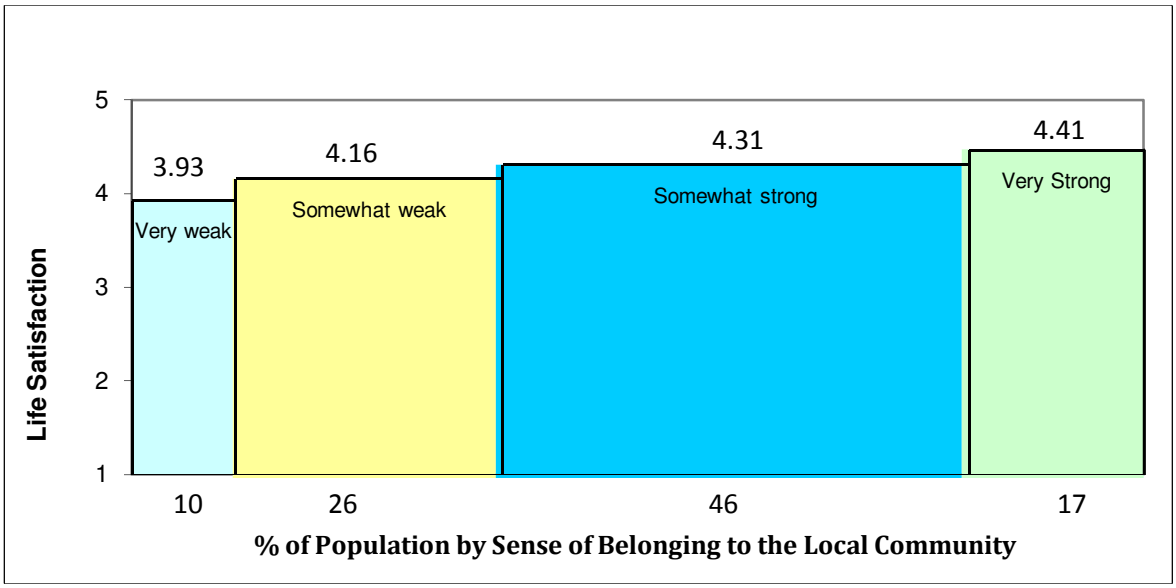


Table 7 and Chart 15 show the average life satisfaction across three different levels of physical activity. This concept is based primarily on the leisure physical activity index and has been adopted in the CCHS as a survey question with three possible answers; inactive, somewhat active and active. As expected, the level of physical activity has a positive relationship with average life satisfaction with the score being 4.16 for inactive, 4.33 for somewhat active and 4.40 for active individuals.

Table 7: Average Life Satisfaction by Level of Physical Activity in Canada, 2007-2008

Level of Physical Activity	Average Life Satisfaction	**%** of Population
Inactive	4.16	23.14
Somewhat Active	4.33	24.74
Active	4.40	52.12
Difference between Inactive and Active	0.24	

Chart 15: Life Satisfaction by Level of Physical Activity in Canada, 2007-2008

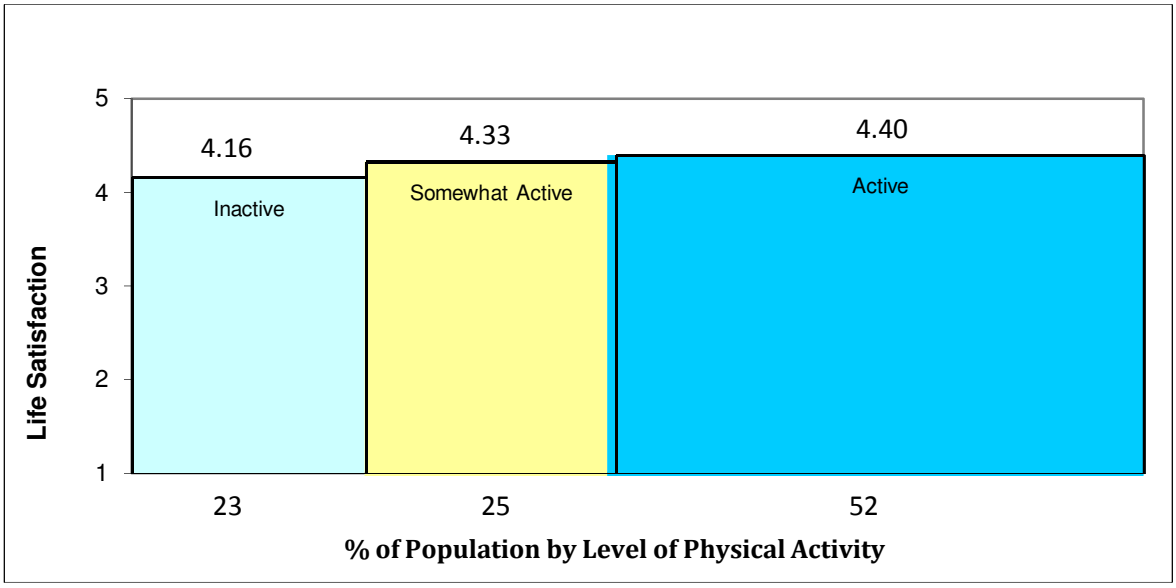
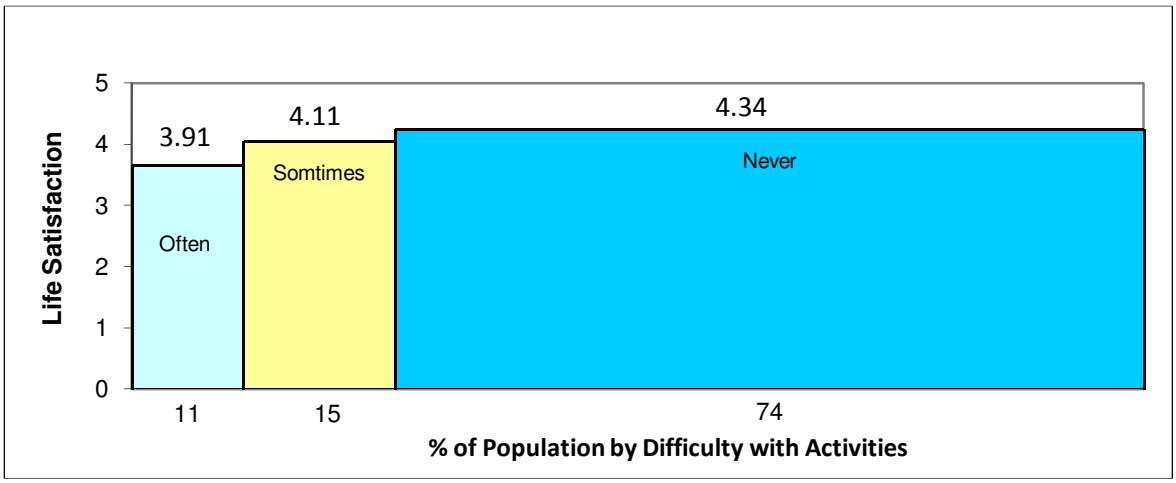


Table 8 and Chart 16 show average life satisfaction is lower for people who have difficulty with activities such as learning, hearing, seeing, walking, climbing stairs or bending. The average life satisfaction is 4.34 for people who never have any difficulty with such activities, 4.11 for people who have sometime had difficulties and 3.91 for those who often have difficulties.

Table 8: Average Life Satisfaction by Difficulty with Activities in Canada, 2007-2008

Difficulty with Activities	Average Life Satisfaction	**%** of Population
Never have Difficulties	4.34	73.79
Sometimes have Difficulties	4.11	14.94
Often have difficulties	3.91	11.28
Difference between Never have Difficulties and Often have difficulties	0.43	

Chart 16: Average Life Satisfaction by Difficulty with Activities in Canada, 2007-2008



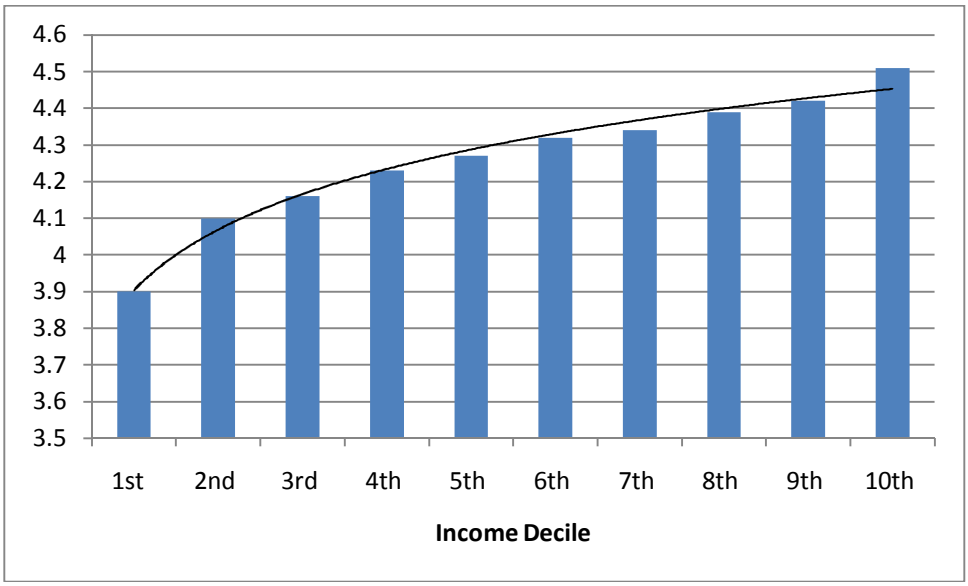
ii. Individual Characteristics

The income measures in this section are expressed in terms of household income deciles. Table 9 and Chart 17 show a positive monotonic relationship between this income measure and subjective well-being. Those in the lowest income decile have an average life satisfaction of 3.90 while those in the top decile have an average life satisfaction of 4.51. It must be noted that the gap between the fifth (i.e. median) and the bottom income decile (0.37) is greater than the gap between the median income decile and the top income decile (0.24). Therefore, the marginal effects of income on life satisfaction appear relatively larger for the low income groups.

Table 9: Average Life Satisfaction by Household Income Deciles of Canada, 2007-2008

Household Income	Mean Income in Decile	Average Life Satisfaction
1st Decile (Lowest)	13,918	3.90
2nd Decile	26,663	4.10
3rd Decile	37,063	4.16
4th Decile	47,701	4.23
5th Decile	59,654	4.27
6th Decile	71,580	4.32
7th Decile	83,975	4.34
8th Decile	101,452	4.39
9th Decile	133,078	4.42
10th Decile (Highest)	227,301	4.51
Difference between Highest and Lowest		0.61

Chart 17: Life Satisfaction by Income Deciles, Canada 2007-2008



We find that students are slightly happier than non-students, 4.28 versus 4.26 (Table 10). Individuals are categorized as students if they are enrolled part-time or full-time in a school, college or a university.

Table 10: Average Life Satisfaction by Student Status in Canada, 2007-2008

Student Status	Average Life Satisfaction	**%** of Population
Student	4.28	8.00
Non-Student	4.26	92.00
Difference between Not a student and Student	0.02	

The CCHS also has a question on the immigration status of an individual. Individuals are termed immigrants if they were not born in Canada. They are termed recent immigrants if they migrated within the last nine years, and are classified as non-recent immigrants if they migrated to Canada more than nine years ago at the time of the survey. The data from CCHS shows that those born in Canada are markedly happier than those born outside (Table 11). Non-immigrants have an average life satisfaction of 4.30 compared to 4.11 for recent immigrants and 4.14 for non-recent immigrants.

Table 11: Average Life Satisfaction by Immigration Status in Canada, 2007-2008

Immigration Status	Average Life Satisfaction	**%** of Population
Non-Immigrants	4.30	85.00
Non-Recent Immigrants	4.14	12.00
Recent Immigrants	4.11	3.00
Difference between Recent Immigrants and Non-Immigrants	0.19	

We have split the age variable into 10 year groups to study the level of life satisfaction by age. From Table 12, it can be seen that average life satisfaction increases from 4.27 in the 20s to 4.29 in the 30s. It then declines with individuals in their 40s to 4.25 before reaching a global minimum of 4.22 in the 50s. It then increases to 4.29 for individuals in their 60s before declining slightly to 4.26 for individuals in their 70s and above. Therefore, individuals in their 30s and 60s are the happiest and the individuals in the 50s are the least happy of all the age categories. But the differences are small.

Table 12: Average Life Satisfaction by Age Categories in Canada, 2007-2008

Age Category	Average Life Satisfaction	**%** of Population
20s	4.27	18.12
30s (Joint highest)	4.29	18.09
40s	4.25	21.13
50s (Lowest)	4.22	18.78
60s (Joint highest)	4.29	12.25
70s and above	4.26	11.63
Difference between the 30/60s and the 50s	0.07	

Visible minorities are found to be less happy than those who belong to the majority. The average life satisfaction of those in the visible minorities is 4.10, compared to 4.29 for the majority (Table 13).

Table 13: Average Life Satisfaction by Visible Minority Status in Canada, 2007-2008

Visible Minority Status	Average Life Satisfaction	**%** of Population
Majority	4.29	81.62
Visible Minority	4.10	18.38
Difference between Majority and Visible Minority	0.19	

Education was found to have a positive relationship with well-being, although the relationship is not perfectly linear.

Table 14 and Chart 18 show that average life satisfaction is 4.11 for individuals with less than secondary education, 4.24 for individuals with secondary schooling, and 4.22 for individuals with some post-secondary schooling and 4.31 for persons with post-secondary schooling.

Table 14: Average Life Satisfaction by Highest Educational Attainment in Canada, 2007-2008

Highest Educational Attainment	Average Life Satisfaction	**%** of Population
Less than Secondary	4.11	15.79
Secondary School Graduate	4.24	16.26
Some Post-Secondary	4.22	7.93
Post-Secondary	4.31	60.02
Difference between Less than Secondary and Post-Secondary	0.20	

Chart 18: Average Life Satisfaction by Highest Educational Attainment in Canada, 2007-2008

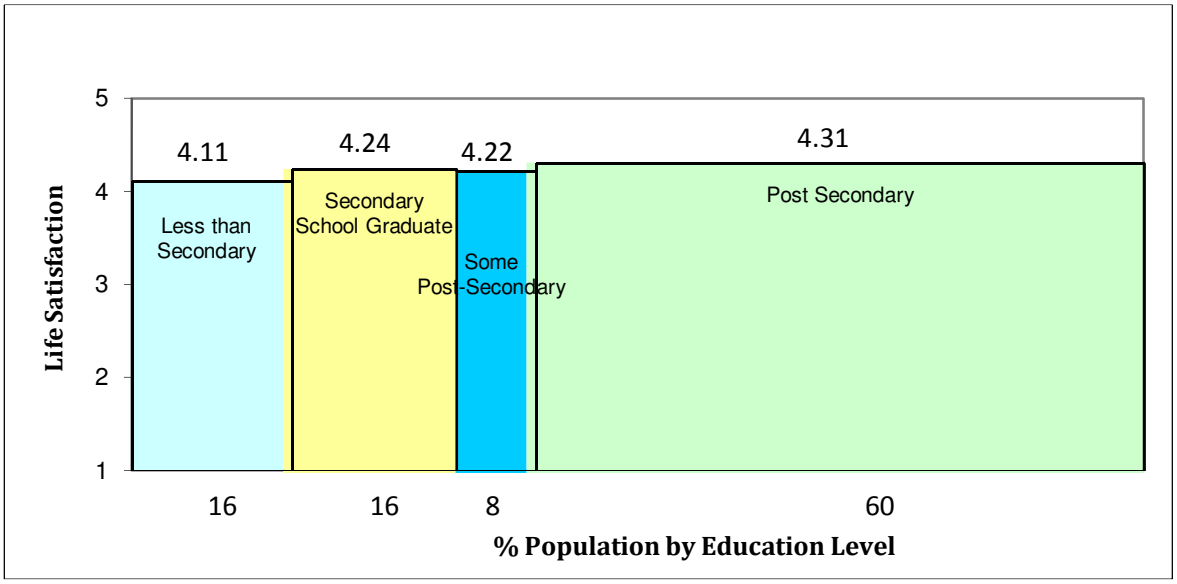
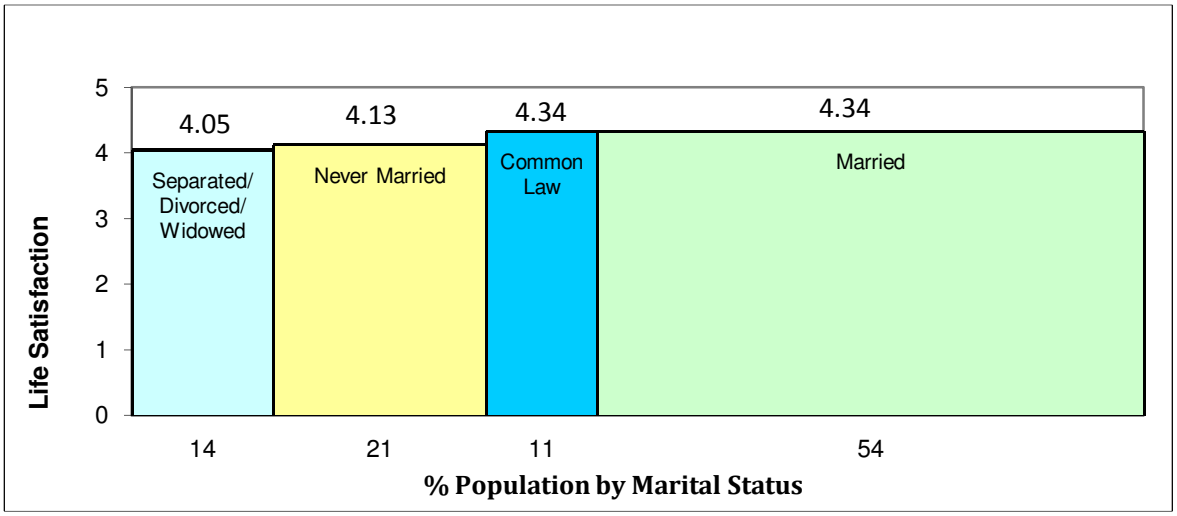


Table 15 and Chart 19 show that individuals who are married or in a common law relationship are happier than individuals who have never married or are separated, divorced or widowed. The average life satisfaction of those who are married or in a common law relationship is 4.34 compared to 4.05 for those who are separated, widowed or divorced and 4.13 for those who have never married.

Table 15: Average Life Satisfaction by Marital Status in Canada, 2007-2008

Marital Status	Average Life Satisfaction	**%** of Population
Married	4.34	54.36
Common Law	4.34	11.39
Never married	4.13	20.68
Separated/Divorced/Widowed	4.05	13.57
Difference between Married and Separated/Divorced/Widowed	0.29	

Chart 19: Average Life Satisfaction by Marital Status in Canada, 2007-2008



We find Francophones (4.32) and Anglophones (4.27) to be happier than Allophones (4.06) as shown in Table 16 and Chart 20. This is not surprising as familiarity with the official language provides great advantages in social networking as well as labour market opportunities.

Table 16: Average Life Satisfaction by Language Spoken at Home in Canada, 2007-2008

Language Spoken at Home	Average Life Satisfaction	**%** of Population
Francophones	4.32	21.18
Anglophones	4.27	66.22
Allophones	4.06	12.60
Difference between Francophones and Allophones	0.26	

Chart 20: Average Life Satisfaction by Language Spoken at Home in Canada, 2007-2008

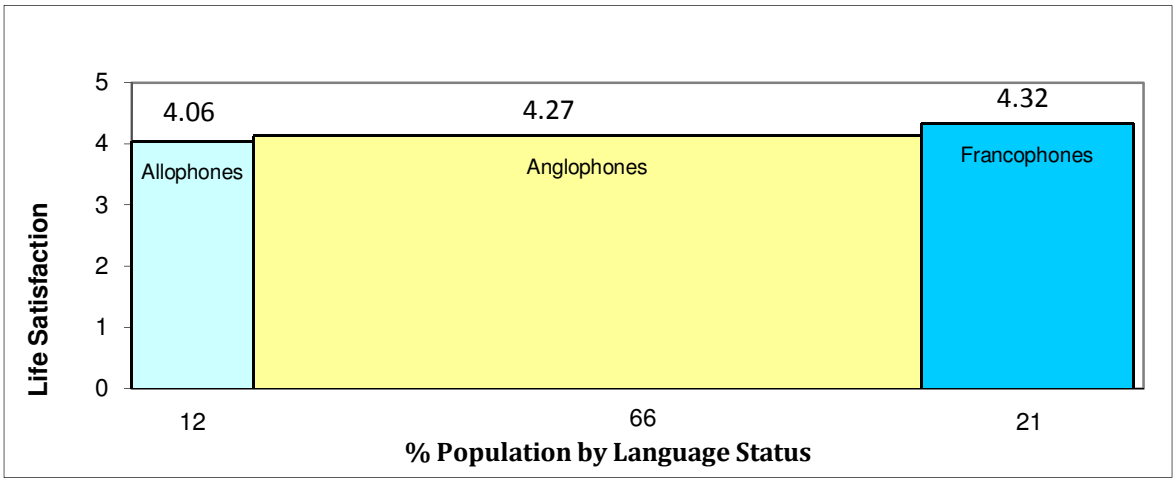


Table 17 shows that employed individuals are happier than those who are not employed. This is not surprising since loss of employment is seen by most as stigma and causes one to lose self-respect. However, the statistics from this table must be interpreted with caution as the 'not employed' variable includes both the unemployed as well as those not in the labour force due to the limitations of the public use micro-data file. Employment status also includes a category for those who are disabled and are permanently unable to work. Their average life satisfaction is considerably lower at 3.63 when compared to those who are employed (4.30) and not employed (4.21)

Table 17: Average Life Satisfaction by Employment Status in Canada, 2007-2008

Employment Status	Average Life Satisfaction	**%** of Population
Employed	4.30	71.15
Unemployed	4.07	3.14
Unable to Work	3.64	2.94
Not Employed	4.26	22.17
Difference between Employed & Unable to Work	0.67	

Average life satisfaction of males is 4.25 compared 4.26 for females (Table 18). The difference between the happiness of the two sexes is quite small but there are other factors such as health that might play an important role between the relationship of an individual's sex and life satisfaction. This relationship will be examined closely when such factors are accounted in the analysis in the following section.

Table 18: Average Life Satisfaction by Sex in Canada, 2007-2008

Sex	Average Life Satisfaction	**%** of Population
Female	4.26	49.04
Male	4.25	50.96
Difference between Male and *Female*	0.01	

IV. Regression Analysis

This section discusses the methodological framework used for the regression analysis of the CCHS dataset. We present the results from two sets of regressions: Equation 1 which uses only individual variables and Equation 2 which uses individual and health region variables. We estimate the effect of individual and societal level variables on happiness using an ordered probit regression framework. We also provide a linear probability model as a basis of comparison for our results from the ordered probit regressions.

The first section provides a motivation and explanation for the econometric methods used in this report. This is followed by a discussion of the variables used in the estimation procedure. Then we provide the results of the ordered probit and linear probability models in turn. The last section compares the expected life satisfaction for various categories of our independent variables, calculated from our regression results, with the actual reported mean life satisfaction in each category.

A. Methodological Framework for the Regression Analysis

The regression analysis follows the econometric techniques that Helliwell (2003) uses in his paper to explain international and interpersonal differences in well-being using the World Values Survey. The idea behind his framework is as follows: subjective well-being is affected by both individual factors (e.g. individual temperament, income, health) and societal factors (corruption, inequality, average income). This approach is well suited for our study as we have two sets of regressors: individual level and societal level. Our approach differs from Helliwell's methodology in two ways: we define societal-level not as the national level but at the health region level and we rely on an ordered probit estimation framework where Helliwell primarily used Ordinary Least Squares (OLS).

We consider several geographical dimensions because it is hard to know the size of the geographic unit that primarily affects subjective well-being. Thus, we experiment by using two geographical levels in Canada. Second, as the size of our unit for society increases (from health region to CMA) the range of societal level variables available increases because of greater data availability.

The two-level analysis, using individual and societal determinants, allows us assess how changes in societal variables affect individual happiness while holding individual characteristics constant and vice-versa. Societal variables (discussed in the following section) are either averages of individual variables from the CCHS or are drawn from other sources. We include such measures to assess whether the average level of health across a geographical unit has a spillover effect on individual happiness. Perhaps, being around other healthy people make individuals happier.

At the most basic level, we are looking to define what factors make individuals more likely to report high levels of life satisfaction. Greene (2003) defines the basic discrete choice framework in following way:

$$\text{Prob}(\text{event } j \text{ occurs}) = \text{Prob}(Y = j) = F[\text{relevant effects, parameters}]$$

where *F* is the cumulative distribution function for the variable of interest (in our case life satisfaction). In other words, we want to be able to associate whether given values of our independent variables make individuals more likely to report having a given category of life satisfaction.

As mentioned above, Helliwell (2003) primarily used OLS in his estimation of life satisfaction (he also estimated an ordered probit model). OLS is not well-suited to address the basic framework posited above. One major drawback of using OLS to estimate our equation for life satisfaction is that OLS imposes that the distance between each of the ordinal responses are equal. Specifically, moving from a life satisfaction score of one to two would be equivalent to moving from four to five. It is not self-evident that this would hold for a subjective measure such as life satisfaction, especially across individuals. Secondly, OLS is more appropriate when the dependent variable is continuous. The life satisfaction variable used in this report is measured on a scale from one to five, so this may not be a reasonable assumption to make. Moreover, the expected value of the dependent variable has to have its range restricted to [0,1] otherwise the predicted values will be meaningless.

Using an ordered probit regression framework, the underlying latent regression model for life satisfaction that we are interested in is:

$$\boldsymbol{h}^* = \boldsymbol{x}'\boldsymbol{\beta} + \boldsymbol{z}'\boldsymbol{\gamma} + \boldsymbol{\varepsilon} \qquad (1)$$

where $\boldsymbol{h}^*$ is the exact measure of life satisfaction but is unobserved, $\boldsymbol{x}$ is a vector of micro-level variables, $\mathbf{z}$ is a vector of societal-level variables, and $\boldsymbol{\beta}$ and $\boldsymbol{\gamma}$ are their respective vectors of parameters that we are interested in estimating, and $\boldsymbol{\varepsilon}$ is the standard error term. Instead of being able to observe $\boldsymbol{h}^*$, we have our measure, $\boldsymbol{h}$, for life satisfaction observed in the CCHS. This variable is a realization of $\boldsymbol{h}^*$ and has the following form:

$$\boldsymbol{h} = \begin{cases} 1 & \text{if} \quad \boldsymbol{h}^* \leq 0 \\ 2 & \text{if} \quad 0 < \boldsymbol{h}^* \leq \mu_1 \\ 3 & \text{if} \quad \mu_1 < \boldsymbol{h}^* \leq \mu_2 \\ 4 & \text{if} \quad \mu_2 < \boldsymbol{h}^* \leq \mu_3 \\ 5 & \text{if} \quad \mu_4 \leq \boldsymbol{h}^* \end{cases}$$

where μ_i for *i*=1,2,3,4 are unknown parameters (known as cut-points) to be estimated with the other vectors of parameters.[14] This observed variable acts as a form of censoring. Unlike OLS, the distance between each of these cut-points does not have to be equal.

To estimate the probabilities in an ordered probit model, we must assume that the parameters, cut points, and values of the independent variables define realizations on the standard normal distribution. For simplicity, in the case with only micro-level independent variables, we can define the probability of reporting a given value of life satisfaction in the following manner:

$$\begin{aligned} \text{Prob}(h = 1|\boldsymbol{x}) &= \Phi(-\boldsymbol{x}'\boldsymbol{\beta}) \\ \text{Prob}(h = 2|\boldsymbol{x}) &= \Phi(\mu_1 - \boldsymbol{x}'\boldsymbol{\beta}) - \Phi(-\boldsymbol{x}'\boldsymbol{\beta}) \\ &\vdots \qquad\qquad\qquad \vdots \\ \text{Prob}(h = 5|\boldsymbol{x}) &= 1 - \Phi(\mu_4 - \boldsymbol{x}'\boldsymbol{\beta}) \end{aligned}$$

where Φ is the standard normal cumulative distribution function and all the probabilities must sum to one. A key drawback to using ordered probit is that unlike OLS, the marginal effects are not uniquely defined by the estimated coefficients. In particular, the values of the independent variables are needed to calculate the marginal effects as we demonstrate below:

[14] For a more technical treatment of the ordered probit regression framework, see Greene (2003).

$$\frac{\partial \text{Prob}(h=1|\boldsymbol{x})}{\partial \boldsymbol{x}} = -\phi(-\boldsymbol{x}'\boldsymbol{\beta})\boldsymbol{\beta}$$
$$\vdots \qquad\qquad \vdots$$
$$\frac{\partial \text{Prob}(h=5|\boldsymbol{x})}{\partial \boldsymbol{x}} = \phi(\mu_4 - \boldsymbol{x}'\boldsymbol{\beta})\boldsymbol{\beta}$$

where ϕ is the standard normal probability density function. The coefficients only uniquely define the direction of the marginal effects for the lowest and highest category of the life satisfaction scale. Since the underlying probabilities must sum to one, the marginal effects by construction sum to zero. We are interested in the marginal effects because we want to understand if changes in key explanatory variables (mental health, income, and so on) increase the probability of an individual reporting that they are happy. This will allow us to determine factors that should be given emphasis to improve overall happiness in Canada.

The marginal effect is more meaningful for continuous variables where a small change in the explanatory variable may cause the distribution function to shift. For a dummy variable, there is no such thing as a "marginal" change: you are either in one category of a dummy variable or the other. Thus, the marginal effect is approximated by taking the difference in the expected probability of reporting a given level of life satisfaction for the two groups partitioned by a dummy variable.[15]

In Appendix III, we provide the marginal effects for both equation 1 and 2 for each life satisfaction response category. For parsimony, in our analysis below we focus on the marginal effect for the top life satisfaction category ("very satisfied").

B. Key Variables

Subjective well-being (life satisfaction) is the dependent variable for our regression analysis and is measured using the question which asks "How satisfied are you with your life in general?" and rates its answers on the following 5-point scale: very satisfied (5), satisfied (4), neither satisfied nor dissatisfied (3), dissatisfied (2), or very dissatisfied (1).

Due to the number of non-responses on the income question, the number of observations used in the regression analysis is smaller than the total sample size. After accounting for non-response, the total sample size is 70,196 from 121 health regions. The independent variables have been divided into two categories: individual variables and societal variables. A summary of the means and standard deviations of the variables can be found in Appendix Table 2.

All the ordinal variables used in our analysis followed the rating scheme coded in the CCHS. Health and mental health were measured on the following scale: 1-poor, 2-fair, 3-good, 4-very good and 5-excellent. Stress level also used this rating scale but the orders for the best and worst outcome were reversed: 1- not at all (stressful), 2- not very, 3- a bit, 4- quite a bit, 5- extremely (stressful). For the sense of belonging variable, the responses were measured on a 4-point scale with the worst outcome being 1-very weak and the best outcome being 4- very strong.

For our measure of income, we took the natural logarithm of reported household income (measured on a continuous scale). The logarithm is used to try and account for the possibility that after a certain threshold

[15] This is known as a first difference and is the default marginal effect calculation for ordered response models given by most statistical packages.

marginal increases in household income will have little effect on individual happiness. In a recent paper, Deaton and Kahneman (2010) estimated this threshold to be $75,000 using data from the new US Gallup Poll on happiness.

The dummy variables in this analysis control for individual characteristics and demographics such as age, sex, immigration status, visible minority status, marital status, language, and labour force status. This allows us to control for consistent differences in reported subjective well-being across categories.

For age, a categorical variable was used as a regressor. This allows for age to have a non-linear impact on happiness across the life cycle. The 20-29 age group is the base case in our regressions. The five indicator variables used to cover differences in happiness across age groups are 30-39, 40-49, 50-59, 60-69, and 70 or above.

For immigration status, non-immigrants are the base case. The indicator variables used as a comparison are non-recent immigrants, individuals who migrated to Canada more than nine years ago, and recent immigrants, individuals who migrated to Canada fewer than nine years ago. We also used visible minority status as a regressor with non-visible minority being the base category.

For the sex variable, females were used as the base case and males were the indicator variable. This allows for there to be differences in reported life satisfaction across sex.

Education levels of individuals are also used. This variable corresponds to the highest level of educational attainment. The base case is did not graduate from secondary school, and the other three indicator variables are graduated from secondary school, attended post-secondary, and graduated from post-secondary.

Another variable related to education used in the analysis is whether an individual is a student or not. That is, an indicator variable was used for respondents who are still students with non-student as the base category. The student variable represents individuals who are either studying full-time or part-time in a school, college and university.

For marital status, the base case is ‘never been married’. Three indicator variables were used, one for married, one for in a common-law relationship, and one for persons divorced, separated, or widowed.

For language spoken at home, Anglophone is the base case, and indicator variables are used for Francophones and Allophones (individuals who do not speak either English or French at home).

Persons who are employed is the base category for employment status. Indicator variables are used for people who are out of the labour force, permanently disabled and unemployed.

Two additional categories related to the level of physical activity and difficulties with activities are also used. For level of physical activity, ‘physically inactive’ is the base category and two indicator variables are used: one for ‘somewhat inactive’ and the other for ‘physically active’. Difficulty with activities is related to problems with hearing, seeing, communicating, walking, climbing stairs, bending, learning or doing any similar activities” with possible answers of ‘sometimes’, ‘often’ or’ never’. We chose ‘never’ as the base case and used indicator variables for ‘sometimes have difficulties’ and one for ‘often have difficulties’.

The societal variables at the health region level were proportion of individuals who were: students, graduates at the post-secondary level, non-recent immigrants, married, francophones, males, physically active, and never had difficulty with activities. For ordinal variables representing individual characteristics, we used averages for the population in a health region. These variables were average perceived health, average perceived

mental health, average stress, average level of belonging to the local community and average age. The societal variables at the CMA level were the corresponding proportions and averages for these same variables.

We calculated a measure of income inequality for each health region by using the variance of individual household income for each health region. We also use the natural logarithm of average household income in each health region or CMA. Aside from income, we also calculated the logarithm of health region population sizes from the CCHS. The corresponding measure at the CMA level is the income variance of the individuals' in the CMA.

We used the 2006 Canadian Census Population and its community profiles to derive at both the CMA and health region level two variables: population density (persons per square kilometer) and the unemployment rate.

C. Regression Results

i. Ordered Probit Regression of Life Satisfaction of the Canadian Population

a. Equation 1 and 2

In Equation 1, found in Appendix III, we use subjective well-being as the dependent variable and all the individual-level variables discussed in the previous section as independent variables. In Equation 2 (also found in Appendix III), we test for the societal impact on subjective well-being and explore whether these variables add explanatory power to our original model. Equation 2 therefore contains individual as well as health region variables.

The results for both the models can be found in Appendix Table 3 in Appendix III. They show that all the positive situational characteristics – health, mental health, sense of belonging to the local community, and level of physical activity are positively associated with well-being. The negative situational characteristics, such as difficulty with activities and stress level, are negatively associated with well-being, as expected. The variables representing these situational characteristics are statistically significant in both sets of Equations. Therefore good health, physically active lifestyle and high sense of belonging are positive determinants of happiness while pressure, strain or anxiety in domestic and work related routine and frequent difficulties with activities such as learning, hearing, seeing, walking, climbing stairs or bending are negative correlates of well-being.[16]

The results for personal characteristics and demographics are also close to ones found in the literature. Married individuals and those in a common-law relationship are happier than those who have never been married. Their estimated coefficients are highly significant (at the 1 per cent level) while the coefficient representing those who are divorced separated and widowed was insignificant. These results are consistent for both sets of Equations. This is in line with findings of empirical studies in the literature that have successfully pinned downed the positive correlation between marriage and happiness. Even though there is cause to believe that habituation can set in following marriage which can cause relative happiness to decline, a married individual is still happier than someone who is divorced, separated, widowed or has never been married.

[16] As we note above, the coefficients can only be used to sign the marginal effects for the bottom and top categories of life satisfaction. This should be taken into consideration when interpreting the sign of the coefficients and their relationship with subjective well-being.

The analysis for both equations shows that household income is positively related to well-being, as the coefficient is positive and highly significant. The role of income has been debated profusely in the well-being literature. There is also a great deal of contention over the role of income beyond a certain threshold, after which the marginal effect of income on happiness starts to decline.

For age groups, people from 30-50 years of age are found to be less happy, while the individuals in their 70s are happier than those in their 20s (the base case variable). Categorical variables for individuals in their 40s and 50s are statistically significant at the 1 per cent level. For those in their 30s the significance level is 1 per cent and for those in their 70s, the variable is statistically significant at the 10 per cent level. These results are consistent in both Equations.

Visible minorities and immigrants are less satisfied than the majority and non-immigrants in both Equation 1 and Equation 2. These categorical variables are also statistically significant.

The categorical variables for language spoken at home are highly significant at 1 per cent for Equation 1. Francophones are happier and more satisfied, while Allophones are less happy and satisfied than Anglophones. The level of significance on the Francophones variable declines from 1 per cent to 5 per cent in Equation 2.

Students are happier than non-students. This regressor is significant (at the 1 per cent level) in both equations.

The societal determinants of subjective well-being are household income at the health region (5 per cent level of significance), proportion of students (statistically significant at the 1 per cent level), proportion of non-recent immigrants (statistically significant at the 1 per cent level), proportion of post-secondary graduates (statistically significant at the 1 per cent level), proportion of married individuals (statistically significant at the 5 per cent level), proportion of males (statistically significant at the 5 per cent level), proportion of highly active individuals (statistically significant at the 1 per cent level) and proportion of individuals with no difficulties (statistically significant at the 1 per cent level). All other societal variables were statistically insignificant.[17]

ii. Average Effects: Equation 1 and 2

The coefficients in the ordered probit regressions are z-values that cannot be interpreted in a meaningful way. The degree of association between subjective well-being and its key determinants is not possible to estimate with a z-value. Therefore, we tried to understand the coefficients in terms of the marginal effects for both Equation 1 and Equation 2. This will also help us interpret the impact of each explanatory variable on the change in the probability for every level of satisfaction. In terms of computation, marginal effects are calculated keeping each variable at its average level.

The sign and magnitude of the marginal effects depend on the values of the dependent variables as the method involved in estimating an ordered probit equation is non-linear. Therefore, we summarized the marginal effect into an aggregate measure called the 'average effect'. An average effect or a net effect is calculated by aggregating the marginal effects for each variable and multiplying it by a weight. The weights are assigned

[17] We also checked for the 'societal impact' with variables representing information collected at the CMA level in Equation 3 (results in Appendix III). Aside from proportion of non-recent immigrants (statistically significant at 1 per cent level) and household income inequality (statistically significant at 10 per cent level), all other contextual variables were statistically insignificant.

according to the scale used in the life satisfaction question. The weighting scheme is: 1-Very Dissatisfied, 2-Dissatisfied, 3- Neither Satisfied Nor Dissatisfied, 4- Satisfied, and 5 is Very Satisfied. (See results in Appendix Table 5 and Appendix Table 6 in Appendix III)

The results show that the association of the ordinal variables with well-being does not change when health region variables are added to the model except for sense of belonging to the local community. On average, a unit increase in self reported health, self reported mental health and household income increases the probability of being satisfied (where satisfied is going up by a level on a scale of 1-5) by 11 per cent, 22 per cent and 7 per cent respectively while an increase in stress level decreases the probability of being satisfied by 10 per cent. An increase in sense of belonging increases the probability of being satisfied by 8 per cent. These numbers are consistent in Equation 1 and Equation 2.

A student has a 5 per cent chance of being happier than a non-student in both Equation 1 and Equation 2.

According to Equation 1, the probabilities of recent immigrants and non-recent immigrants being less happy than non-immigrants are 12 per cent and 5 per cent respectively. The probability decreases for recent immigrants to 11 per cent for non-recent immigrants to 4 per cent in Equation 2. Visible minorities have a greater chance of being less happy than the majority – 9 per cent and 8 per cent for Equation 1 and Equation 2 respectively.

Both equations show that being married increases the probability of being more satisfied with life than an individual who has never been married by 17 per cent. A person in a common law relationship also has greater chances of being happier (12 per cent both in Equation 1 and Equation 2).

In Equation 1, Francophones have a probability of 4 per cent of being more satisfied with life than Anglophones, while Allophones have a probability of 6 per cent of being less happy than Anglophones. In Equation 2, the probability of Allophones being less happy than Anglophones remains the same while the probability that Francophones are more satisfied with life than Anglophones drops to 2 per cent.

For age, the individuals in their 30s, 40s and 50s have a probability of being less satisfied than those in their 20s. The probability for the 40s age group decreases in Equation 2, from 4 per cent in Equation 1 to 3 per cent, but remains roughly the same for the 30s and 50s age group, at 2 per cent and 5 per cent, respectively. For those in their 70s, the probability of being more satisfied than someone in their 20s is 2 per cent in both equations.

Males are generally less satisfied than females with a probability of 5 per cent in both equations.

For level of physical activity, individuals who are somewhat active or active are more satisfied than individuals who are inactive with a probability of 6 per cent and 7 per cent respectively. This result is consistent in Equation 2. According to both equations, individuals who often have difficulties along with those who sometimes have difficulties are generally found to be less satisfied with probabilities of 7 per cent and 4 per cent respectively.

The average effects for health region variables are negligible. The only significant impact is caused by the log income of health region, where a one standard deviation increase in the household income decile causes the probability of being satisfied to decrease by 9 per cent.

iii. Marginal Effects: Equations 1 and 2

The recent Stiglitz Report from France advocates that happiness be given more emphasis relative to GDP in making public policy decisions. As an alternative to the average effects estimated above, we analyze the marginal effects from the ordered probit estimation of equations 1 and 2 as well as take ratios of the coefficients relative to household income (marginal effects can be found in Tables 5 and 6 of Appendix III; the ordered probit coefficients can be found in Tables 3 and 4 of Appendix III). This provides an intuitive comparison of the explanatory variables' effects on happiness relative to household income. These two methods demonstrate why happiness is relevant and should take a prominent role at the policy table. In this section we discuss the marginal effects of the covariates that are the most economically and statistically significant. We focus on the marginal effects from equation 2 (combining both individual and societal levels) except when the results differ drastically from equation 1.

Perceived mental health status has a very significant effect on individual happiness. According to the marginal effect in Table 6 of Appendix III, a one-unit increase in mental health from its mean (4.06) increases the probability of a person stating that they are very satisfied by 17.0 percentage points holding all other explanatory variables at their means.[18] As another method of showing the relative importance of mental health status on individual happiness, we compute the amount of household income that you would be required to give to the average person in order to make them indifferent between the change in income and a given change in mental health status. A half standard deviation increase (0.465 units) in mental health status is equivalent to the effect of a 143 per cent increase in household income for the average person on happiness ($0.465 \times 0.470/0.00152$).[19] If the hypothesized change were a one-unit increase instead, as is used in the executive summary, then the corresponding increase in income would have to be 309 per cent ($1.0 \times 0.470/0.00152$). Both of these calculations implicitly assume that over the relevant range, life satisfaction is linear, so that the average is equal to the margin (Di Tella et al, 2003). Hence, this relative measure is more accurate for small changes in the explanatory variable, which is why a half standard deviation point change is a more reasonable change to consider.[20]

The public policy implications of this finding are immense. Clearly, more comprehensive treatment programs for mental health problems will not only make individuals better off by improving their mental health but it may also improve life satisfaction for those individuals. One potential problem with this relationship is that mental health and life satisfaction may be endogenously determined in which case there is no way to establish any causation between the two variables with the statistical techniques we implemented. Hence, improvements in mental health status are correlated with higher life satisfaction holding all else equal.

An individual's physical health is also an important determinant of individual happiness according to our estimates. A one-unit increase in health from its mean (3.54) increases the likelihood of a person stating that they are very satisfied by 8.8 percentage points.[21] Compared to the effect of household income on happiness, the

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[18] In equation 1, the marginal effect for the ordinal outcome is nearly identical at 16.9 per cent.

[19] The factor 0.465 comes from a half standard-deviation change in mental health status. The factor 0.470 is the point estimate from the ordered probit estimation of equation 2 provided in Table 6 of Appendix III. The divisor 0.00152 comes from taking the point estimate on log household income and dividing by 100 in order to get the equivalent household income value in per cent as opposed to log points, i.e., $\Delta y = (\beta_{inc}/100)\%\Delta x$.

[20] In order to calculate the relative effect referenced in the executive summary for the remaining continuous variables, the leading factor of 1.0 is used instead of a half standard deviation point change.

[21] The marginal effect estimated from equation 1 is numerically identical.

effect of an increase of half a standard deviation (0.52 units) in health is equivalent to an 82 per cent increase in household income for the average person (0.52 × 0.239/0.00152).[22]

Stress level is negatively associated with life satisfaction. Specifically, a one-unit increase in stress level from its mean (2.68) decreases the probability of an individual reporting that they are very satisfied by 7.7 percentage points. An individual would have to be given a 70 per cent increase in household income in order to mitigate the effect of a half standard deviation increase in stress level (0.51 units) on happiness according to our estimates (0.51 × -0.208/0.00152).

A sense of belonging to the local community also has strong positive effect on individual life satisfaction. According to its marginal effect, a one-unit increase in sense of belong from its mean (2.80) increases the probability of an individual stating they are very satisfied by 6.5 percentage points. Using our measure of importance relative to household income, we find that a half standard deviation point change (0.43 units) in sense of belonging is the same as the effect of a 50 per cent increase in household income on happiness (0.43 × 0.176/0.00152).

Employment status has strong impacts on individual happiness. Moving from unemployment to employment increases the probability of an individual being very satisfied by 8.2 percentage points. For the relative measure to household income, we find that moving from unemployment to employment is equivalent to the effect of a 151 per cent increase in household income on happiness (1 × -0.230/0.00152). As was stated above, comparing the relative size of point estimates from the ordered probit estimation procedure is reasonable when we can assume life satisfaction is linear over the relevant range of the independent variable. In the case of an indicator variable since the effect is only meaningful for switching from one category to another (unemployed to employed), it may be too large of a change to assume that the underlying relationship is linear. Hence, the comparison between becoming unemployed and its relative importance compared to income should be viewed with caution.

According to the ordered probit estimates, we also find that married individuals are happier than the reference category of never been married. Specifically, getting married increases a person's likelihood of stating that they are very satisfied with life by 13.2 percentage points. We also find that the effect of getting married on happiness is equivalent to a 236 per cent increase in household income (1 × 0.359/0.00152). The caveat mentioned above also applied here.

Even after controlling for individual employment status, sense of belonging, stress level, and household income, we still find that recent immigrants are less happy than non-immigrants (the reference category). In particular, immigrating to Canada (becoming a recent immigrant) decreases the probability of a person reporting that they are very satisfied by 8.6 percentage points.[23] For the average person, we find that immigrating to Canada is equivalent to the effect of a 159 per cent decrease in household income on happiness (1 × -0.241/0.00152).[24] Again, the previously mentioned caveat applies.

As the above relative measures show, household income is not the key determinant of individual happiness in Canada. In fact, a ten per cent increase in household income only increases the probability of a person stating that they are very satisfied by 0.6 per cent. According to our estimates from Canada, other factors such as mental and physical health as well as stress level and sense of belonging are better predictors of life

[22] The factors in this calculation are obtained in the same manner as described above with the exception that 0.239 is the point estimate for perceived health in equation 2 of Appendix Table 3.
[23] In equation 1, the marginal effect associated with non-recent immigrant status is 9.25 per cent.
[24] In equation 1, the point estimate for non-recent immigrants is -0.261, which would result in a 171 per cent decrease.

satisfaction. This suggests that when making public policy decisions greater emphasis should be placed on how these policies will impact individual life satisfaction. Typically, we have focused on public policy measures that improve economic growth but as we demonstrate here, marginal increases in income have limited impact on individual happiness. If policy makers want to improve overall happiness then greater attention should be given to initiatives such as improving mental health treatment programs and increasing engagement in local communities.

We find a similar pattern at the societal level for average household income. In equation 2, the log of average household income in each health region was included in the model. This variable is measuring the effect of increases in the average household income on individual happiness holding individual household income constant. Hence, this variable captures the importance of relative income. The point estimate from the ordered probit regression is significant at the 5 per cent level (household income at the individual level is significant at the 1 per cent level). The marginal effect suggests that a ten per cent increase in the average household income of a health region (holding household income for an individual constant) decreases the proportion of people in a given health region that are very satisfied by 0.7 percentage points. Although the top marginal effect for average household income is higher than household income at the individual level, the marginal effects for the societal level variable are not as robust as there is less variation at the societal level in average income. Despite this caveat, there is still evidence that relative income is a slightly more important determinant of happiness than absolute income. Hence, people care more about how they are doing relative to others. Our results for relative income provide more support for also considering public policy measures that address overall happiness since income growth is not as important for individual happiness.

Clearly, the Stiglitz Report hit the mark. Evidence from Canada suggests that if we want to improve overall happiness than we need to focus on measures other than GDP. Factors such as mental and physical health as well as a sense of belonging and stress level are more robust determinants happiness.

iv. Linear Probability Model

The ordered probit model discussed earlier estimates a non-linear probability function and its marginal effects can be difficult to interpret. As a method of comparison we also estimate a linear probability model (LPM) for life satisfaction in Canada.

In comparison to the ordered probit model, a LPM considers the cumulative distribution function to be linear and as a result it can be estimated using OLS. Specifically,

$$F(\boldsymbol{x}, \boldsymbol{\beta}) = \boldsymbol{x}'\boldsymbol{\beta},\ E[h|\boldsymbol{x}] = F(\boldsymbol{x}, \boldsymbol{\beta}),\ \boldsymbol{h} = \boldsymbol{x}'\boldsymbol{\beta} + \boldsymbol{\varepsilon}$$

where $\mathbf{x}$, $\boldsymbol{\beta}$, and $\boldsymbol{\varepsilon}$ are defined the same as in the ordered probit model and $E[h|\boldsymbol{x}]$ is the expected value of life satisfaction given the vector of regressors. We estimate the above LPM by converting our dependent life satisfaction variable to a [0,1] binary choice variable where satisfied is equal to 1 if an individual reports a life satisfaction of 4 or 5 and is equal to 0 otherwise (as in equation 4 and 5). We also ran a LPM transforming life satisfaction to a binary choice variable that is equal to 1 when an individual reports a life satisfaction of 5 and it is equal to 0 otherwise (as in equation 6 and 7).

Although the LPM is more convenient to work with, there are several drawbacks. One fundamental issue is that the predicted values of the dependent variable can fall outside the range [0,1], which makes them hard to interpret. Another problem is that the errors from this model are heteroskedastic. Heteroskedasticity can be dealt with by using the usual robust variance-covariance estimator while the former issue is attenuated by the fact that fitted values of the dependent variable calculated using the means of the regressors are unlikely to lie outside the [0,1] range (Moffitt, 1999, Amemiya, 1981). In other words, the predictor values for outliers are more problematic.

a. Results from the Linear Probability Model: Equation 4 and Equation 5

We regress the binary form of life satisfaction in two separate equations. In the first equation (Equation 4), we used life satisfaction as the dependent variable and all the individual level variables as independent variables. In the second equation (Equation 5), we include the societal variables for each health region. An immediate comparison reveals that adding health region variables does not add much explanatory power to the equation as the R-square increases only slightly from 18.11 per cent to 18.29 per cent. The results from the both models can be found in Appendix Table 7.

As expected, we find that all the individual level variables that are related to positive situational characteristics - health, mental health, sense of belonging to the local community and physical activity are positively correlated with subjective well-being and their coefficients are statistically significant at the 1 per cent level. In Equation 4, holding all else constant, an increase in the unit of perceived health increases the probability of a person being satisfied by 2.6 percentage points. A one-point increase in the sense of belonging variable increases an individual's probability of reporting they are satisfied by 3.0 percentage points. In comparison to health and sense of belonging, perceived mental health emerges as a very strong correlate of well-being. A one-point increase in perceived mental health status increases the probability of being satisfied by 6.6 percentage points. For physical activity status, moderately active and highly active individuals are 1.3 percentage points and 1.0 percent points, respectively, more likely to be satisfied than inactive individuals. The coefficients in Equation 5 are very similar to those found in Equation 4.

The negative situational characteristics such as difficulty with activities (or disability) and level of perceived stress are negatively correlated with well-being. Relative to the base case of 'never had difficulty with activities', the probability of an individual who sometimes has difficulty with activities being satisfied decreases by 5.0 percent points. The probability of being satisfied decreases by 1.2 percentage points for an individual who frequently encounters such difficulties. Higher perceived stress lowers the probability of being satisfied by 3.5 percentage points. Once again, the estimates in Equation 5 are very close to those found in Equation 4.

Among the personal and demographic characteristics, the categorical variable of marriage emerges as a very important determinant of well-being. In Equation 4, a married person is more likely to be satisfied than someone who has never married by 4.8 percentage points. The magnitude is slightly lower for someone in a common-law relationship at 4.2 percentage points. This finding is highly consistent with the results of the ordered probit where the 'average effects' of being married or in a common-law relationship as opposed to 'never married' were among the highest of all the individual level variables. The coefficient on divorced, separated or widowed is strongly significant at 1 per cent and it shows that an individual is less likely to be satisfied compared to someone who has never married by 1.0 percentage points. The size of the coefficient in Equation 5 is lower for those married (3.6 percent points vs. 4.8 percentage points) and those in a common-law relationship (2.9 percentage points vs. 4.2 percentage points) while it is higher for those who were divorced/separated/widowed (2.8 percentage points vs. 1.0 percentage points).

The variables for employment status are significant at the 1 per cent level for Equations 4 and 5. In Equation 4, relative to employed persons, the probability of people unable to work being satisfied decreases by 9.8 percentage points. The probability of being satisfied for people out of the labour force decreases by 2.3 percentage points relative to employed persons. The likelihood of being satisfied for unemployed persons decreases by 6.1 percentage points relative to people with jobs. In Equation 5, the signs of the coefficients remain the same, but the magnitudes for unable to work and out of the labour force do change (to -5.5 percentage points and -1.8 percentage points respectively).

In Equation 4, two of the educational attainment dummy variables are statistically significant, in contrast to the results from the ordered probit model where only one of them was statistically significant. Compared to the base case of less than secondary school education, having some post secondary education and post-secondary education (statistically significant at the 1 per cent level) decreases the probability of an individual being satisfied by 2.0 percentage points and 1.4 percentage points respectively. This is, to some degree, in line with the literature that suggests that the effects of education on happiness are seen instead through better income and health instead of directly. These two variables, however, become statistically insignificant in Equation 5.

The divergence between the results from the ordered probit and the linear probability model for both education and labour force status could be attributed to the manner in which the dependent variable, life satisfaction, has been aggregated in order to allow for estimation using a LPM.

Immigrants are found to be less satisfied than non-immigrants. In Equation 4, the probability of being satisfied for recent immigrants and non-recent immigrants decreases by 1.7 and 1.6 percentage points respectively relative to non-immigrants. When health region variables are added to the model in Equation 5 the probability of being satisfied for recent immigrants decreases by 2.1 percentage points. However, the coefficient for non-recent immigrants becomes statistically insignificant. For visible minorities, the probability that they are less happy than the majority is 1.2 percentage points in Equation 4 (statistically significant at the 5 per cent level), but this effect is not statistical significant in Equation 5.

In Equation 4, compared to the base case of those in their 20s, the probability that individuals in their 30s, 40s and 70s are satisfied decreases by 1.5, 1.0, and 0.8 percentage points respectively. The magnitudes are similar in Equation 5, but the significance level drops considerably (in Equation 4 all coefficients are statistically significant at 1 per cent or 5 per cent level while in Equation 5 coefficients are statistically significant at either 5 per cent or 10 per cent level). The probability that people in their 60s are satisfied than the base case increases by 2.4 percentage points in Equation 4. The magnitude of that coefficient falls slightly in Equation 5. This result is not consistent with the ordered probit model.

For health region variables in Equation 5, only income inequality, proportion of students, proportion of married, average mental health and average age are statistically significant. The correlation between all of these with subjective well-being is exceptionally low apart from average mental health and average age. The coefficients on these variables are significant at the 5 per cent level and it is found that they have a negative relationship with subjective well-being, where an increase in average mental health and average age decreases the chances of a person being satisfied by 5.3 and 3.5 percentage points, respectively.

b. Results from the Linear Probability Model: Sensitivity Check – Equation 6 and Equation 7

As a sensitivity check, we slightly altered the definition of a satisfied individual in our LPM. We change the dependent variable to be equal to 1 only when an individual reports a life satisfaction of 5 (very satisfied) and is equal to 0 otherwise. Similar patterns in the relationships between different individual and health region variables with subjective well-being across two different models would enable conclusions to be drawn with more conviction.

We present the results of using this binary dependent variable in two sets of equations, Equation 6 (containing only individual level variables) and Equation 7 (containing individual as well as health region variables) and estimates are given in Appendix Table 7.

For the individual level variables, relative to the previous linear probability model, we find that even though the type of relationship with well-being remains unchanged, the strength of association varies due to the change in the magnitude of the coefficient. In Equation 6, for the positive situational variables, we find that the coefficients are much higher – health (7.3 percentage points vs. 2.6 percentage points), mental health (14.0 percentage points vs. 6.6 percentage points), sense of belonging to the local community (4.5 percentage points vs. 3.0 percentage points). The change is markedly higher for the categorical variables of physical activity, somewhat active (3.8 percentage points vs. 1.3 percentage points) and active (5.5 percentage points vs. 1.0 percentage points), compared to the base case of inactive individuals. The addition of health region variables in Equation 7 does not alter the magnitude of the coefficients significantly.

Among the negative situational characteristics, stress emerges as a prominent variable and strong correlate of well-being. The association of stress in this model is also stronger compared to the previous model: 5.6 percentage points vs. 3.5 percentage points. Among the categorical variables of difficulty with activities, only ‘often have difficulties’ is weakly significant and decreases the chances of being satisfied by 1.2 percentage points compared to an individual who has never had difficulties.

In Equation 6, among demographic and personal characteristics, two categorical variables of marriage – married and common-law – are among the strongest correlates of well-being at 11.8 percentage points and 8.1 percentage points compared to the base case of ‘never been married’. Even the coefficient of divorced/separated/widowed is highly significant in contrast to the previous model and shows that an individual is more likely to be satisfied by 2.6 percentage points compared to someone who has never married. The results are very similar in Equation 7.

The labour force variables yield some surprising results. The coefficients of the variables representing individuals who out of the labour force and those who unable to work are not only statistically significant but are also positively correlated with well-being compared to the base case, employed. According to Equation 6, those who are unable to work are 9.9 percentage points more likely to be satisfied compared to those who are employed. The probability for those who are out of the labour force is 3.9 percentage points higher than employed persons. These results should be taken with caution as the change in sign may be associated with the process of aggregating the life satisfaction variable using only the highest category as evidence of being satisfied. Unemployed persons are still less likely to be satisfied compared to employed persons. Specifically, the probability of being satisfied decreases by 4.1 percentage points for the unemployed.

The sensitivity analysis also reveals language spoken at home to be a strong correlate of subjective well-being. In Equation 6, compared to the base case variable, Anglophones, Francophones are more satisfied (by 2.2

percentage points) while Allophones are less satisfied (by 6.5 percentage points). Interestingly, the effect of language for Francophones becomes statistically insignificant when health region variables are added in Equation 7. Thus, language spoken at home is sensitive to changes in model specification and its association with life satisfaction is not as strong as some of the other individual variables.

For education, students are found to be happier than non-students by 2.1 percentage points in Equation 6 and 2.2 percentage points in Equation 7. It is interesting to note that the categorical variables of level of education are statistically insignificant except for post-secondary education. Individuals with post-secondary education are more likely to be satisfied than those with less than a high school education by 2.9 percentage points. In equation 7, the corresponding marginal effect is 2.7 percentage points in Equation 7.

All other variables pertaining to the remaining demographics yield results similar to the previous model with differences mostly relating to the magnitude of the coefficients. In Equation 6, in summary, visible minorities are less satisfied than the majority (by 6.0 percentage points), individuals in their 30s, (2.0 percentage points), 40s (1.9 percentage points) and 50s (1.2 percentage points) are less satisfied than those in their 20s and males are less satisfied than females (3.6 percentage points). A noteworthy change is in the magnitude of the probability with which immigrants are found to be less satisfied compared to non-immigrants: recent immigrants (8.7 percentage points vs. 1.7 percentage points) and non-recent immigrants (3.1 percentage points vs.1.6 percentage points).

For the health region variables in Equation 7, income inequality, median household income, proportion of non-recent immigrants, proportion of post secondary graduates, proportion of physically active individuals , proportion of individuals who never have difficulty with activities and average stress are statistically significant at the 5 per cent or 1 per cent level. Proportion of students and proportion of males are weakly significant at the 10 per cent level. Overall the association of these factors with well-being is very weak and combined with the results from the previous model we can safely assert that factors at the health region do not play a dominant role in determining the happiness of an individual. We estimated all four equations with standard errors clustered at the health region level to further test the validity of this assertion and did not find any major changes apart from a negative relationship of average sense of belonging and subjective well-being in the model with a lower cut-off point. The coefficient on this variable turns statistically insignificant when the model is estimated with a higher cut-off point for satisfaction.

iv. Predicted Probabilities and Expected Life Satisfaction

In order to further understand the results of the regressions, we explored the size of the effect of the independent variables by creating predicted probabilities of life satisfaction. In this method we varied one variable while keeping all variables at a constant level. Since the ordered probit utilizes the full scale of the life satisfaction question, probabilities were predicted for each level of satisfaction. For example, an individual with poor health and average attributes in all other independent variables has a 0.20 per cent probability of being very dissatisfied, 2.95 per cent of being dissatisfied, 9.30 per cent of being neither satisfied nor dissatisfied, 72.05 per cent being satisfied, and 15.53 per cent being very satisfied with their life (see Appendix Table 8 in Appendix III). For each of the two linear probability models, a single aggregated probability was predicted for each variable of interest. For instance, an individual in poor health and average attributes in all other dependent variables has a 20 per cent chance of being satisfied in the model with a higher cut-off point.

This method helps control for all other variables in the regression, while looking at each variable individually. In comparison, if we were to look at the actual raw distribution of those who report their life satisfaction as poor, of these people, 1.08 per cent described themselves as very dissatisfied with their lives, 7.96

per cent as dissatisfied, 14.14 per cent as neither satisfied not dissatisfied, 60.3 per cent as satisfied, and 16.51 per cent as very satisfied. The reason for this discrepancy is that people who report their health as poor (such as low income) have characteristics that are different in ways from the average population, which leads to a lower level of subjective well-being.

To compare actual average life satisfaction[25] for each individual, we arrived at the "Expected Value" of life satisfaction by standardizing the predicted probabilities into an aggregated statistic on a scale of 1-5. For the ordered probit model, we multiplied the predicted probabilities with the following weighting scheme: 1-Very Dissatisfied, 2- Dissatisfied, 3- Neither Satisfied Nor Dissatisfied, 4- Satisfied and 5 is Very Satisfied (See Appendix Table 8).

For ordinal variables, a difference in expected life satisfaction was computed between the highest and the lowest category in the expected values and contrasted with the difference in actual mean of life satisfaction. For dummy variables, a difference was calculated between the highest and the lowest values of expected life satisfaction of a categorical variable and then compared with the difference in actual means. (Expected probabilities and the 'Expected Value' for each variable alongside a discussion can be found in Appendix III, section F)

The first two columns for each model in Table 19 show the difference in observed or actual average life satisfaction and expected life satisfaction respectively. It must be noted that for this analysis, we have chosen to concentrate on the individual variables as the health region variables did not show any strong correlation with subjective well-being.

Table 19 : Difference in Life Satisfaction Directly Explained By Individual Level Variables

	Ordered Probit Model			LP (4,5)			LP (5)		
	Difference in Actual Average Life Satisfaction (1)	Direct Effect (Expected Value of Life Satisfaction) (2)	% Direct Effect (3) =[(1-2)/2]	Difference in Actual Average Life Satisfaction (4)	Direct Effect (Expected Value of Life Satisfaction) (5)	% Direct Effect (6) =[(5-4)/4]	Difference in Actual Average Life Satisfaction (7)	Direct Effect (Expected Value of Life Satisfaction) (8)	% Direct Effect (9) =[(8-7)/7]
Mental Health	1.92	1.00	50.8	3.40	1.33	39.0	2.77	2.73	98.6
Health	1.32	0.46	34.8	2.22	0.58	26.2	2.43	1.43	58.7
Stress	0.85	0.40	47.1	1.43	0.62	43.2	1.71	1.10	63.9
Log of Household Income	0.61	0.20	32.8	0.88	0.30	33.7	1.67	0.60	36.0
Sense of Belonging to the Local Community	0.54	0.25	46.1	0.82	0.42	50.7	1.40	0.74	53.2
Difficulty with activities	0.43	0.06	14.3	0.75	0.30	40.0	0.81	0.04	-4.8
Physical Activity	0.24	0.07	29.9	0.28	0.04	14.3	0.77	0.25	32.5
Marital Status	0.18	0.20	87.7	0.45	0.32	71.3	0.75	0.52	69.3
Language Spoken at Home	0.26	0.10	38.5	0.06	0.02	33.9	0.10	0.07	66.9
Visible Minority	0.19	0.09	47.3	0.20	0.06	29.2	0.69	0.13	19.0

[25] Since the dependent variable, Life Satisfaction, is a binary outcome in the linear probability models, the mean value of the actual average life satisfaction lies between 0 and 1. This value has been standardized to a scale of 1-5 for comparison with the ordered probit model.

Status									
Immigration Status	0.19	0.13	68.4	0.15	0.08	54.4	0.32	0.47	147.7
Note: LP (4, 5) and LP (5) indicate Linear Probability Models, with the former having a lower cut-off point for life satisfaction. Both the difference in Actual Average Life Satisfaction and Direct Effect are on a scale of 1-5.									

Table 20 below summarizes the key results of the analytical framework discussed above. Based on these results, we find that mental health, health, stress, sense of belonging to the local community, immigration status and household income are the 'core' determinants of subjective well-being. These 'core' determinants are followed closely by difficulty with activities, level of physical activities and marital status. Columns 3, 6 and 9 indicate the variation in expected life satisfaction as a percentage of actual life satisfaction. This method gives a slightly different ranking in terms of the stronger correlates of life satisfaction but the key results are essentially the same.

For all the three models, we find that aforementioned core determinants lead the ranking in differences in actual average life satisfaction. We find the same ordering with 'Expected Life Satisfaction'. In terms of variation explained by an individual variable, marital status (87.7 per cent) accounts for the highest variation for the ordered probit model followed by immigration status (68.4 per cent), mental health (50.8 per cent), stress (47.1 per cent) and sense of belonging to the local community (46.1 per cent). The linear probability model with the lower cut-off point, LP (4,5), sees marital status (71.3 per cent) at the top followed by immigration status (54.4 per cent), sense of belonging to the local community (50.7 per cent), stress (43.2 per cent) and difficulty with activities (40.0 per cent). With the exception of mental health, the linear probability model with the higher cut-off point, LP (5), has higher differences in expected and actual life satisfaction for all the variables compared to the other two models. This model sees mental health (98.6 per cent) at the top followed by health (58.7 per cent), stress (63.9 per cent), household income (36 per cent) and sense of belonging to the local community (53.2 per cent).

As expected, the degree of variation explained by each individual variable varies in all three models. This is mainly due to the technical specifications. For instance, in the ordered probit model, over 87.7 per cent of the differences in actual life satisfaction that are related to marital status are accounted by marital status itself while the explanatory power of this variable falls to 71.3 per cent in the linear probability model with a lower cut-off point. However, in terms of variation explained, stress and sense of belonging feature prominently in all three models, whereas marital status, health and mental health appear in the top five in at least two of the models.

Table 20: Percentage of Direct Effect or Variation in Life Satisfaction Explained by Individual-Level Variables

Ordered Probit Model	%	LP (4,5)	%	LP (5)	%
Marital Status	87.7	Marital Status	71.3	Mental Health	98.6
Immigration Status	68.4	Immigration Status	54.4	Health	58.7
Mental Health	50.8	Sense of Belonging to the Local Community	50.7	Stress	63.9
Stress	47.1	Stress	43.2	Household Income	36.0
Sense of Belonging to the Local Community	46.1	Difficulty with activities	40.0	Sense of Belonging to the Local Community	53.2
Note: LP (4, 5) and LP (5) indicate Linear Probability Models, with the former having a lower cut-off point for life satisfaction.					

V. Explaining Geographical Variation in Happiness in Canada[26]

The regression and the post-regression analysis in the previous sections based on the happiness data for 83,000 Canadians identified the variables that were most strongly associated with subjective well-being, namely health, mental health, stress and sense of belonging. In this section we will seek to exploit this information to explain geographical variation in life satisfaction in Canada across provinces, CMAs and health regions based on the values for these variables in the geographical units at different levels of geography.

The average level of happiness in a geographical unit reflects the average level of happiness of the population. As seen, this happiness is positively related to the state of mental health, overall health, sense of belonging to the community, and negatively related to stress, among other factors. Consequently, differences in these population characteristics or states over space can be the source of geographical variation in happiness. For example, a strong sense of belonging to the community in Atlantic Canada could in principle explain higher average happiness in Atlantic Canada. The challenge is how to quantify the relative importance of the different factors that can, in principle, explain the geographical variation in happiness. This has to be done in order to weight the observed geographical variation of the determinants or drivers of happiness.

To quantify variation, we run a simulation exercise by using the coefficients of these main variables along with six categorical variables. These six categorical factors are marital status, immigration status, level of physical activity, and difficulty with activities, student status and sex. We chose married individuals (including common law), physically active individuals, individuals who often had difficulties, students, males and recent immigrants for the categorical variables of marital status, level of physical activity, difficulty with activities, student status, sex and immigration status respectively.

The absolute value of these coefficients was summed and then normalized or rescaled to add to unity to produce the weights. A large weight is assigned to mental health, followed by marital status, health, stress and recent immigrants. The coefficients of the variables along with their respective weights are listed in Table 21 below.

Table 21: Weights used in simulations to explain geographical variation in subjective well-being

	Ordered Probit Model		LP (4,5)		LP (5)	
	Coefficients	Weights	Coefficients	Weights	Coefficients	Weights
Perceived Health	0.236	0.107	0.029	0.105	0.071	0.108
Perceived Mental Health	0.455	0.206	0.066	0.240	0.136	0.207
Stress Level	-0.208	-0.092	-0.031	-0.113	-0.055	-0.084
Sense of Belonging to Local Community	0.180	0.081	0.028	0.102	0.050	0.076
Proportion of Married (including common law)	0.418	0.189	0.050	0.181	0.130	0.198
Proportion of Physically Active Individuals	0.135	0.061	0.008	0.030	0.050	0.076
Proportion of Individuals Who Often have Difficulties	-0.075	-0.033	-0.008	-0.029	-0.012	-0.012
Proportion of Students	0.119	0.054	0.024	0.088	0.027	0.041

[26] This section of the report will be updated to include factors such as household income and employment status in the analysis of geographical variation of happiness in Canada. It will also focus on using the differences in actual to expected probabilities as a method for accounting for geographical variation in happiness.

Proportion of Males	-0.127	-0.056	-0.015	-0.055	-0.037	-0.056
Proportion of Recent Immigrants	-0.257	-0.114	-0.016	-0.058	-0.094	-0.143

The choice of these variables was made on two criteria. First, the variables were statistically significant at the 1 per cent level (with the exception of individuals who often had difficulty with activities whose variable is significant at 10 per cent for the linear probability model with a higher cut-off point). Second, and more importantly, these variables had the greatest degree of expected variation in happiness among the categories of the variables. The relative size of the direct effect of these variables on happiness corresponds closely to the relative size of the coefficients and weights. Other variables, of course, affect happiness, but their direct effect is smaller. The most important of these variables are marital status, immigration status, difficulties with activities, physical activity, language spoken at home, student status and sex of the individual.

In addition to the weights of the ten drivers of happiness chosen for this study, geographical variation in average happiness will be affected by the geographical variation in the observed values of the drivers. For example, if the average mental health of geographical units exhibits little variation across space, even though within the geographical unit it manifests large differences among individuals, then mental health contributes little to the explanation of geographical variation.

A. Provinces

As shown earlier in the report, at the provincial level, average happiness in Canada varied from a high of 4.33 in Prince Edward Island to a low of 4.23 in Ontario and 4.24 in British Columbia. The Canadian average was 4.26. Table 22 shows the application of the framework developed above to explain the 0.03 point higher average happiness in the province of Newfoundland and Labrador relative to the national average using weights from the ordered probit model, as it is the primary method of analysis for this study.

The greatest differences in the average values for the determinants exist in sense of belonging to the local community, proportion of married individuals including common law and individuals who have difficulty with activities. These are offset by negative differences in proportion of recent immigrants and stress level. The net effect is that the 0.12 points of Newfoundland and Labrador's 0.03 point greater happiness relative to the national average is over explained by this framework with married (including common law) being the most important factor followed by sense of belonging to the local community, proportion of recent immigrants and stress level.

Table 22: Explaining Variation in Life Satisfaction for Newfoundland and Labrador

	Average Life Satisfact-ion for Canada (%) (1)	Average Life Satisfaction for NFLD & LAB (%) (2)	Standardized Average for Canada (Scale 1-5) (3)	Standardized Average for NFLD & LAB (Scale 1-5) (4)	Difference in Standardized Averages (5)=(4)-(3)	Weights from Ordered Probit Model (6)	(7)=(6)*(5)
Life Satisfaction			4.26	4.29	*0.036*		
Perceived Health			3.64	3.63	-0.008	0.107	-0.001
Perceived Mental Health			4.07	4.14	0.069	0.206	0.014
Stress Level			2.79	2.55	-0.242	-0.092	0.022
Sense of Belonging to Local Community			3.38	3.81	0.430	0.081	0.035
Proportion of Married (including common law)	65.6	70.3	3.28	3.51	-0.012	0.189	0.044
Proportion of Physically Active Individuals	22.6	19.7	1.13	0.99	0.231	0.061	-0.009
Proportion of Individuals Who Often Have Difficulties	11.3	14.5	0.56	0.72	-0.142	-0.033	-0.005
Proportion of Students	7.8	6.5	0.39	0.32	0.161	0.054	-0.004
Proportion of Males	49.0	48.4	2.45	2.42	-0.066	-0.056	0.002
Proportion of Recent Immigrants	6.0	1.0	0.30	0.05	-0.031	-0.114	0.028
Variation Explained							0.127
% Variation Explained (7) Variation Explained/ (5) Differences in Life Satisfaction)							352.7

This extended approach is applied in order to explain the 0.03 difference in happiness between Ontario and the national average. The happiness in this province is mostly boosted by the proportion of above-average married individuals (including common law) and a strong sense of belonging to the local community. This is mostly offset by health related concerns such as below-average self assessed health, mental health and above average stress level and proportion of individuals who face difficulties with activities. After taking into account the weights against each factor, proportion of recent immigrants and proportion of married individuals (including common law) contribute the most in explaining the 27.5 per cent variation in the 0.03 point gap in average happiness between the national average and Ontario.

Table 23: Explaining Variation in Life Satisfaction for Ontario

	Average Life Satisfaction for Canada (%) (1)	Average Life Satisfaction for Ontario (%) (2)	Standardized Average for Canada (Scale 1-5) (3)	Standardized Average for Ontario (Scale 1-5) (4)	Difference in Standardized Averages (5)=(4)-(3)	Weight from Ordered Probit Model (6)	(7)=(6)*(5)
Life Satisfaction			4.26	4.23	-0.033		
Perceived Health			3.64	3.62	-0.019	0.107	-0.002
Perceived Mental Health			4.07	4.06	-0.008	0.206	-0.002
Stress Level			2.79	2.82	0.033	-0.092	-0.003
Sense of Belonging to Local Community			3.38	3.41	0.032	0.081	0.003
Proportion of Married (including common law)	65.6	66.3	3.28	3.32	0.035	0.189	0.007
Proportion of Physically Active Individuals	22.6	22.4	1.13	1.12	-0.009	0.061	-0.001
Proportion of Individuals Who Often Have Difficulties	11.3	12.3	0.56	0.62	0.052	-0.033	-0.002
Proportion of Students	7.8	8.2	0.39	0.41	0.020	0.054	0.001
Proportion of Males	49.0	48.8	2.45	2.44	-0.012	-0.056	0.001
Proportion of Recent Immigrants	6.0	7.9	0.30	0.40	0.097	-0.114	-0.011
Variation Explained							-0.009
% Variation Explained (7) Variation Explained/ (5) Differences in Life Satisfaction)							**27.5**

Table 24 below presents a quick summary for the geographical variation that is explained through each of the three models used in the estimation of our results (the detailed breakdown for each province can be found in Appendix IV, section A). It shows the differences between the national and the average life satisfaction of the provinces while also making note of the variation that is collectively explained by the ten drivers of happiness that we have selected. The statistical significance of the difference between the average life satisfaction of each province and the national level is gauged through a t-test[27]. The test reveals that for Prince Edward Island, New Brunswick, Québec and Ontario, Alberta and British Columbia, the differences are statistically significant at 1 per cent level. The difference between Newfoundland and Labrador and the national average is statistically significant at 5 per cent level while the gap for the provinces of Nova Scotia, Manitoba, Saskatchewan and territories of Yukon/NWT/Nunavut is statistically insignificant.

[27] T-Statistic = $(\mu_p - \mu_N) / \sqrt{(\sigma^2_p / N_p + \sigma^2_n / N_n)}$ where 'p' is the provincial and 'n' is the national statistic.

Table 24: Variation in Life Satisfaction at the Provincial Level

		Ordered Probit		LP (4,5)		LP (5)	
	Difference between the National and Provincial Life Satisfaction (1)	Variation Explained by the ten factors (2)	% Variation Explained by ten factors (3)	Variation Explained by the ten factors (4)	% Variation Explained by ten factors (5)	Variation Explained by the ten factors (6)	% Variation Explained by ten factors (7)
Provinces							
Newfoundland and Labrador	0.036**	0.127	352.7	0.130	357.0	0.134	367.1
Prince Edward Island	0.074**	0.040	54.6	0.033	45.1	0.049	66.6
Nova Scotia	0.013	0.006	45.4	-0.009	-70.5	0.019	154.6
New Brunswick	0.038**	0.027	70.4	0.012	30.3	0.039	101.2
Québec	0.040**	-0.004	-9.8	-0.002	-5.2	-0.008	-20.7
Ontario	-0.033**	-0.009	27.5	-0.003	9.3	-0.011	32.6
Manitoba	-0.010	-0.014	135.9	0.020	193.7	-0.008	78.8
Saskatchewan	0.013	0.009	71.4	0.005	41.3	0.010	78.1
Alberta	0.039**	0.022	55.4	0.014	36.1	0.025	62.7
British Columbia	-0.021**	-0.007	31.7	-0.012	57.2	-0.005	23.5
YKN/Nunavut/NWT	0.004	0.007	167.5	0.003	72.7	0.006	150.0
Average of Statistically Significant Differences			82.5		75.7		90.4
Average of All the Provinces (excluding the territories)			83.0		69.4		94.4

Note: ** and * indicate statistical significance at 1% and 5% respectively.
See Appendix IV, section A for full results

As expected, the explanatory power of the ten variables is found to be sensitive to the weight that was derived from each of the three models. However, in all our simulations, the Atlantic region of Canada that was found to be happiest in the country is relatively well explained by all three provinces (the only exception is the province of Nova Scotia that is under explained by the linear probability with a lower cut-off point). In addition, the provinces of Manitoba, Saskatchewan, Alberta, British Columbia and Ontario are also well explained to some degree by at least two models. However, the differences between the average life satisfaction in Canada and the provinces of Nova Scotia, Manitoba, Saskatchewan and the territories are statistically insignificant and variation explained in that regard must be interpreted with caution. A noteworthy finding is related to the province of Québec which is one the more satisfied provinces of the country but is under-explained by all three methods of estimation.

In summary, our simulation technique was effective in demonstrating the strength of the association between the ten drivers of happiness and subjective well-being. This was evident by the fact that at least 70 per cent of the provincial variation in happiness was explained through all three methods.

B. CMAs

At the CMA level, average happiness in Canada in 2007-08 varied from a high of 4.36 in Brantford and 4.35 in Québec City to a low of 4.16 in Toronto and 4.18 in Vancouver. The Canadian average was 4.26. Table 25 applies the framework developed in the previous sub-section to explain the 0.11 point higher average happiness in Québec City relative to the national average. (See Appendix IV, section B for a detailed breakdown of the top five and bottom five ranked CMAs by life satisfaction). The table shows that both health and mental health are above average in the city while proportion of recent immigrants are below average, which in principle should increase happiness in the city relative to the national average. On the other hand, happiness is lowered by the below-average proportion of married individuals and the sense of belonging, perhaps surprisingly given the homogeneous linguistic and ethnic mix of the population. The net effect is that 0.057 points or more than half of Québec City's 0.108 point greater happiness relative to the national average can be explained by the ten variables included in our framework, with the high sense of mental health and proportion of recent immigrants being the most important factors.

Table 25: Explaining Variation in Life Satisfaction for Québec City

	Québec City						
	Average for Canada (%) (1)	Average for Québec City (%) (2)	Standardized Average for Canada (Scale 1-5) (3)	Standardized Average for Québec City (Scale 1-5) (4)	Difference in Standardized Averages (5)=(4)-(3)	Weights from Ordered Probit Model (6)	(7)=(6)*(5)
Life Satisfaction			4.24	4.35	0.108		
Perceived Health			3.63	3.75	0.118	0.107	0.013
Perceived Mental Health			4.06	4.25	0.188	0.206	0.039
Stress Level			2.86	2.80	-0.063	-0.092	0.006
Sense of Belonging to Local Community			3.39	3.16	-0.227	0.081	-0.019
Proportion of Married (including common law)	64.2	62.4	3.21	3.12	-0.091	0.189	-0.017
Proportion of Physically Active Individuals	22.4	19.7	1.12	0.98	-0.138	0.061	-0.008
Proportion of Individuals Who Often Dad Difficulties	10.7	6.5	0.53	0.33	-0.208	-0.033	0.007
Proportion of Students	8.8	9.9	0.44	0.49	0.054	0.054	0.003
Proportion of Males	48.8	48.2	2.44	2.41	-0.032	-0.056	0.002
Proportion of Recent Immigrants	7.8	2.1	0.39	0.11	-0.284	-0.114	0.032
Variation Explained							0.057
% Variation Explained (7) Variation Explained/ (5) Differences in Life Satisfaction)							52.5

Table 26 explains the -0.06 point gap in happiness between Vancouver, the second unhappiest CMA, and the national average. As was the case for British Columbia, mental health is well below and it is this factor that accounts for more than a third of the negative happiness gap (-0.02 points). Moreover, like Québec City, the proportion of recent immigrants also plays an important role in explaining the negative gap which is somewhat offset by the city's above average sense of belonging and proportion of physically active individuals.

Table 26: Explaining Variation in Life Satisfaction for Vancouver

	Vancouver						
	Average for Canada (%) (1)	Average for Vancouver (%) (2)	Standardized Average for Canada (Scale 1-5) (3)	Standardized Average for Vancouver (4)	Difference in Standardized Averages (5)=(4)-(3)	Weights from Ordered Probit Model (6)	(7)=(6)*(5)
Life Satisfaction			4.24	4.18	-0.058		
Perceived Health			3.63	3.63	-0.002	0.107	0.000
Perceived Mental Health			4.06	3.96	-0.095	0.206	-0.020
Stress Level			2.86	2.78	-0.077	-0.092	0.007
Sense of Belonging to Local Community			3.39	3.44	0.050	0.081	0.004
Proportion of Married (including common law)	64.2	62.3	3.21	3.11	-0.095	0.189	-0.018
Proportion of Physically Active Individuals	22.4	25.2	1.12	1.26	0.135	0.061	0.008
Proportion of Individuals Who Often Had Difficulties	10.7	9.5	0.53	0.48	-0.058	-0.033	0.002
Proportion of Students	8.8	10.1	0.44	0.50	0.064	0.054	0.004
Proportion of Males	48.8	49.1	2.44	2.46	0.014	-0.056	-0.001
Proportion of Recent Immigrants	7.8	11.1	0.39	0.56	0.166	-0.114	-0.019
Variation Explained							-0.033
% Variation Explained (7) Variation Explained/ (5) Differences in Life Satisfaction)							56.2

Table 27 below summarizes the results in terms of explanatory power of the ten drivers of happiness to explain the variation in the five happiest and the five least happy CMAs. The gaps in happiness between the five happiest CMAs and the national average are found to be statistically significant at 1 per cent level. For the bottom five CMAs in the satisfaction rankings, only the gaps between the national average and Vancouver and Toronto respectively are statistically significant. Furthermore, the aggregated results from the simulations show that the happiest CMAs, along with Toronto and Vancouver, are well explained by all three models with the sole exception of Victoria, which is significantly over explained in all three estimations. At least 58 per cent of the variation in the CMAs whose satisfaction gap compared to the national average is statistically significant is explained by the ten drivers of happiness.

Apart from Victoria, the happiest CMAs have a high average sense of belonging and above average mental health. Stress levels for Québec and Trois-Rivieres are well below average while those of Victoria and Calgary are closer to the average.

St Catharines-Niagara, Vancouver, Windsor and Toronto are the lowest ranked CMAs by life satisfaction whose variation can be attributed to its most important determinants. Apart from Toronto whose mental health is closer to the CMA average, all these CMAs have below average health and mental health. Another notable and common characteristic amongst these three CMAs compared to Toronto is the high sense of belonging to the local community and relatively low stress levels. The big centres, Toronto, Calgary and Vancouver also have an above average proportion of recent immigrants which has a negative effect on the happiness of these CMAs.

Table 27: Variation in Life Satisfaction at the CMA Level

		Ordered Probit		LP (4,5)		LP (5)	
	Difference between the National and Provincial Life Satisfaction (1)	Variation Explained by the ten factors (2)	% Variation Explained by ten factors (3)	Variation Explained by the ten factors (4)	% Variation Explained by ten factors (5)	Variation Explained by the ten factors (6)	% Variation Explained by ten factors (7)
CMAs							
Most Satisfied CMAs							
Brantford	0.115**	0.055	47.7	0.030	26.1	0.071	61.5
Québec	0.108**	0.057	52.5	0.050	46.1	0.058	53.7
Trois-Rivieres	0.090**	0.070	77.2	0.054	59.8	0.078	86.2
Victoria	0.094**	0.182	194.0	0.152	162.9	0.200	213.5
Calgary	0.095**	0.040	43.4	0.031	32.3	0.045	47.9
Least Satisfied CMAs							
Toronto	-0.082**	-0.053	64.6	-0.028	34.3	-0.066	80.5
Vancouver	-0.058**	-0.033	56.2	-0.026	43.9	-0.039	67.5
Hamilton	-0.027	0.062	-225.8	0.054	-197.1	0.072	-264.3
Windsor	-0.029	0.077	-270.8	0.704	-246.2	0.088	-307.6
St.Catharines-Niagara	-0.016	0.027	-172.2	0.005	-30.0	0.047	-297.2
Average Statistically Significant CMAs			76.5		57.9		87.2
Average of Top and Bottom 5 CMAs			-13.3		-6.8		-25.9

Note: ** and * indicate statistical significance at 1% and 5% respectively.
See Appendix IV, section B for full results

C. Health Regions

At the health region level, average happiness in Canada varied from a high of 4.40 in Renfrew County and 4.39 in Oxford County to a low of 4.11 in the City of Toronto, 4.14 in Peel Regional Health Unit, and 4.14 in Vancouver Health Services Delivery Area. The Canadian average was 4.26. Table 28 applies the framework developed above to explain the 0.13 point higher average happiness in Oxford County relative to the national average (data for the five most satisfied and five least satisfied Health Regions are contained in Appendix IV, section C). The table shows that a very strong sense of belonging, above-average proportion of married individuals followed by proportion of below average recent immigrants and below average stress level explains why residents of Oxford County are much happier on average.

Table 28: Explaining Variation in Life Satisfaction for Oxford County

	Average for Canada (%) (1)	Average for Oxford County (%) (2)	Average for Canada (Scale 1-5) (3)	Average for Oxford County (Scale 1-5) (4)	Difference in Standardized Averages (5)=(4)-(3)	Weights from Ordered Probit Model (6)	(7)=(6)*(5)
Life Satisfaction			4.26	4.39	0.132		
Perceived Health			3.64	3.69	0.048	0.107	0.005
Perceived Mental Health			4.07	4.03	-0.039	0.206	-0.008
Stress Level			2.79	2.65	-0.142	-0.092	0.013
Sense of Belonging to Local Community			3.38	3.9	0.526	0.081	0.043
Proportion of Married (including common law)	65.6	75.7	3.28	3.78	0.503	0.189	0.095
Proportion of Physically Active Individuals	22.6	16.59	1.13	0.83	-0.298	0.061	-0.018
Proportion of Individuals Who Often Have Difficulties	11.3	11.39	0.56	0.57	0.006	-0.033	0.000
Proportion of Students	7.8	3.85	0.39	0.19	-0.197	0.054	-0.011
Proportion of Males	49.0	49.7	2.45	2.49	0.033	-0.056	-0.002
Proportion of Recent Immigrants	6.0	0.8	0.30	0.04	-0.258	-0.114	0.029
Variation Explained							0.147
% Variation Explained (7) Variation Explained/ (5) Differences in Life Satisfaction)							111.4

Table 29 applies the framework to explain the -0.15 point gap in happiness between the City of Toronto and the national average. The major factor that explains nearly a third of the gap is the above-average proportion of recent immigrants. Another important factor that holds relative importance is the below-average proportion of married (including common-law) individuals.

Table 29: Explaining Variation in Life Satisfaction for Toronto

	Average for Canada (%) (1)	Average for Toronto (%) (2)	Standardized Average for Canada (Scale 1-5) (3)	Standardized Average for Toronto (Scale 1-5) (4)	Difference in Standardized Averages (5)=(4)-(3)	Weights from Ordered Probit Model (6)	(7)= (6)*(5)
Life Satisfaction			4.26	4.11	-0.148		
Perceived Health			3.64	3.61	-0.031	0.107	-0.003
Perceived Mental Health			4.07	4.07	-0.003	0.206	-0.001
Stress Level			2.79	2.81	0.025	-0.092	-0.002
Sense of Belonging to Local Community			3.38	3.27	-0.105	0.081	-0.009
Proportion of Married (including common law)	65.6	59.2	3.28	2.96	-0.323	0.189	-0.061
Proportion of Physically Active Individuals	22.6	18.1	1.13	0.91	-0.221	0.061	-0.014
Proportion of Individuals Who Often Have Difficulties	11.3	11.7	0.56	0.58	0.02	-0.033	-0.001
Proportion of Students	7.8	10.4	0.39	0.52	0.13	0.054	0.007
Proportion of Males	49.0	48.0	2.45	2.4	-0.052	-0.056	0.003
Proportion of Recent Immigrants	6.0	16.4	0.3	0.82	0.518	-0.114	-0.059
Variation Explained							-0.139
% Variation Explained (7) Variation Explained/ (5) Differences in Life Satisfaction)							93.9

Table 30 below summarizes the results in terms of explanatory power of the ten drivers of happiness to explain the variation in the five happiest and the five least happy health regions. The gaps in happiness between all ten health regions and the national average are found to be statistically significant at 1 per cent level. Among the happiest health regions, Oxford County and Région de la Côte-Nord are significantly over-explained, whereas for the low ranked health regions, only Vancouver is over-explained. On average, more than 60 per cent of the variation at the health region is explained through our simulation technique using the ten main drivers of happiness.

The positive features of satisfied health regions of Région de la Gaspésie - Îles-de-la-Madeleine and Région de la Côte-Nord are its high sense of belonging, below average stress levels and its above average mental health. It is interesting to note that above-average proportion of individuals who are married or in a common law relationship in all three happiest health regions in Québec explains a significant amount of the gap, with over half in Région de la Côte-Nord and Région des Laurentides and about one-fourth in Région de la Gaspésie - Îles-de-la-Madeleine. Oxford County, on the other hand, has above average health and sense of belonging and below average stress levels that is offset by below average mental health.

The common characteristics of low ranked health regions are relatively low health and mental health except for Vancouver that has above average health and Toronto, whose mental health is closer to the national average. Toronto and Vancouver also have a below average sense of belonging, although the magnitude of the difference is much greater in the former. Stress levels were noted to be relatively higher in Toronto and Peel Health Unit.

Table 30: Variation in Life Satisfaction at the Health Region Level

		Ordered Probit		LP (4,5)		LP (5)	
	Difference between the National and the HR Life Satisfaction (1)	Variation Explained by the ten factors (2)	% Variation Explained by ten factors (3)	Variation Explained by the ten factors (4)	% Variation Explained by ten factors (5)	Variation Explained by the ten factors (6)	% Variation Explained by ten factors (7)
Health Regions							
Most Satisfied HRs							
Renfrew	0.142**	0.090	63.62	0.662	46.70	0.108	76.46
Oxford	0.132**	0.147	111.37	0.143	108.73	0.153	115.81
Région des Laurentides	0.12**	0.058	48.94	0.342	28.99	0.067	56.59
Région de la Gaspésie - Îles-de-la-Madeleine	0.118**	0.089	82.35	0.090	83.19	0.091	84.62
Région de la Côte-Nord	0.108**	0.151	133.17	0.143	126.50	0.156	137.66
Least Satisfied HRs							
City of Toronto	-0.148**	0.139	93.88	-0.099	66.77	-0.161	108.34
Peel Health Unit	-0.118**	-0.060	51.06	-0.019	16.16	-0.083	70.60
Vancouver HSDA	-0.098**	-0.130	132.59	-0.112	113.63	-0.148	150.43
Fraser South	-0.080**	-0.009	10.76	0.001	-1.09	-0.015	18.49
Richmond	-0.080**	-0.051	63.96	-0.023	29.02	-0.068	85.69
Average of Top and Bottom 5 HRs			79.17		61.86		90.47

Note: ** and * indicate statistical significance at 1% and 5% respectively.
See Appendix IV, section C for full results

VI. Conclusion

This report has presented an analysis of the factors explaining geographic variation in happiness in Canada at the provincial, CMA, and health region level. After a detailed description of the landscape of happiness in Canada in 2007-08 based on the CCHS, the report identified through regression analysis the key determinants of happiness at the individual level. We find that although household income is significant, other factors such as perceived mental and physical health status are better predictors of individual happiness.

We then used the point estimates from the important factors to develop weights and apply these weights to a model of the geographic variation in happiness. According to these results, due to both the differences in the mean across geographical units and the significance of the point estimate, a sense of belonging is the most important factor in explaining geographical variation in Canada. Mental health status was the second most important determinant of geographical variation. It was assigned the highest weight in but the variance in mean mental health status across geographical units is much smaller.

Despite the extent of geographical variation explained by our model, we find that offsetting factors related to happiness reduce its variation across regions in Canada. That is, although sense of belonging may be higher in one province, that province may also have a lower average mental health. For example, Quebec has the lowest mean sense of belonging (3.22) among the ten provinces and three territories but it also has the highest mean mental health status (4.16).

This report provides strong support for the recommendations of the Stiglitz Report, which was commissioned by President Nicolas Sarkozy of France and released in September 2009, to put greater emphasis on happiness relative to GDP in the development of public policy. We find that evidence from Canada suggests that mental health status, sense of belonging, physical health, and stress level are more significant determinants of happiness than household income. Thus, if policy makers want to improve overall happiness in Canada then greater focus should be given to making progress on these factors.

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Appendix I: What Makes People Happy? A Selective Review of the Literature

This section will discuss six important determinants of happiness that have featured prominently in the literature; marriage, income, unemployment, health, education, and inequality.

A. Marriage

In the tradition of Becker (1981), marriage provides a basic safety net against adverse life experiences and allows for gains from economies of scale and specialization within the family. This is reflected in married people earning higher incomes than single people, *ceteris paribus* (Chun and Lee, 2001). While economists like Becker have focused on economic gains, psychologists and sociologists have stressed the increase in emotional support and relational gratification as an important benefit of marriage contributing to increased well-being.

Empirical studies have shown that, compared to single people, married people have better physical and psychological health (Burman and Margolin 1992, and Ross *et al.* 1990). Using data from the United States General Social Survey, Layard (2005) shows that a single person is less happy than a married person by 4.5 point on the happiness scale of 10-100.[28] Widowers and the unmarried also suffer from a lower well-being than a married person but the group of people most affected are those who have been separated. A separated person is eight points lower on the happiness scale as compared to a married person.[29]

Appendix Table 1: Happiness by Martial Status, United States General Social Survey

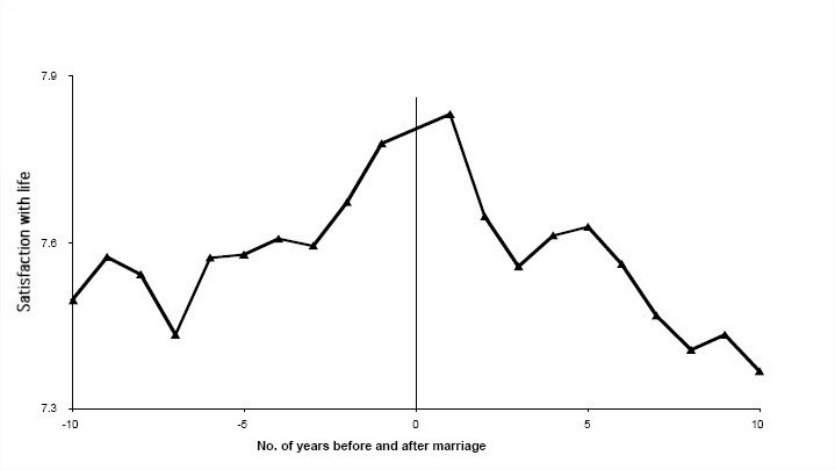
Family Relationships	Happiness Relative to Married, Points (Scale 10-100)
Divorced	-5.0
Separated	-8.0
Widowed	-4.0
Never Married	-4.5
Cohabiting	-2.0

Source: Layard (2005:64)

The German Socio-Economic Panel has shown that happiness levels of married people follows a particular trend after controlling for the respondents' sex and basic demographics. Marriage generally makes people happy. Frey and Stutzer (2003) used the German Socio-Economic Panel to pin down this causality. Longitudinal data show that the level of happiness starts to increase as the time of marriage comes nearer, and it peaks around the year of the marriage. After the peak period, there is reason to believe that adaptation sets in and the level of happiness keeps decreasing with time until it falls back to its baseline level. This notion is supported by some psychologists who believe that marital transitions cause short-term change in well-being (Johnson and Wu 2002).

[28] The scale is actually 1-10, but for simplicity, all units were multiplied by 10 so it ranges from 10-100.
[29] Also see Stack and Eshleman (1998)

Appendix Figure 1: Life Satisfaction and Marriage in Germany



Source: Frey and Stutzer (2003:32)

Guven *et al.* (2009) also used panel data to study happiness and marital status in Australia. They found that if spouses did not share similar levels of life satisfaction during their marriage years, they were more likely to divorce in the future if there was a gap in the happiness between the husband and the wife. The probability of a divorce would increase if the happiness gap grew over time. In particular, if the wife was unhappier than the husband, the marriage was more likely to end in a break up because most divorces were instigated by women. The authors also controlled for other variables such as children, income and age. Despite these controls, the association between an increasing happiness gap and the risk of divorce continued to persist. The paper concluded that public policy, especially policies that affect the division of labour inside households, should avoid giving spouses incentives that lead to diverging levels of happiness – namely, individual income and employment have been shown to be among the main determinants of happiness.

Helliwell (2003) conducted analysis similar to what we endeavour to do in this report. Using data from the World Values Survey, he investigated which individual and national-level characteristics would affect individual life satisfaction. Not surprisingly, married individuals were the happiest while the divorced and separated were the least happy. In 2009, the Gallup Healthways Well-Being Index of the United States showed that married people were the most satisfied group, ahead of persons with all other marital statuses.

B. Income

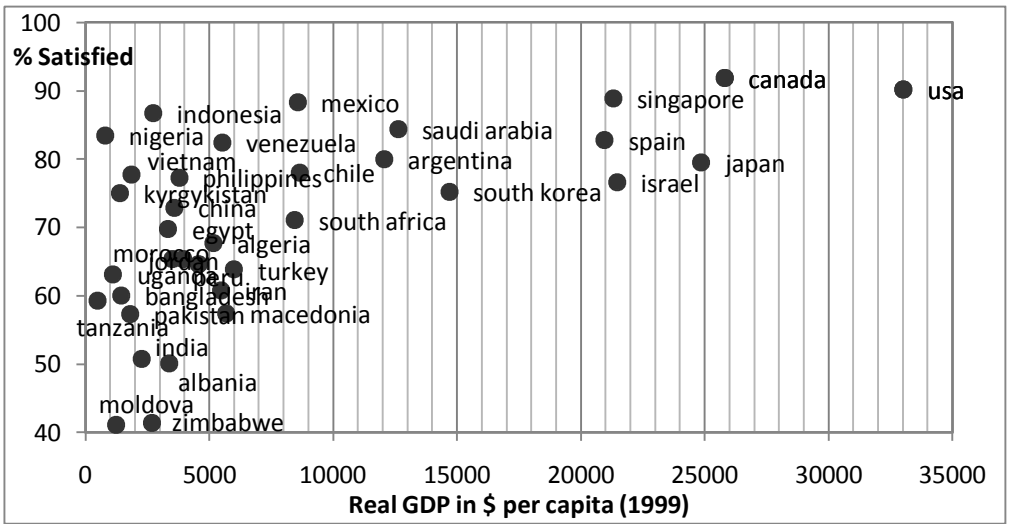
An individual's economic status is an important factor in determining his or her well-being. It depends not only on one's current income stream in comparison with the reference group but also on expectations of future earnings. Traditionally, researchers have focused on the role of current income in absolute terms. However, studies have shown that individuals who have a higher relative income have higher subjective well-being, although the magnitude is often described to be small. (Diener *et al.* 1999).

The case of former East Germany showed that living standards of those who are employed have soared since 1990, but their level of happiness has plummeted because instead of comparing their incomes with their old reference group, the Soviet Bloc, they started making comparisons with the new reference

group with a higher level of average income, the West Germans (Layard, 2005). Economic comparisons in the form of the reference income approach are closely related to Brickman and Campbell's (1971) concept of a 'hedonic treadmill'. Individuals' objectives and goals are closely related to his environment. These goals and objectives are revised as the environment around him evolves. Helliwell and Barrington-Leigh (2008) studied the reference income approach locally. By analyzing data on different geographical levels of Canada, they found income comparison effects were stronger and dominated empathy, consistent with the findings of Kingdon and Knight (2007) who studied South African regions.

Besides laying emphasis on reference income, researchers have also made note of a certain income threshold that corresponds to a level sufficient to fulfill basic needs (Helliwell, 2003). Beyond this threshold, additional income is not associated with extra happiness. This can be seen from the right-hand side of . For countries that have a GDP per capita of above $10,000, happiness does not rise as steeply as it does for countries below that level.

Appendix Figure 2: Cross Country Comparisons: Income and Happiness



Sources: World Development Indicators Database and World Values Survey.

Note: The percentage satisfied shown in the graph is obtained by taking the average of "quite" or "very happy" and per cent satisfied above level 6 in the World Values Survey. Layard (2005) has performed a similar analysis by merging two waves of the World Values Survey for a larger pool of countries.

Inglehart *et al.* (2008) used all five waves of the World Values Survey to test this hypothesis on 46 countries for which time series data was available and they were able to show a smooth and positive relationship between life satisfaction and rising incomes. This relationship was also shown by Diener *et al.* (2009), Deaton (2008) and Wolfers and Stevenson (2008) who used the European Social Survey (23 countries) and Gallup World Poll (130 countries) respectively, with the latter survey having a more representative sample of the world's population. The reason leading Layard (2005), Easterlin (1995) and Bjornskov (2008) to doubt the relationship between happiness and rising incomes is that they used the World Values Survey which includes few poor countries, most of them in eastern Europe or parts of the former Soviet Union (among them Moldova, Ukraine, Armenia, Belarus, Russia, Bulgaria, Latvia, Estonia, Azerbaijan, Bosnia and Herzegovina, Macedonia, Romania, Estonia, and Slovakia). The respondents in these countries were found to be exceptionally dissatisfied and they established a cluster of countries well

below the relationship between life satisfaction and income which should otherwise hold in a balanced sample. The World Values Survey in its earlier waves also surveyed people from urban parts of India, China, Ghana and Nigeria to establish some sort of balance in the sample which was tilted towards OECD countries. People from these countries had higher life satisfaction. Therefore, the sample of poor countries comprised of a mixture of satisfied people from the urban parts of some poor countries and dissatisfied respondents from poor countries in Eastern Europe failed to show any clear trend (Deaton, 2008).

C. Unemployment

Work not only provides income, but it helps sustains social relationships. Loss of employment is seen by most as a stigma and causes one to lose self-respect. This factor is related to one's financial situation. The lack of employment will in most cases lead to a loss of income and decrease in well-being. Using the World Values Survey, Helliwell (2003) shows that unemployment lowers subjective well-being by as much as a one-unit on the five-point health scale.

Loss of employment causes a decrease in well-being, part of which can only be attributed to lower income. The German Socio Economic Panel has shown that, for a person, the pain of unemployment is greater than the pain of losing income.[30] Moving between employment and being out of the labour force involves a smaller change in happiness than moving between work and unemployment. According to some researchers, unemployment causes persistent misery and despair which causes people to report a lower well-being even after being employed for a lengthy duration. Clark (2006) used data from three European Panels to show that there is no 'habituation' to unemployment and that it hurts as much after one or two years of unemployment as it does at the beginning. Helliwell (2003), however, believes that the constant reported loss in well-being is mostly due to the habituation affects in the form of debt and despair that builds up after long-standing unemployment. And that it is important to disentangle the habituation affects which would provide a more accurate affect of the unemployment on well-being and satisfaction.

D. Health

Health contributes towards all three measures of an individuals' well-being; social, mental, and physical. The indicators of health in the form of life expectancy, fertility and infant mortality are central measures of the quality of life. Hayes and Ross (1986) cite several studies indicating a high correlation between health and psychological well-being. This positive association has been confirmed by Helliwell (2003) and Bjornskov *et al.* (2006). Using the World Values Survey, Helliwell showed that a one-point improvement in health, on the five point scale, is associated with a 0.61 point increase in subjective well-being and, given the means and scales of the variables, a 1% increase in average reported health status is associated with just over a 1% increase in subjective well-being. His analysis yielded similar results when the analysis was extended to cross-country comparisons.

It must be noted that healthy people do have a tendency to overstate the loss in well-being from deterioration in their actual health (Layard, 2005). Therefore, there is cause to believe that there would be a significant difference between measuring the impact of a self assessed change in health status and an actual change in health status on well-being. It has also been found that individuals whose personalities are inherently more optimistic are more likely to give positive assessments of their health status and their subjective well-being. Scheier *et al.* (1989) preformed an experiment on optimism on 51 patients before and

[30] Winklemann and Winklemann (1998). The causal affect of 'unemployed' is higher than 'out of labour force' for all the different models used with variations in demographic variables.

after a coronary artery bypass surgery where they found that post-surgery optimistic patients showing positive signs in the form of quicker recovery and positive emotional response to family and hospital staff.

Clinical research published in the European Heart Journal examined SWB from a different angle: how an individual's SWB affects their physical wellness. Davidson *et al.* (2010) used the Canadian Health Survey for Nova Scotia to study the increased "affect" of emotions such as joy, happiness, excitement, enthusiasm and contentment on the ten-year incidence of coronary health disease. The results indicated that positive effect, through a variety of mechanisms such as better sleeping habits and giving up smoking, could actually defend against coronary heart disease. This conclusion suggested that preventive strategies for the disease may be enhanced not only by reducing depressive symptoms in individuals but also by increasing their positive affect.

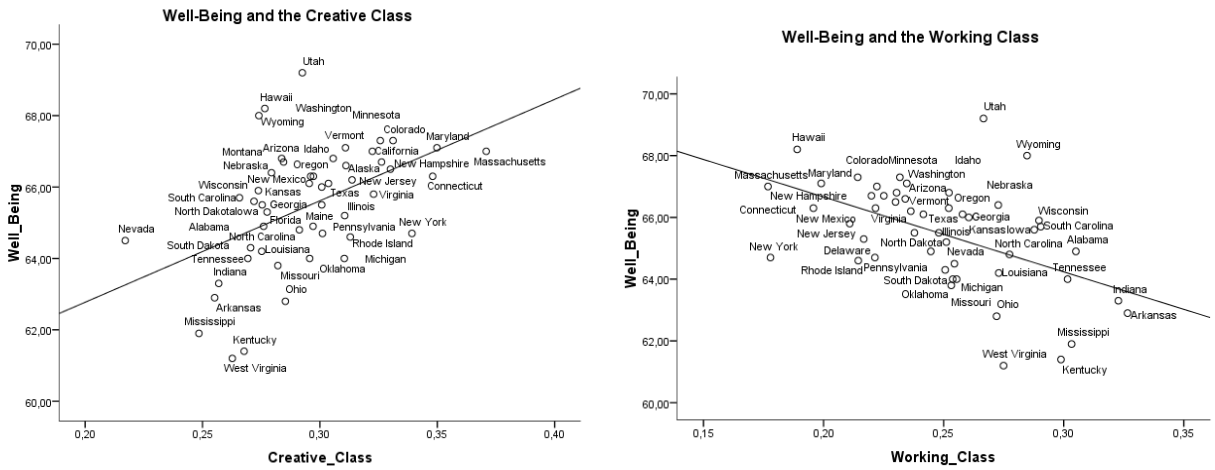
E. Education

Education has been found to be the strongest systematic determinant of individual participation in a variety of social activities, and social connections have been linked to increased health and well-being (Putnam, 2000). The results which have been obtained are quite surprising in relation to what theorists have proposed.

Helliwell (2003) found that individual partial effects of different levels of education did not have large and significant impacts on life satisfaction. After community variables were added to his analysis, once again, national educational attainment did not have an impact on well-being. According to Helliwell, individual well-being benefits of education on life satisfaction are mitigated by other factors such as health, perceived trust, and higher incomes; and for community-level variables, benefits of education appear to flow through positive effects on the creation and maintenance of human and social capital like national trust and quality of government. Using the data from the same survey with a larger pool of countries, Bjørnskov *et al*. (2006) found the variable of primary education to be significant only for people outside low income groups. Their results also showed that secondary schooling did not contribute to well-being for any income or age group.

Along with all of the international evidence on well-being mentioned, there has been a great deal of research on the U.S. states as well. Specifically, Florida *et al.* (2009) examined the relationship between well-being and several economic and social measures including education. They found that the more advanced a society is, the happier the citizens of that state. The analysis by Florida *et al.* revealed some interesting conclusions. The correlation between well-being and the Creative Class, defined as individuals part of creative professions seen as business and finance, law etc., is positive but smaller ($r = .49$) compared to the correlation between well-being and working class occupations (construction and extraction, installation, maintenance and repair, production, transportation and material moving occupations) ($r = -.50$). The occupational Creative Class had a larger percentage of people with a Bachelors degree or higher than the Working Class. Partial correlations were also run to make sure all the results were statistically significant.

Appendix Figure 3 : Well-Being and Florida's Classes



Source: Florida *et al.* (2009)

F. Inequality

Inequality has also been studied as a determinate of well-being. The actual degree of income inequality and related redistributive government policies might well affect personal socio-economic positions as well as the perceived fairness of the allocation of resources is society. First, the degree of income inequality affects the relative income position of individuals and thus might influence their well-being. Helliwell (2002) assessed inequality by adding the Gini coefficient for each national economy as a regressor in the life satisfaction equation.[31] Bjornskov *et al.* (2008) using the same data set and methodology studied a larger pool of countries. Their results were similar to Helliwell's where the inequality variable was statistically insignificant.

Individuals are also concerned about their income position in relation to their peer or reference group for happiness. But the direction of this relationship is ambiguous. People in low income groups might be negatively influenced by inequality if the affect of envy and status is strong, yet greater income inequality could also entail greater opportunities as unequal but dynamic societies might present opportunities for upward economic mobility which might otherwise be miniscule in a society with low inequality. The well-being of people in higher income brackets and those in favourable positions in relation to their reference group is as well indeterminate as it is also dependent on two opposing affects: the feeling of being in a good social position versus the fear of being deprived by the income groups below them (Alesina *et al.*, 2003).

[31] There were, however, some well-being effects of income inequality in an indirect manner where personal and national income averages were added to the regression equation, a negative effect on well-being was observed. The observation was based on the decile position of the individual.

Appendix II: Data Summary

Appendix Table 2: Data Summary

	Mean	Std. Dev.
Individual Variables		
Ordinal Variables		
Life Satisfaction	4.25	0.74
Perceived Health	3.54	1.04
Perceived Mental Health	4.01	0.93
Stress Level	2.68	1.02
Sense of Belonging to Local Community	2.80	0.86
Household Income	47,662	35,933
Dummy Variables	Frequency Distribution	
Student Status		
Not a Student	0.93	0.26
Student	0.05	0.22
Immigration Status		
Non-Immigrants	0.83	0.38
Recent Immigrants	0.03	0.16
Non-Recent Immigrants	0.12	0.33
Age Group		
20s	0.13	0.33
30s	0.16	0.37
40s	0.17	0.37
50s	0.19	0.39
60s	0.16	0.37
70s	0.12	0.32
80+	0.07	0.25
Visible Minority Status		
Majority	0.85	0.36
Visible Minority	0.12	0.32
Education		
Less than Secondary	0.20	0.40
Secondary School Graduate	0.16	0.36
Some Post-Secondary	0.07	0.25
Post-Secondary	0.54	0.50
Marital Status		
Never been married	0.20	0.40
Married	0.49	0.50

Common-Law	0.09	0.29
	Mean	Std. Dev.
Divorced/Separated/Widowed	0.22	0.42
Language		
Anglophone	0.73	0.45
Francophone	0.19	0.39
Allophone	0.06	0.24
Working Status		
Employed	0.66	0.47
Not Employed	0.30	0.46
Unable to Work	0.04	0.19
Sex		
Females	0.55	0.50
Males	0.45	0.50
Level of Physical Activity		
Inactive	0.22	0.42
Somewhat Active	0.24	0.43
Active	0.51	0.50
Difficulty with Activities		
Never	0.68	0.47
Sometimes Difficulties	0.17	0.38
Often	0.15	0.35
Health Region Level Variables		
Household Income Inequality	1.23*(10^9)	5.15*(10^8)
Population Density of Health Region†	819.9	1418
Household Income	47,639	7,500
Unemployment Rate†	6.62	2.57
Proportion of Students**	6.63	2.46
Proportion of Non-Recent Immigrants**	12.05	11.17
Proportion of Post Secondary Graduates**	55.72	5.73
Proportion of Married**	55.24	8.41
Proportion of Francophones**	18.91	33.84
Proportion of Males**	49.23	1.05
Proportion of Physically Active Individuals**	22.72	4.24
Proportion of Individuals who have never had Difficulty with Activities**	71.65	6.42
Average Health	2.61	0.09
Average Mental Health	3.05	0.08
Average Stress	2.76	0.09
Average Sense of Belonging	2.77	0.16
Average Age	47.13	1.81

Total Observations: 116569
Missing responses are not excluded
† Denotes a variable derived from the 2006 Census of Population. All other variables are from the 2007/2008 Canadian Community Health Survey

**Denotes a Health Region Variable in terms of percentage.
Perceived Mental Health and Perceived Health have five categories:
1-poor, 2-fair, 3- good, 4-very good, 5- excellent

Stress has five categories :
1-not at all, 2-not very, 3- a bit, 4-quite a bit, 5-extremely

Sense of Belonging to the local Community has four categories:
1-weak, 2-somewhat weak, 3-somewhat strong, 4-strong

Appendix III: Regression Results

A. Equation 1 and Equation 2

Appendix Table 3: Ordered Probit Regression of Life Satisfaction of individuals in 121 Health Regions of Canada, 2007-2008

	Equation 1: Only Individual Level Variables		Equation 2: Individual and Health Region Variables	
	Coefficient	S.E	Coefficient	S.E
Pseudo R^2	0.1912		0.1921	
Individual Variables				
Ordinal Variables				
Perceived Health	0.239***	0.006	0.239***	0.006
Perceived Mental Health	0.467***	0.006	0.470***	0.006
Stress Level	-0.209***	0.005	-0.208***	0.005
Sense of Belonging to Local Community	0.175***	0.006	0.176***	0.006
Log Household Income	0.148***	0.007	0.152***	0.007
Dummy Variables				
Student Status				
Not a Student				
Student	0.099***	0.018	0.105***	0.019
Immigration Status				
Non-Immigrants				
Recent Immigrants	-0.261***	0.024	-0.241***	0.024
Non-Recent Immigrant	-0.108***	0.016	-0.084***	0.016
Age Group				
20s				
30s	-0.037**	0.016	-0.033**	0.016
40s	-0.076***	0.016	-0.072***	0.016
50s	-0.102***	0.017	-0.100***	0.018
60s	-0.029	0.021	-0.026	0.021
70s	0.049*	0.029	0.051*	0.029
Visible Minority Status				
Visible Majority				
Visible Minority	-0.193***	0.017	-0.170***	0.018
Education				
Less than Secondary				
Secondary School Graduate	0.029	0.018	0.030	0.018

Some Post-Secondary	0.020	0.022	0.020	0.022
Post-Secondary	0.065***	0.015	0.065***	0.016
Marital Status				
Never been married				
Married	0.371***	0.014	0.359***	0.014
Common-Law	0.261***	0.017	0.251***	0.017
Divorced/Separated/Widowed	-0.003	0.018	-0.011	0.019
Language				
Anglophone				
Francophone	0.087***	0.012	0.051**	0.022
Allophone	-0.135***	0.019	-0.123***	0.019
Working Status				
Employed				
Unemployed	-0.235***	0.027	-0.230***	0.027
Disabled	0.071**	0.031	0.079**	0.031
Out of Labour Force	0.046***	0.014	0.050***	0.015
Sex				
Females				
Males	-0.113***	0.009	-0.114***	0.010
Level of Physical Activity				
Inactive				
Somewhat Active	0.123***	0.011	0.118***	0.011
Active	0.153***	0.012	0.145***	0.012
Difficulty with Activities				
Never				
Sometimes Difficulties	-0.141***	0.017	-0.142***	0.018
Often	-0.084***	0.014	-0.083***	0.014
Health Region Variables				
Household Income Inequality			-0.000	0.000
Log Population Density of Health Region			-0.004	0.005
Log Income of Health Region			-0.196**	0.088
Unemployment Rate			-0.001	0.003
Proportion of Students			-0.012***	0.004
Proportion of Non-Recent Immigrants			-0.004***	0.001
Proportion of Post Secondary Graduates			0.004***	0.002
Proportion of Married			0.003**	0.001
Proportion of Males			-0.018**	0.009
Proportion of Physically Active Individuals			0.007***	0.002
Proportion of Individuals who never have difficulty with activities			0.005***	0.002

Average Health	0.025	0.140
Average Mental Health	-0.328	0.101
Average Stress	0.162	0.092
Average Sense of Belonging	-0.167	0.065
Average Age	-0.008	0.006

Data Source CCHS 2007-2008
Note: *** p<0.01, ** p<0.05, * p<0.1 denote significances at the 1, 5 and 10 per cent level respectively. Boldface indicates base case variable.

B. Equation 3

Appendix Table 4: Ordered Probit Regression of Life Satisfaction of individuals in 33 CMAs of Canada, 2007-2008

	Equation 3 (with individual and CMA variables)	
	Coefficient	S.E
Pseudo R^2	0.193	
CMA level Variables		
Household Income Inequality	3.81E-11*	2.27E-11
Log Population Density of Health Region	5.02E-05	4.85E-05
Log Income of Health Region	-2.92E-01	0.299497
Unemployment Rate	-1.30E-03	0.002365
	-4.90E-03	0.015252
Proportion of Students	-7.22E-03	0.002507
Proportion of Non-Recent Immigrants	-3.80E-03***	0.005075
Proportion of Post Secondary Graduates	4.43E-03	0.006182
Proportion of Married	-1.41E-03	0.01134
Proportion of Males	1.18E-02	0.006817
Proportion of Physically Active Individuals	9.65E-03	0.005985
Proportion of Individuals Who Never Have Difficulty With Activities	-1.44E-01	0.468027
Average Health	-4.33E-01	0.291826
Average Mental Health	3.90E-01	0.285021
Average Stress	-1.41E-01	0.2229
Average Sense of Belonging	-7.00E-03	0.016971
Average Age	3.81E-11	2.27E-11

Data Source CCHS 2007-2008

Note: *** p<0.01, ** p<0.05, * p<0.1 denote significances at the 1, 5 and 10 per cent level respectively. Boldface indicates base case variable.

C. Marginal Effects: Equation 1

Appendix Table 5: Ordered Probit Results of Regression 1 – Marginal Effects

	∂Pr(y=1)/∂x		∂Pr(y=2)/∂x		∂Pr(y=3)/∂x		∂Pr(y=4)/∂x		∂Pr(y=5)/∂x		Average Effect
Individual Variables											
Ordinal Variables											
Perceived Health	-0.0002	**	-0.0041	**	-0.0149	**	-0.0690	**	0.0882	**	0.11
Perceived Mental Health	-0.0005	**	-0.0091	**	-0.0302	**	-0.1289	**	0.1687	**	0.22
Stress Level	0.0002	**	0.0036	**	0.0131	**	0.0607	**	-0.0776	**	-0.10
Sense of Belonging	-0.0001	**	-0.0030	**	-0.0109	**	-0.0510	**	0.0650	**	0.08
Log Household Income	-0.0001	**	-0.0024	**	-0.0091	**	-0.0434	**	0.0551	**	0.07
Dummy Variables											
Student Status											
Not a Student											
Student	-0.0001	**	-0.0015	**	-0.0057	**	-0.0301	**	0.0373	**	0.05
Immigration Status											
Non-Immigrants											
Recent Immigrants	0.0003	**	0.0057	**	0.0192	**	0.0672	**	-0.0925	**	-0.12
Non-Recent Immigrants	0.0001	**	0.0019	**	0.0070	**	0.0305	**	-0.0395	**	-0.05
Age Group											
20s											
30s	0.0000	*	0.0006	*	0.0023	*	0.0107	*	-0.0137	*	-0.02
40s	0.0001	**	0.0013	**	0.0048	**	0.0219	**	-0.0281	**	-0.04
50s	0.0001	**	0.0018	**	0.0066		0.0292	**	-0.0377	**	-0.05
60s	0.0000		0.0005		0.0018		0.0084		-0.0107		-0.01

70s	0.0000	*	-0.0008	*	-0.0029		-0.0146	*	0.0183	*	0.02
Visible Minority Status											
Visible Majority											
Visible Minority	0.0002	**	0.0038	**	0.0132	**	0.0527	**	-0.0699	**	-0.09
Education											
Less than Secondary											
Secondary School Graduate	0.0000		-0.0005		-0.0018		-0.0086		0.0108		0.01
Some Post-Secondary	0.0000		-0.0003		-0.0012		-0.0059		0.0074		0.01
Post-Secondary	-0.0001		-0.0011		-0.0041		-0.0189		0.0241		0.03
Marital Status											
Never been married											
Married	-0.0003	**	-0.0066	**	-0.0239	**	-0.1056	**	0.1365	**	0.17
Common-Law	-0.0001	**	-0.0034	**	-0.0138	**	-0.0826	**	0.0999	**	0.12
Divorced/Separated/Widowed	0.0000		0.0001		0.0002		0.0010		-0.0013		0.00
Language											
Anglophone											
Francophone	-0.0001	**	-0.0014	**	-0.0075	**	-0.0256	**	0.0325	**	0.04
Allophone	0.0001	**	0.0026	**	0.0036	**	0.0355	**	-0.0472	**	-0.06
Working Status											
Employed											
Unemployed	0.0003	**	0.0051	**	0.0173	**	0.0609	**	-0.0835	**	-0.11
Unable to Work	0.0000	*	-0.0011	*	-0.0042	*	-0.0216	*	0.0269	*	0.03
Out of Labour Force	0.0000	**	-0.0007	**	-0.0028	**	-0.0136	**	0.0171	**	0.02
Sex											
Females											
Males	0.0001	**	0.0019	**	0.0070	**	0.0334	**	-0.0423	**	-0.05

Level of Physical Activity											
Inactive											
Somewhat Active	-0.0001	**	-0.0019	**	-0.0072	**	-0.0370	**	0.0461	**	0.06
Active	-0.0001	**	-0.0023	**	-0.0089	**	-0.0465	**	0.0578	**	0.07
Difficulty with Activities											
Never											
Sometimes Difficulties	0.0001	**	0.0027	**	0.0095	**	0.0388	**	-0.0512	**	-0.07
Often	0.0001	**	0.0015	**	0.0054	**	0.0238	**	-0.0308	**	-0.04

Data Source: CCHS 2007-2008
Marginal Effects are based on varying one variable and keeping all others at the overall average levels.
*, **, + denote significances at the 1, 5 and 10 percent level respectively.

D. Marginal Effects: Equation 2

Appendix Table 6: Ordered Probit Results of Regression 2 - Marginal Effects

	∂Pr(y=1)/∂x		∂Pr(y=2)/∂x		∂Pr(y=3)/∂x		∂Pr(y=4)/∂x		∂Pr(y=5)/∂x		Average Effect
Individual Variables											
Ordinal Variables											
Perceived Health	0.000	**	-0.004	**	-0.015	**	-0.069	**	0.088	**	0.11
Perceived Mental Health	-0.001	**	-0.009	**	-0.030	**	-0.130	**	0.170	**	0.22
Stress Level	0.000	**	0.004	**	0.013	**	0.060	**	-0.077	**	-0.10
Sense of Belonging to local community	0.000	**	-0.003	**	-0.011	**	-0.051	**	0.065	**	0.08
Log Household Income	0.000	**	-0.002	**	-0.009	**	-0.045	**	0.057	**	0.07
Dummy Variables											
Student Status											
Not a Student											
Student	0.000	**	-0.002	**	-0.006	**	-0.032	**	0.040	**	0.05
Immigration Status											
Non-Immigrants											
Recent Immigrants	0.000	**	0.005	**	0.018	**	0.063	**	-0.086	**	-0.11
Non-Recent Immigrant	0.000	**	0.001	**	0.005	**	0.024	**	-0.031	**	-0.04
Age Group											
20s											
30s	0.000	*	0.001	*	0.002	*	0.010	*	-0.012	*	-0.02
40s	0.000	**	0.001	**	0.005	**	0.021	**	-0.027	**	-0.03
50s	0.000	**	0.002	**	0.006	**	0.029	**	-0.037	**	-0.05

60s	0.000		0.000		0.002		0.008		-0.010		-0.01
70s	0.000	*	-0.001	*	-0.003	*	-0.015	*	0.019	*	0.02
Visible Majority											
Visible Minority	0.000	**	0.003	**	0.011	**	0.047	**	-0.062	**	-0.08
Education											
Less than Secondary											
Secondary School Graduate	0.000		0.000		-0.002		-0.009		0.011		0.01
Some Post-Secondary	0.000		0.000		-0.001		-0.006		0.007		0.01
Post-Secondary	0.000	**	-0.001	**	-0.004	**	-0.019	**	0.024	**	0.03
Marital Status											
Never been married											
Married	0.000	**	-0.006	**	-0.023	**	-0.102	**	0.132	**	0.17
Common-Law	0.000	**	-0.003	**	-0.013	**	-0.080	**	0.096	**	0.12
Divorced/Separated/Widowed	0.000		0.000		0.001		0.003		-0.004		0.00
Language											
Anglophone											
Francophone	0.000		-0.001		-0.003		-0.015		0.019		0.02
Allophone	0.000	**	0.002	**	0.008	**	0.034	**	-0.045	**	-0.06
Working Status											
Employed											
Unemployed	0.000		0.005		0.017		0.060		-0.082		-0.11
Unable to Work	0.000		-0.001		-0.005		-0.024		0.030		0.04
Out of Labour Force	0.000		-0.001		-0.003		-0.015		0.019		0.02
Sex											
Females											
Males	0.000	**	0.002	**	0.007	**	0.034	**	-0.042	**	-0.05

Level of Physical Activity											
Inactive											
Somewhat Active	0.000	**	-0.002	**	-0.007	**	-0.036	**	0.044	**	0.06
Active	0.000	**	-0.002	**	-0.008	**	-0.044	**	0.055	**	0.07
Difficulty with Physical Activities											
Never											
Sometimes	0.000	**	0.003	**	0.010	**	0.039	**	-0.052	**	-0.07
Often	0.000	**	0.001	**	0.005	**	0.024	**	-0.031	**	-0.04
Health Region Variables											
Household Income Inequality	0.000	*	0.000	*	0.000	*	0.000	*	0.000	*	0.00
Log Population Health Region	0.000		0.000		0.000		0.001		-0.001		0.00
Log Household Income	0.000		0.003		0.012		0.058		-0.073		-0.09
Unemployment Rate	0.000		0.000		0.000		0.000		0.000		0.00
Proportion of Students	0.000	**	0.000	**	0.001	**	0.003	**	-0.004	**	-0.01
Proportion of Non-Recent Immigrants	0.000	**	0.000	**	0.000	**	0.001	**	-0.001	**	0.00
Proportion of Post Secondary Graduates	0.000	**	0.000	**	0.000	**	-0.001	**	0.002	**	0.00
Proportion of Married	0.000	*	0.000	*	0.000	*	-0.001	*	0.001	*	0.00
Proportion of Males	0.000	*	0.000	*	0.001	*	0.005	*	-0.007	*	-0.01
Proportion of Physically Active Individuals	0.000	**	0.000	**	0.000	**	-0.002	**	0.003	**	0.00
Proportion of Never Individuals with no Difficulty with Physical activities	0.000	**	0.000	**	0.000	**	-0.002	**	0.002	**	0.00
Average Health	0.000		0.000		-0.002		-0.007		0.009		0.01
Average Mental Health	0.000		0.005		0.020		0.096		-0.122		-0.15
Average Stress	0.000		-0.003		-0.010		-0.048		0.060		0.08
Average Sense of Belonging	0.000		0.003		0.010		0.049		-0.062		-0.08
Average Age	0.000		0.000		0.000		0.002		-0.003		0.00

Data Source: CCHS 2007-2008. Marginal Effects are based on varying one variable and keeping all others at their overall average levels.

Appendix Table 7: Linear Probability Regression of Life Satisfaction of individuals in 101 Health Regions of Canada, 2007-2008

	Equation 4 (LP 4,5) [Only Individual Variables]		Equation 5 (LP 4,5) [Individual and Health Region Variables]		Equation 6 (LP 5) [Only Individual Variables]		Equation 7 (LP 5) [Individual and Health Region Variables]	
	Coefficient	S.E	Coefficient	S.E	Coefficient	S.E	Coefficient	S.E
R^2	0.1811		0.1829		0.2264		0.2282	
Individual Variables								
Ordinal Variables								
Perceived Health	0.026***	0.001	0.028***	0.003	0.073***	0.002	0.073***	0.004
Perceived Mental Health	0.066***	0.001	0.067***	0.003	0.140***	0.002	0.141***	0.004
Stress Level	-0.035***	0.001	-0.030***	0.003	-0.056***	0.002	-0.055***	0.004
Sense of Belonging to Local Community	0.030***	0.001	0.029***	0.002	0.045***	0.002	0.046***	0.003
Log Household Income	0.018***	0.001	0.021***	0.002	0.043***	0.002	0.043***	0.004
Dummy Variables								
Student Status								
Not a Student								
Student	0.019***	0.004	0.021***	0.007	0.021***	0.007	0.022**	0.011
Immigration Status								
Non-Immigrants								
Recent Immigrants	-0.017***	0.007	-0.021***	0.007	-0.087***	0.009	-0.084***	0.019
Non-Recent Immigrant	-0.016***	0.004	-0.008	0.007	-0.031***	0.006	-0.027**	0.012
Age Group								
20s								
30s	-0.015***	0.004	-0.012*	0.007	-0.020***	0.006	-0.019**	0.007
40s	-0.010***	0.004	-0.023**	0.009	-0.019***	0.006	-0.019**	0.009
50s	0.004	0.004	0.002	0.005	-0.012*	0.007	-0.012	0.010
60s	0.024***	0.005	0.022**	0.009	0.005	0.010	0.004	0.016
70s	-0.008**	0.004	-0.007	0.005	-0.007	0.006	-0.006	0.009

Visible Minority Status								
Visible Majority								
Visible Minority	-0.012**	0.005	-0.018	0.012	-0.060***	0.006	-0.055***	0.013
Education								
Less than Secondary								
Secondary School Graduate	-0.005	0.004	0.016*	0.008	-0.003	0.006	-0.003	0.011
Some Post-Secondary	-0.020***	0.004	-0.001	0.009	0.013	0.008	0.011	0.012
Post-Secondary	-0.014***	0.003	0.000	0.005	0.029***	0.006	0.027***	0.008
Marital Status								
Never been married								
Married	0.048***	0.003	0.036***	0.004	0.118***	0.005	0.117***	0.010
Common-Law	0.042***	0.004	0.029***	0.006	0.081***	0.006	0.080***	0.012
Divorced/Separated/Widowed	-0.010***	0.003	-0.028***	0.008	0.026***	0.007	0.026***	0.007
Language								
Anglophone								
Francophone	0.010***	0.002	0.003	0.008	0.022***	0.004	0.014	0.011
Allophone	0.001	0.005	0.001	0.011	-0.065***	0.007	-0.062***	0.016
Working Status								
Employed								
Unemployed	-0.061***	0.006	-0.063***	0.012	-0.041***	0.010	-0.039***	0.014
Unable to work	-0.098***	0.006	-0.055***	0.017	0.099***	0.012	0.101***	0.020
Out of Labour Force	-0.023***	0.003	-0.018***	0.004	0.039***	0.005	0.040***	0.010
Gender								
Females								
Males	-0.012***	0.002	-0.012***	0.002	-0.036***	0.003	-0.036***	0.006

Level of Physical Activity								
Inactive								
Somewhat Active	0.013***	0.002	0.013**	0.005	0.038***	0.004	0.036***	0.009
Active	0.010***	0.002	0.010**	0.004	0.055***	0.004	0.052***	0.009
Difficulty with Activities								
Never								
Sometimes Difficulties	-0.050***	0.003	-0.062***	0.008	0.008	0.006	0.008	0.008
Often	-0.012***	0.003	-0.025***	0.005	-0.012**	0.005	-0.012*	0.006
Health Region Variables								
Household Income Inequality			-0.000***	0.000			0.000**	0.000
Population Density of Health Region			-0.001	0.001			0.001	0.002
Median Household Income			-0.013	0.017			-0.069**	0.033
Unemployment Rate			0.000	0.001			-0.000	0.001
Proportion of Students			-0.002*	0.001			-0.003*	0.002
Proportion of Non-Recent Immigrants			-0.000	0.000			-0.001***	0.000
Proportion of Post Secondary Graduates			0.000	0.000			0.002**	0.001
Proportion of Married			0.001**	0.000			0.001	0.001
Proportion of Males			0.001	0.002			-0.007*	0.004
Proportion of Physically Active Individuals			-0.000	0.000			0.003***	0.001
Proportion of Individuals Who Never Have Difficulty With Activities			0.001	0.001			0.002***	0.001
Average Health			-0.008	0.033			0.022	0.056
Average Mental Health			-0.053**	0.027			-0.090**	0.041
Average Stress			0.019	0.026			0.050	0.045
Average Sense of Belonging			-0.035**	0.015			-0.035	0.026
Average Age			0.001	0.001			-0.003	0.003

Note: *** p<0.01, ** p<0.05, * p<0.1 denote significances at the 1, 5 and 10 per cent level respectively.
Boldface indicates base case variable.

LP (4,5) is the model the satisfaction scale collapsed into dissatisfied(1-3) and satisfied(4-5)
LP (5) is the model the satisfaction scale collapsed into dissatisfied(1-4) and satisfied(5)

E. Ordered Probit Results of Equation 1 – Expected Life Satisfaction

Appendix Table 8: Ordered Probit Results of Equation 1 - Expected Probabilities

	Very Dissatisfied (1)	Dissatisfied (2)	Neither Satisfied Nor Dissatisfied (3)	Satisfied (4)	Very Satisfied (5)	Expected Value of Life Satisfaction (6)	Actual Life Satisfaction (7)
Health							
Poor	0.0019	0.0294	0.0928	0.7205	0.1553	4.00	3.23
Fair	0.0009	0.017	0.0639	0.6991	0.2191	4.12	3.83
Good	0.0004	0.0093	0.0417	0.6528	0.2958	4.23	4.11
Very Good	0.0002	0.0048	0.0257	0.5864	0.3829	4.35	4.38
Excellent	0.0001	0.0024	0.015	0.5061	0.4764	4.46	4.56
Difference						0.46	1.32
Mental Health							
Poor	0.0182	0.1256	0.2169	0.6044	0.0350	3.51	2.65
Fair	0.0052	0.0577	0.1421	0.7056	0.0894	3.82	3.38
Good	0.0012	0.0216	0.0755	0.7115	0.1901	4.07	3.95
Very Good	0.0002	0.0066	0.0325	0.6199	0.3407	4.29	4.27
Excellent	0.0000	0.0016	0.0114	0.4645	0.5225	4.51	4.57
Difference						1.00	1.92
Stress							
Not at all	0.0000	0.0021	0.0135	0.4897	0.4947	4.48	4.52
Not very	0.0001	0.0039	0.0219	0.5623	0.4119	4.38	4.41
A bit	0.0003	0.0070	0.0340	0.6259	0.3328	4.28	4.25
Quite a bit	0.0006	0.0122	0.0506	0.6760	0.2606	4.18	4.05
Extremely	0.0011	0.0203	0.0724	0.7087	0.1974	4.08	3.67
Difference						0.40	0.85
Sense of Belonging to the Local Community							
Very weak	0.0007	0.0138	0.0552	0.6852	0.2451	4.16	3.93
Somewhat weak	0.0003	0.0088	0.0400	0.6475	0.3034	4.24	4.16
Somewhat strong	0.0002	0.0054	0.0281	0.5992	0.3671	4.33	4.31
Very Strong	0.0001	0.0033	0.0192	0.5428	0.4347	4.41	4.47
Difference						0.25	0.54
Household Income							
1st Decile	0.0005	0.0114	0.0469	0.6669	0.2743	4.20	3.90
2nd Decile	0.0004	0.0101	0.0446	0.6547	0.2902	4.22	4.10
3rd Decile	0.0004	0.0089	0.0408	0.6433	0.3066	4.25	4.16
4th Decile	0.0003	0.0078	0.0372	0.6354	0.3233	4.29	4.23
5th Decile	0.0003	0.0069	0.0339	0.6185	0.3404	4.29	4.27

6th Decile	0.0002	0.006	0.0308	0.605	0.3579	4.31	4.32
7th Decile	0.0002	0.0053	0.0279	0.591	0.3756	4.34	4.34
8th Decile	0.0002	0.0046	0.0253	0.5763	0.3937	4.36	4.39
9th Decile	0.0001	0.004	0.0228	0.5611	0.4119	4.38	4.42
10th Decile	0.0001	0.0035	0.0205	0.5455	0.4304	4.40	4.51
Difference						0.20	0.61
Student Status							
Not a student	0.0002	0.0064	0.0322	0.6115	0.3495	4.30	4.26
Student	0.0001	0.0047	0.0253	0.5837	0.3862	4.35	4.28
Difference						0.05	0.02
Immigration Status							
Non-Immigrants	0.0002	0.0058	0.0294	0.6058	0.3588	4.32	4.30
Recent Immigrants	0.0005	0.0116	0.0489	0.6721	0.2668	4.19	4.11
Non-Recent Immigrants	0.0003	0.0078	0.0366	0.6359	0.3195	4.27	4.14
Difference						-0.13	-0.19
Age Category							
20s	0.0002	0.0054	0.0279	0.598	0.3685	4.33	4.27
30s	0.0002	0.0060	0.0301	0.609	0.3547	4.31	4.29
40s	0.0002	0.0066	0.0326	0.6202	0.3403	4.29	4.25
50s	0.0003	0.0071	0.0344	0.6275	0.3307	4.28	4.22
60s*	0.0002	0.0058	0.0296	0.6066	0.3577	4.32	4.29
70s	0.0001	0.0047	0.0251	0.583	0.3871	4.35	4.26
Difference						0.05	0.07
Visible Minority Status							
Majority	0.0002	0.0059	0.0298	0.6076	0.3565	4.31	4.29
Visible Minority	0.0004	0.0099	0.0436	0.6585	0.2875	4.22	4.10
Difference						-0.09	-0.19
Educational Attainment							
No HS Grad*	0.0003	0.007	0.0337	0.6249	0.3342	4.29	4.11
HS Grad*	0.0002	0.0064	0.0318	0.6168	0.3448	4.30	4.24
Went to PS*	0.0002	0.0066	0.0324	0.6194	0.3414	4.30	4.22
PS Grad	0.0002	0.0058	0.0295	0.6064	0.3581	4.32	4.31
Difference						0.03	0.20
Marital Status							
Married	0.0001	0.0039	0.0221	0.5636	0.4103	4.38	4.34
Common Law	0.0002	0.0054	0.028	0.5985	0.3679	4.33	4.34
Separated/Divorced/Widowed*	0.0005	0.0117	0.0496	0.6673	0.2709	4.20	4.05
Never married	0.0005	0.011	0.0471	0.6677	0.2738	4.20	4.13
Difference						0.18	-0.21

Language Spoken at Home							
Anglophone	0.0002	0.0063	0.0314	0.6151	0.3469	4.30	4.27
Francophone	0.0002	0.0050	0.0262	0.5892	0.3794	4.34	4.32
Allophone	0.0004	0.0091	0.0410	0.6508	0.2987	4.24	4.06
Difference						-0.06	-0.21
Employment Status							
Employed	0.0002	0.0063	0.0312	0.6141	0.3482	4.30	4.30
Unemployed	0.0005	0.0117	0.0492	0.6727	0.2659	4.19	4.07
Disabled	0.0002	0.0051	0.0269	0.5929	0.3749	4.34	3.64
Out of Labour Force	0.0002	0.0055	0.0284	0.6006	0.3653	4.33	4.26
Sex							
Female	0.0002	0.0053	0.0274	0.5957	0.3715	4.33	4.26
Male	0.0003	0.0072	0.0346	0.6284	0.3295	4.28	4.25
Difference						0.05	0.01
Physical Activity							
Inactive	0.0003	0.0074	0.0353	0.6311	0.3259	4.27	4.16
Somewhat Active	0.0002	0.0053	0.0275	0.5959	0.3711	4.33	4.33
Active	0.0002	0.0048	0.0258	0.5865	0.3827	4.35	4.40
Difference						0.06	0.24
Difficulty with Activities							
Never Difficulties	0.0002	0.0056	0.0289	0.6031	0.3622	4.32	4.34
Sometimes Difficulties	0.0003	0.0071	0.0343	0.6270	0.3314	4.28	4.11
Often difficulties	0.0003	0.0083	0.0383	0.6421	0.3110	4.26	3.91
Difference						0.06	0.42

F. Expected Life Satisfaction and Average Life Satisfaction – Ordered Probit Model

In all our regressions, both health in general and mental health were found to be highly statistically significant coefficients (p-value less than 0.1 per cent). Self-assessed mental health has the widest marginal effect. Given average levels in other variables, the expected value of life satisfaction is only 3.54 for those with poor mental health, 3.83 for those with fair mental health, 4.07 for those with good, 4.30 for those with very good, and 4.51 for those who self-assessed their mental health as excellent (Appendix Table 9). The actual average life satisfaction is 2.65 for those with poor mental health, and 4.57 with excellent mental health. When the differences in expected life satisfaction (0.97) and actual life satisfaction (1.92) are compared, we find that there is 50.5 per cent variation in subjective well-being between individuals in poor and excellent mental health that can directly be attributed to mental health assuming all other variables are held constant at their average levels.

Appendix Table 9: Expected Average Life Satisfaction by Mental Health, Canada 2007-2008

Mental Health	Actual Value (1)	Expected Mean (2)	Difference between actual and expected mean (2) – (1)	Difference in average life satisfaction explained by variable (3)=(2/1)
Poor	2.65	3.51	0.86	
Fair	3.38	3.82	0.44	
Good	3.95	4.07	0.12	
Very Good	4.27	4.29	0.02	
Excellent	4.57	4.51	-0.06	
Difference between Poor and Excellent Mental Health	1.92	1.00		51.8 per cent

The second widest variation in life satisfaction is due to self-assessed health (Appendix Table 10). Assuming all other variables are at their average levels for the overall population, the expected value of life satisfaction of those who report poor health is 4.00, 4.12 for fair health, 4.24 for good health, 4.35 for very good health, and 4.46 for excellent health. The actual observed average satisfaction for those with poor health is 3.23 and 4.56 for those with excellent health, meaning only 34.5 per cent (0.46 out of 1.32) of the difference in life satisfaction between people with poor and excellent health is directly attributed to health.

Appendix Table 10: Expected Average Life Satisfaction by Health, Canada 2007-2008

Health	Actual Value (1)	Expected Mean (2)	Difference between actual and expected mean (2) – (1)	Difference in average life satisfaction explained by variable (3)=(2/1)
Poor	3.23	4.00	0.77	
Fair	3.83	4.12	0.29	
Good	4.11	4.23	0.12	
Very Good	4.38	4.35	-0.03	
Excellent	4.56	4.46	-0.10	
Difference between Poor and Excellent Health	1.32	0.46		34.8 per cent

The variable which has the next widest impact is stress (Appendix Table 11), which was found to be highly statistically significant in all our regressions. Again, assuming all other variables are at the averages for the population, those who say their average day is not at all stressful will have an expected value of life satisfaction of 4.48, those whose average day is not very stressful 4.38, a bit stressful 4.28, quite a bit stressful 4.18, and those who say there average day is extremely stressful will have an expected value of life satisfaction at 4.08 given average levels in other variables. The observed average satisfaction for those who are not at all stressed is 4.52 and 3.67 for those who are extremely stressed. Thus, 47.1 per cent (0.40 out of 0.85) of the difference in average satisfaction between these groups is directly attributed to stress.

Appendix Table 11: Expected Average Life Satisfaction by Mental Stress, Canada 2007-2008

Stress	Actual Value (1)	Expected Mean (2)	Difference between actual and expected mean (2) – (1)	Difference in average life satisfaction explained by variable (3)=(2/1)
Not at all	4.52	4.48	-0.04	
Not very	4.41	4.38	-0.03	
A bit	4.25	4.28	0.03	
Quite a bit	4.05	4.18	0.13	
Extremely	3.67	4.08	0.41	
Difference between Not at all and Extremely Stressed	0.85	0.40		47.1 per cent

After stress, the variable with the widest variation in predicted well-being is sense of belonging to local community (Appendix Table 12). Sense of belonging to the local community was found to be highly statistically significant in all our regressions. Given average levels in all other variables, those who report a very weak sense of belonging to the local community have an expected value of life satisfaction of 4.15, a somewhat weak sense 4.24, a somewhat strong sense 4.33, and those who report a

very strong sense of belonging to the local community have an expect value of life satisfaction of 4.41. The observed average life satisfaction for those who have a very weak sense of belonging to the local community is 3.93, and 4.47 for those who report a very strong sense of belonging; meaning 48.1 per cent (0.26 out of 0.54) of this difference is attributed directly to their difference in their sense of belonging.

Appendix Table 12: Expected Average Life Satisfaction by Sense of Belonging to the Local Community, Canada 2007-2008

Sense of Belonging to the Local Community	Actual Value (1)	Expected Mean (2)	Difference between actual and expected mean (2) – (1)	Difference in average life satisfaction explained by variable (3)=(2/1)
Very weak	3.93	4.16	0.23	
Somewhat weak	4.16	4.24	0.08	
Somewhat strong	4.31	4.33	0.02	
Very Strong	4.47	4.41	-0.06	
Difference between very weak and very strong sense of belonging	0.54	0.25		46.1 per cent

Household income, adjusted for both household and community size, is also closely associated with subjective well-being (Appendix Table 13). It was found to be highly statistically significant variable in all our regressions. Given average levels in all the other variables, average life satisfaction monotonically increases with income deciles from a low expected value of life satisfaction of 4.20 for the lowest decile to a high of 4.40 for the highest decile. The observed average life satisfaction by household income deciles also increased monotonically, with the lowest decile having an average of 3.90 and the highest having an average of 4.51. Thus, only 32.6 per cent (0.20 out of 0.61) of the difference in life satisfaction between the top and bottom deciles is due directly to household income.

The expected value for life satisfaction for persons in the bottom decile is 0.30 points greater than the actual value (4.20 versus 3.90). It is this difference that explains most of the reduction in the gap in happiness between the top and bottom deciles once controls are run. It suggests that the low actual happiness values observed for the very poor reflect more than just low income and include such influences as poor health and a low sense of belonging.

Appendix Table 13: Expected Average Life Satisfaction by Household Income, Canada 2007-2008

Household Income	Actual Value (1)	Expected Mean (2)	Difference between actual and expected mean (2) – (1)	Difference in average life satisfaction explained by variable (3)=(2/1)
1st Decile	3.90	4.20	0.30	
2nd Decile	4.10	4.22	0.12	
3rd Decile	4.16	4.25	0.09	
4th Decile	4.23	4.27	0.04	
5th Decile	4.27	4.29	0.02	

6th Decile	4.32	4.31	-0.01	
7th Decile	4.34	4.34	0	
8th Decile	4.39	4.36	-0.03	
9th Decile	4.42	4.38	-0.04	
10th Decile	4.51	4.40	-0.11	
Difference between top and bottom income decile	0.61	0.20		32.8 per cent

Marital status also has a large impact on subjective well-being (Appendix Table 14). The dummy variables for married and common-law were found to be statistically significant in all our regressions. Because the dummy variable for separated/widowed/divorced was insignificant in all are regressions we cannot infer any differences between the base case (never married) and separated widowed or divorced. Assuming average levels in the non-marital status variables, we find married individuals have an expected value of life satisfaction of 4.34; persons in a common-law relationship have a similar value with an expected value of life satisfaction of 4.34, while individuals who have never married have an expected life satisfaction of 4.13, the lowest out of any category. The observed average life satisfaction for married persons is 4.34 and 4.13 for never married, and 90.9 per cent of this variation (0.20 out of 0.21) can directly be tied to their marital status.

Appendix Table 14: Expected Average Life Satisfaction by Martial Status, Canada 2007-2008

Marital Status	Actual Value (1)	Expected Mean (2)	Difference between actual and expected mean (2) – (1)	Difference in average life satisfaction explained by variable (3)=(2/1)
Married	4.38	4.39	0.01	
Common Law	4.33	4.34	0.01	
Separated/Divorced/Widowed*	4.20	4.20	0.00	
Never married	4.20	4.19	-0.01	
Difference between Married and Never Married	0.18	0.20		

* indicates that coefficient of the variable is statistically insignificant.

Dummy variables for sometimes having difficulties with activities and often having difficulties with activities were both found to be statistically significant in all regressions. Consistent with the literature but inconsistent with most people's perceptions, the difference in subjective well-being directly from physical difficulties is small. Controlling for other factors including health, a representative person has an expected value of life satisfaction of 4.32 if he or she reports to having no difficulties with daily activities, those who report have some difficulties with daily activities have an expected value of life satisfaction of 4.28, and those who often have difficulties with daily activities have an expected value of life satisfaction of 4.26. Those who report never having difficulties with the daily activities were observed to have an average life satisfaction of 4.34 compared to an average life satisfaction of 3.91 for those who often had difficulties with their daily activities. Only 14.3 per cent (0.06 out of 0.42) of the difference in life satisfaction between those with no difficulties and those who often have difficulties can be directly attributed to their difficulties in daily activities.

Appendix Table 15: Expected Average Life Satisfaction by Difficulties with Activities, Canada 2007-2008

Difficulty with Activities	Actual Value (1)	Expected Mean (2)	Difference between actual and expected mean (2) – (1)	Difference in average life satisfaction explained by variable (3)=(2/1)
Often Difficulties	3.91	4.26	-0.08	
Sometimes Difficulties	4.11	4.28	0.17	
Never difficulties	4.34	4.32	0.41	
Difference Often and Never Difficulties	0.43	0.06		14.3 per cent

All the regressions found a strong statistically significant negative effect of being physically inactive on life satisfaction. According to our regression, if an individual is not physically active but has average characteristics in all other variables then his expected value of life satisfaction is 4.28, his life satisfaction is 4.33 if he is somewhat active and 4.34 if he is highly active. The observed average satisfaction for those who are not physically active is 4.16 and 4.40 for those who are physically active. Only 25 per cent of the observation difference in life satisfaction between those not physically active and those somewhat physically active can be directly tied to their level of physical activity.

Appendix Table 16: Expected Average Life Satisfaction by Physical Activity, Canada 2007-2008

Physical Activity	Actual Value (1)	Expected Mean (2)	Difference between actual and expected mean (2) – (1)	Difference in average life satisfaction explained by variable (3)=(2/1)
Inactive	4.16	4.27	0.11	
Somewhat Active	4.33	4.33	0.00	
Active	4.40	4.35	-0.05	
Difference between Inactive and Active	0.24	0.07		29.9 per cent

We found statistically significant effects of language spoken (Appendix Table 17). Speaking French at home was found to have a somewhat statistically significant impact on subjective well-being compared to the base case of speaking English at home. Speaking neither English nor French at home was found to have a strong statistically significant impact compared to the base case of speaking English at home. Given average levels of all other variables, we found an Anglophone would have an expected value of life satisfaction of 4.30, a francophone 4.33, and an allophone 4.24. The actual distribution is: Anglophones have an average life satisfaction of 4.27, Francophones 4.32, and Allophones 4.06, meaning 28.6 per cent (0.06 out of 0.21) of the difference in average life satisfaction between Francophones and Allophones is directly due to the difference in language spoken at home.

Appendix Table 17: Expected Average Life Satisfaction by Language Spoken at Home, Canada 2007-2008

Language Spoken at Home	Actual Value (1)	Expected Mean (2)	Difference between actual and expected mean (2) – (1)	Difference in average life satisfaction explained by variable (3)=(2/1)
Anglophone	4.27	4.30	0.03	
Francophone	4.32	4.34	0.02	
Allophone	4.06	4.24	0.18	
Difference between Francophone and Allophone	0.26	0.10		38.5 per cent

In all the regressions, we found a strong statistically significant impact of being a student compared to the base case of not being a non-student. The expected value of a non-student with all other characteristics at their averages is 4.30 compared to 4.36 for a student (Appendix Table 18). When we looked at the actual distribution of average life satisfaction across student status we found virtually no difference, with students having an average life satisfaction of 4.28 compared to 4.26 for a non-student. The differences between the two statuses are too low for any kind of inferences to be drawn.

Appendix Table 18: Expected Average Life Satisfaction by Student Status, Canada 2007-2008

Student Status	Actual Value (1)	Expected Mean (2)	Difference between actual and expected mean (2) – (1)	Difference in average life satisfaction explained by variable (3)=(2/1)
Not a student	4.26	4.30	0.04	
Student	4.28	4.36	0.08	
Difference between student and non-student	0.02	0.06		-

Given average characteristics of the overall population, a female is expected to have a life satisfaction of 4.33 and a male, 4.27 (Appendix Table 19). However in the actual distribution there is very little difference between the two sexes with females having an average life satisfaction of 4.26 and males, 4.25. Similar to the case of student status, the differences are very low and no inferences are drawn on the variation in average life satisfaction.

Appendix Table 19: Expected Average Life Satisfaction by Sex, Canada 2007-2008

Sex	Actual Value (1)	Expected Mean (2)	Difference between actual and expected mean (2) – (1)	Difference in average life satisfaction explained by variable (3)=(2/1)
Female	4.26	4.33	0.07	
Male	4.25	4.28	0.02	
Difference between Male and Female	0.01	0.05		

Another variable we found to be statistically significant in all our regressions were immigration status. Holding all other variables as representative of the average individual in the overall population, non-immigrants have an expected value of life satisfaction of 4.32, non-recent immigrants (immigrated to Canada more than nine years ago) have an expected value of life satisfaction of 4.26 while recent immigrants have an expected life satisfaction of 4.19 (Appendix Table 20). The actual average for non-immigrants is 4.30 and 4.11 for recent immigrants. 68.4 per cent (0.13 out of 0.19) of this difference in average life satisfaction is directly attributed to the difference in immigration status.

Appendix Table 20: Expected Average Life Satisfaction by Immigration Status, Canada 2007-2008

Immigration Status	Actual Value (1)	Expected Mean (2)	Difference between actual and expected mean (2) – (1)	Difference in average life satisfaction explained by variable (3)=(2/1)
Non-Immigrants	4.30	4.32	0.02	
Non-Recent Immigrants	4.14	4.27	0.12	
Recent Immigrants	4.11	4.19	0.08	
Difference between Non-Immigrant and Recent Immigrants	0.19	0.13		68.4 per cent

We also found a statistically significant effect of visible minority status in all regressions. Assuming all other attributes were at the mean levels of the overall population, someone who is non-visible minority has an expected life satisfaction of 4.31 whereas a visible minority has an expected life satisfaction of 4.27 (Appendix Table 21). This difference, however, is much less than the actual difference in life satisfaction, accounting for only 21.2 per cent (0.04 out of 0.19) of the difference as the actual average of non-visible minorities is 4.29 and 4.10 for visible minorities.

Appendix Table 21: Expected Average Life Satisfaction by Visible Minority Status, Canada 2007-2008

Visible Minority Status	Actual Value (1)	Expected Mean (2)	Difference between actual and expected mean (2) – (1)	Difference in average life satisfaction explained by variable (3)=(2/1)
Majority	4.29	4.31	0.02	
Visible Minority	4.10	4.22	0.17	
Difference between visible and non-visible minorities	0.19	0.09		47.4 per cent

In all our regressions indicator variables for ages 30-39, 40-49, 50-59, 71-79 were found to be somewhat statistically significant. The indicator variable for those aged 80 and older was found to be highly statistically significant in all regressions. None of our regressions for the indicator variable for those in their 60s was statistically significant, indicating we cannot draw any inferences in subjective well-being from the base case (20s) and people in their 60s. Controlling for all other variables, the expected value of life satisfaction declined from a local maximum of 4.33 for people in their 20s to a minimum of 4.28 in their 50s and then increased to a maximum of 4.37 for those in their 70s (Appendix Table 22). However the actual distribution of average life satisfaction is different. There is still a local maximum in the 20s decreasing to a local minimum in the 50s, after which average life satisfaction increases to another local maximum in the 60s and then continues to decline in the 70s and 80s. This is likely due to the worse health and lower income of the elderly.

Appendix Table 22: Expected Average Life Satisfaction by Age, Canada 2007-2008

Age Category	Actual Value (1)	Expected Mean (2)	Difference between actual and expected mean (2) – (1)	Difference in average life satisfaction explained by variable (3)=(2/1)
20s	4.27	4.33	0.06	
30s	4.29	4.31	0.02	
40s	4.25	4.29	0.04	
50s	4.22	4.28	0.06	
60s*	4.29	4.32	0.03	
70s	4.26	4.35	0.09	
Difference between 30s and 50s	0.07	0.03		42.9

* indicates that the coefficient of the variable is statistically insignificant

Employment status was found to have a statistically insignificant relationship with subjective well-being. Assuming all other characteristics are at the overall mean, someone employed has an expected life satisfaction of 4.31 compared to 4.33 for someone who is disabled and 4.30 for someone who is not employed (Appendix Table 23). The actual average life satisfaction for people who are employed is 4.30, 4.21 for those not employed and 3.63 for those unable to work. It is not clear why, once all other factors are controlled for, the disabled are actually happier than the non-disabled.

Appendix Table 23: Expected Average Life Satisfaction by Employment Status, Canada 2007-2008

Employment Status	Actual Value (1)	Expected Mean (2)	Difference between actual and expected mean (2) – (1)	Difference in average life satisfaction explained by variable (3)=(2/1)
Employed	4.30	4.30	0.00	
Unemployed	4.07	4.19	0.12	
Unable to Work	3.64	4.34	0.70	
Not Employed	4.26	4.33	0.07	
Difference between Unable to Work and Not Employed	0.66	-0.04		-

We did not find any statistically significant direct effect of individual education on subjective well-being. Those who did not graduate high school have an average life satisfaction of 4.31, those whose highest level of education is graduated post-secondary or attended post-secondary have an average life satisfaction of 4.30, and those who have graduate post-secondary have an average life satisfaction of 4.31 (Appendix Table 24). This means that differences in happiness between persons with different levels of educational attainment are almost entirely due to other factors, such as income. Education alone has minimal direct effect on happiness.

Appendix Table 24: Expected Average Life Satisfaction by Highest Educational Attainment, Canada 2007-2008

Highest Educational Attainment	Actual Value (1)	Expected Mean (2)	Difference between actual and expected mean (2) – (1)	Difference in average life satisfaction explained by variable (3)=(2/1)
No High School Graduation	4.11	4.29	0.20	
High School Graduation	4.24	4.30	0.06	
Went to Post Secondary	4.22	4.30	0.08	
Post Secondary Graduation	4.31	4.32	0.00	
Difference between No HS	0.20	0.03		15.0 per cent

* indicates that the coefficient of the variable is statistically insignificant

Appendix IV: Explaining Variation in Life Satisfaction Across Different Levels of Geography

A. Provinces

Appendix Table 25: Explaining Variation in Life Satisfaction in Newfoundland & Labrador

						Ordered Probit		Linear Probability (4,5)		Linear Probability (5)	
	Average for Canada (%) (1)	Average for NFLD & LAB (%) (2)	Standardized Average for Canada (Scale 1-5) (3)	Standardized Average for NFLD & LAB (Scale 1-5) (4)	Difference in Standardized Averages (5)=(4)-(3)	Weight (6)	(7)= (6)*(5)	Weight (8)	(9)=(8)*(5)	Weights (10)	(11)= (10)*(5)
Life Satisfaction			4.26	4.29	0.036						
Perceived Health			3.64	3.63	-0.010	0.107	-0.001	0.105	-0.001	0.108	-0.001
Perceived Mental Health			4.07	4.14	0.070	0.206	0.014	0.240	0.017	0.207	0.014
Stress Level			2.79	2.55	-0.240	-0.092	0.022	-0.113	0.027	-0.084	0.020
Sense of Belonging to Local Community			3.38	3.81	0.430	0.081	0.035	0.102	0.044	0.076	0.033
Proportion of Married (including common law)	65.6	70.3	3.28	3.51	0.230	0.189	0.044	0.181	0.042	0.198	0.046
Proportion of Physically Active Individuals	22.6	19.7	1.13	0.99	-0.140	0.061	-0.009	0.030	-0.004	0.076	-0.011
Proportion of Individuals Who Often Have Difficulties	11.3	14.5	0.56	0.72	0.160	-0.033	-0.005	-0.029	-0.005	-0.012	-0.002
Proportion of Students	7.8	6.5	0.39	0.32	-0.070	0.054	-0.004	0.088	-0.006	0.041	-0.003
Proportion of Males	49.0	48.4	2.45	2.42	-0.030	-0.056	0.002	-0.055	0.002	-0.056	0.002
Proportion of Recent Immigrants	6.0	1.0	0.3	0.05	-0.250	-0.114	0.028	-0.058	0.014	-0.143	0.035
Variation Explained							0.127		0.130		0.134
% Variation Explained (Variation Explained / (5) Differences in Life Satisfaction							**352.7**		**357.0**		**367.1**
	t stat	Level of Statistical Significance									
Statistical Significance:	-3.00	1%									

Appendix Table 26: Explaining Variation in Life Satisfaction in Prince Edward Island

						Ordered Probit		Linear Probability (4,5)		Linear Probability (5)	
	Average for Canada (%) (1)	Average for PEI (%) (2)	Standardized Average for Canada (Scale 1-5) (3)	Standardized Average for PEI (Scale 1-5) (4)	Difference in Standardized Averages (5)=(4)-(3)	Weight (6)	(7)= (6)*(5)	Weight (8)	(9)= (8)*(5)	Weights (10)	(11)= (10)*(5)
Life Satisfaction			4.26	4.33	0.074						
Perceived Health			3.64	3.6	-0.040	0.107	-0.004	0.105	-0.004	0.108	-0.004
Perceived Mental Health			4.07	4.05	-0.020	0.206	-0.004	0.240	-0.005	0.207	-0.004
Stress Level			2.79	2.68	-0.110	-0.092	0.010	-0.113	0.012	-0.084	0.009
Sense of Belonging to Local Community			3.38	3.59	0.210	0.081	0.017	0.102	0.021	0.076	0.016
Proportion of Married (including common law)	65.6	66.1	3.28	3.31	0.020	0.189	0.005	0.181	0.004	0.198	0.005
Proportion of Physically Active Individuals	22.6	20.8	1.13	1.04	-0.090	0.061	-0.005	0.030	-0.003	0.076	-0.007
Proportion of Individuals Who Often Have Difficulties	11.3	15.1	0.56	0.75	0.190	-0.033	-0.006	-0.029	-0.006	-0.012	-0.002
Proportion of Students	7.8	6.5	0.39	0.32	-0.070	0.054	-0.004	0.088	-0.006	0.041	-0.003
Proportion of Males	49.0	47.8	2.45	2.39	-0.060	-0.056	0.004	-0.055	0.003	-0.056	0.004
Proportion of Recent Immigrants	6.0	1.0	0.3	0.05	-0.250	-0.114	0.028	-0.058	0.014	-0.143	0.036
Variation Explained							0.040		0.033		0.049
% Variation Explained (Variation Explained / (5) Differences in Life Satisfaction							**54.6**		**45.1**		**66.6**
	t stat	Level of Statistical Significance									
Statistical Significance:	-4.74	1%									

Appendix Table 27 : Explaining Variation in Life Satisfaction in Nova Scotia

						Ordered Probit		Linear Probability (4,5)		Linear Probability (5)	
	Average for Canada (%) (1)	Average for NS (%) (2)	Standardized Average for Canada (Scale 1-5) (3)	Standardized Average for NS (Scale 1-5) (4)	Difference in Standardized Averages (5)=(4)-(3)	Weight (6)	(7)= (6)*(5)	Weight (8)	(9)= (8)*(5)	Weights (10)	(11)= (10)*(5)
Life Satisfaction			4.26	4.27	0.013						
Perceived Health			3.64	3.52	-0.119	0.107	-0.013	0.105	-0.013	0.108	-0.013
Perceived Mental Health			4.07	3.99	-0.081	0.206	-0.017	0.240	-0.019	0.207	-0.017
Stress Level			2.79	2.68	-0.110	-0.092	0.010	-0.113	0.012	-0.084	0.009
Sense of Belonging to Local Community			3.38	3.54	0.155	0.081	0.013	0.102	0.016	0.076	0.012
Proportion of Married (including common law)	65.6	65.4	3.28	3.27	-0.011	0.189	-0.002	0.181	-0.002	0.198	-0.002
Proportion of Physically Active Individuals	22.6	22.5	1.13	1.12	-0.005	0.061	0.000	0.030	0.000	0.076	0.000
Proportion of Individuals Who Often Have Difficulties	11.3	17.6	0.56	0.88	0.316	-0.033	-0.010	-0.029	-0.009	-0.012	-0.004
Proportion of Students	7.8	5.1	0.39	0.26	-0.134	0.054	-0.007	0.088	-0.012	0.041	-0.005
Proportion of Males	49.0	48.0	2.45	2.40	-0.054	-0.056	0.003	-0.055	0.003	-0.056	0.003
Proportion of Recent Immigrants	6.0	0.8	0.30	0.04	-0.259	-0.114	0.030	-0.058	0.015	-0.143	0.037
Variation Explained							0.006		-0.009		0.019
% Variation Explained (Variation Explained / (5) Differences in Life Satisfaction							**45.4**		**-70.5**		**154.6**
	t stat	Level of Statistical Significance									
Statistical Significance:	-1.16	No									

Appendix Table 28: Explaining Variation in Life Satisfaction in New Brunswick

						Ordered Probit		Linear Probability (4,5)		Linear Probability (5)	
	Average for Canada (%) (1)	Average for NB (%) (2)	Standardized Average for Canada (Scale 1-5) (3)	Standardized Average for NB (Scale 1-5) (4)	Difference in Standardized Averages (5)=(4)-(3)	Weight (6)	(7)= (6)*(5)	Weight (8)	(9)= (8)*(5)	Weights (10)	(11)= (10)*(5)
Life Satisfaction			4.26	4.30	0.038						
Perceived Health			3.64	3.50	-0.140	0.107	-0.015	0.105	-0.015	0.108	-0.015
Perceived Mental Health			4.07	3.96	-0.103	0.206	-0.021	0.240	-0.025	0.207	-0.021
Stress Level			2.79	2.68	-0.115	-0.092	0.011	-0.113	0.013	-0.084	0.010
Sense of Belonging to Local Community			3.38	3.49	0.107	0.081	0.009	0.102	0.011	0.076	0.008
Proportion of Married (including common law)	65.6	69.2	3.28	3.46	0.178	0.189	0.034	0.181	0.032	0.198	0.035
Proportion of Physically Active Individuals	22.6	19.1	1.13	0.96	-0.171	0.061	-0.010	0.030	-0.005	0.076	-0.013
Proportion of Individuals Who Often Have Difficulties	11.3	15.2	0.56	0.76	0.196	-0.033	-0.006	-0.029	-0.006	-0.012	-0.002
Proportion of Students	7.8	4.9	0.39	0.24	-0.146	0.054	-0.008	0.088	-0.013	0.041	-0.006
Proportion of Males	49.0	48.5	2.45	2.43	-0.026	-0.056	0.001	-0.055	0.001	-0.056	0.001
Proportion of Recent Immigrants	6.0	0.1	0.30	0.01	-0.293	-0.114	0.033	-0.058	0.017	-0.143	0.042
Variation Explained							0.027		0.012		0.039
% Variation Explained (Variation Explained / (5) Differences in Life Satisfaction							**70.4**		**30.3**		**101.2**
	t stat	Level of Statistical Significance									
Statistical Significance:	-3.66	Yes									

Appendix Table 29: Explaining Variation in Life Satisfaction in Québec

						Ordered Probit		Linear Probability (4,5)		Linear Probability (5)	
	Average for Canada (%) (1)	Average for QC (%) (2)	Standardized Average for Canada (Scale 1-5) (3)	Standardized Average for QC (Scale 1-5) (4)	Difference in Standardized Averages (5)=(4)-(3)	Weight (6)	(7)= (6)*(5)	Weight (8)	(9)= (8)*(5)	Weights (10)	(11)= (10)*(5)
Life Satisfaction			4.26	4.30	0.040						
Perceived Health			3.64	3.69	0.057	0.107	0.006	0.105	0.006	0.11	0.01
Perceived Mental Health			4.07	4.16	0.097	0.206	0.020	0.240	0.023	0.21	0.02
Stress Level			2.79	2.81	0.016	-0.092	-0.001	-0.113	-0.002	-0.08	0.00
Sense of Belonging to Local Community			3.38	3.22	-0.159	0.081	-0.013	0.102	-0.016	0.08	-0.01
Proportion of Married (including common law)	65.6	63.4	3.28	3.17	-0.114	0.189	-0.022	0.181	-0.021	0.20	-0.02
Proportion of Physically Active Individuals	22.6	19.2	1.13	0.96	-0.167	0.061	-0.010	0.030	-0.005	0.08	-0.01
Proportion of Individuals Who Often Have Difficulties	11.3	7.7	0.56	0.38	-0.178	-0.033	0.006	-0.029	0.005	-0.01	0.00
Proportion of Students	7.8	8.4	0.39	0.42	0.030	0.054	0.002	0.088	0.003	0.04	0.00
Proportion of Males	49.0	49.0	2.45	2.45	-0.001	-0.056	0.000	-0.055	0.000	-0.06	0.00
Proportion of Recent Immigrants	6.0	4.5	0.30	0.23	-0.075	-0.114	0.009	-0.058	0.004	-0.14	0.01
Variation Explained							-0.004		-0.002		-0.01
% Variation Explained (Variation Explained / (5) Differences in Life Satisfaction							**-9.8**		**-5.2**		**-20.7**
	t stat	Level of Statistical Significance									
Statistical Significance:	-7.50	1%									

Appendix Table 30: Explaining Variation in Life Satisfaction in Ontario

						Ordered Probit		Linear Probability (4,5)		Linear Probability (5)	
	Average for Canada (%) (1)	Average for ON (%) (2)	Standardized Average for Canada (Scale 1-5) (3)	Standardized Average for ON (Scale 1-5) (4)	Difference in Standardized Averages (5)=(4)-(3)	Weight (6)	(7)= (6)*(5)	Weight (8)	(9)= (8)*(5)	Weights (10)	(11)= (10)*(5)
Life Satisfaction			4.26	4.23	-0.033						
Perceived Health			3.64	3.62	-0.019	0.107	-0.002	0.105	-0.002	0.108	-0.0021
Perceived Mental Health			4.07	4.06	-0.008	0.206	-0.002	0.240	-0.002	0.207	-0.0016
Stress Level			2.79	2.82	0.033	-0.092	-0.003	-0.113	-0.004	-0.084	-0.0028
Sense of Belonging to Local Community			3.38	3.41	0.032	0.081	0.003	0.102	0.003	0.076	0.0025
Proportion of Married (including common law)	65.6	66.3	3.28	3.32	0.035	0.189	0.007	0.181	0.006	0.198	0.0069
Proportion of Physically Active Individuals	22.6	22.4	1.13	1.12	-0.009	0.061	-0.001	0.030	0.000	0.076	-0.0007
Proportion of Individuals Who Often Have Difficulties	11.3	12.3	0.56	0.62	0.052	-0.033	-0.002	-0.029	-0.002	-0.012	-0.0006
Proportion of Students	7.8	8.2	0.39	0.41	0.020	0.054	0.001	0.088	0.002	0.041	0.0008
Proportion of Males	49.0	48.8	2.45	2.44	-0.012	-0.056	0.001	-0.055	0.001	-0.056	0.0007
Proportion of Recent Immigrants	6.0	7.9	0.30	0.40	0.097	-0.114	-0.011	-0.058	-0.006	-0.143	-0.0138
Variation Explained							-0.009		-0.003		-0.011
% Variation Explained (Variation Explained / (5) Differences in Life Satisfaction							**27.5**		**9.3**		**32.6**
	t stat	Level of Statistical Significance									
Statistical Significance:	7.61	1%									

Appendix Table 31: Explaining Variation in Life Satisfaction in Manitoba

						Ordered Probit		Linear Probability (4,5)		Linear Probability (5)	
	Average for Canada (%) (1)	Average for MB (%) (2)	Standardized Average for Canada (Scale 1-5) (3)	Standardized Average for MB (Scale 1-5) (4)	Difference in Standardized Averages (5)=(4)-(3)	Weight (6)	(7)= (6)*(5)	Weight (8)	(9)= (8)*(5)	Weights (10)	(11)= (10)*(5)
Life Satisfaction			4.26	4.25	-0.010						
Perceived Health			3.64	3.58	-0.058	0.107	-0.006	0.105	-0.006	0.108	-0.006
Perceived Mental Health			4.07	4.01	-0.058	0.206	-0.012	0.240	-0.014	0.207	-0.012
Stress Level			2.79	2.74	-0.055	-0.092	0.005	-0.113	0.006	-0.084	0.005
Sense of Belonging to Local Community			3.38	3.45	0.067	0.081	0.005	0.102	0.007	0.076	0.005
Proportion of Married (including common law)	65.6	64.2	3.28	3.21	-0.071	0.189	-0.013	0.181	-0.013	0.198	-0.014
Proportion of Physically Active Individuals	22.6	24.3	1.13	1.22	0.089	0.061	0.005	0.030	0.003	0.076	0.007
Proportion of Individuals Who Often Have Difficulties	11.3	14.6	0.56	0.73	0.167	-0.033	-0.006	-0.029	-0.005	-0.012	-0.002
Proportion of Students	7.8	7.4	0.39	0.37	-0.022	0.054	-0.001	0.088	-0.002	0.041	-0.001
Proportion of Males	49.0	49.1	2.45	2.45	0.001	-0.056	0.000	-0.055	0.000	-0.056	0.000
Proportion of Recent Immigrants	6.0	4.5	0.30	0.22	-0.076	-0.114	0.009	-0.058	0.004	-0.143	0.011
Variation Explained							-0.014		-0.020		-0.008
% Variation Explained (Variation Explained / (5) Differences in Life Satisfaction							**135.9**		**193.7**		**78.8**
	t stat	Level of Statistical Significance									
Statistical Significance:	1.13	No									

Appendix Table 32 : Explaining Variation in Life Satisfaction in Saskatchewan

						Ordered Probit		Linear Probability (4,5)		Linear Probability (5)	
	Average for Canada (%) (1)	Average for SK (%) (2)	Standardized Average for Canada (Scale 1-5) (3)	Standardized Average for SK (Scale 1-5) (4)	Difference in Standardized Averages (5)=(4)-(3)	Weight (6)	(7)= (6)*(5)	Weight (8)	(9)= (8)*(5)	Weights (10)	(11)= (10)*(5)
Life Satisfaction			4.26	4.27	0.013						
Perceived Health			3.64	3.55	-0.087	0.107	-0.009	0.105	-0.0091	0.108	-0.0094
Perceived Mental Health			4.07	4.00	-0.070	0.206	-0.014	0.240	-0.0168	0.207	-0.0145
Stress Level			2.79	2.75	-0.043	-0.092	0.004	-0.113	0.0049	-0.084	0.0036
Sense of Belonging to Local Community			3.38	3.53	0.151	0.081	0.012	0.102	0.0154	0.076	0.0115
Proportion of Married (including common law)	65.6	67.1	3.28	3.36	0.075	0.189	0.014	0.181	0.0136	0.198	0.0149
Proportion of Physically Active Individuals	22.6	25.6	1.13	1.28	0.152	0.061	0.009	0.030	0.0045	0.076	0.0116
Proportion of Individuals Who Often Have Difficulties	11.3	10.5	0.56	0.53	-0.036	-0.033	0.001	-0.029	0.0010	-0.012	0.0004
Proportion of Students	7.8	7.1	0.39	0.35	-0.037	0.054	-0.002	0.088	-0.0033	0.041	-0.0015
Proportion of Males	49.0	50.5	2.45	2.52	0.072	-0.056	-0.004	-0.055	-0.0039	-0.056	-0.0040
Proportion of Recent Immigrants	6.0	6.4	0.30	0.32	0.019	-0.114	-0.002	-0.058	-0.0011	-0.143	-0.0027
Variation Explained							0.009		0.0052		0.010
% Variation Explained (Variation Explained / (5) Differences in Life Satisfaction							**71.4**		**41.3**		**78.1**
	t stat	Level of Statistical Significance									
Statistical Significance:	-1.41	No									

Appendix Table 33 : Explaining Variation in Life Satisfaction in Alberta

						Ordered Probit		Linear Probability (4,5)		Linear Probability (5)	
	Average for Canada (%) (1)	Average for AB (%) (2)	Standardized Average for Canada (Scale 1-5) (3)	Standardized Average for AB (Scale 1-5) (4)	Difference in Standardized Averages (5)=(4)-(3)	Weight (6)	(7)= (6)*(5)	Weight (8)	(9)= (8)*(5)	Weights (10)	(11)= (10)*(5)
Life Satisfaction			4.26	4.30	0.039						
Perceived Health			3.64	3.71	0.070	0.107	0.007	0.105	0.0074	0.108	0.0076
Perceived Mental Health			4.07	4.07	0.006	0.206	0.001	0.240	0.0014	0.207	0.0012
Stress Level			2.79	2.80	0.012	-0.092	-0.001	-0.113	-0.0014	-0.084	-0.0010
Sense of Belonging to Local Community			3.38	3.30	-0.080	0.081	-0.006	0.102	-0.0081	0.076	-0.0061
Proportion of Married (including common law)	65.6	67.6	3.28	3.38	0.097	0.189	0.018	0.181	0.0176	0.198	0.0192
Proportion of Physically Active Individuals	22.6	25.6	1.13	1.28	0.152	0.061	0.009	0.030	0.0045	0.076	0.0116
Proportion of Individuals Who Often Have Difficulties	11.3	10.5	0.56	0.53	-0.036	-0.033	0.001	-0.029	0.0010	-0.012	0.0004
Proportion of Students	7.8	7.1	0.39	0.35	-0.037	0.054	-0.002	0.088	-0.0033	0.041	-0.0015
Proportion of Males	49.0	50.5	2.45	2.52	0.072	-0.056	-0.004	-0.055	-0.0039	-0.056	-0.0040
Proportion of Recent Immigrants	6.0	6.4	0.30	0.32	0.019	-0.114	-0.002	-0.058	-0.0011	-0.143	-0.0027
Variation Explained							0.022		0.0141		0.025
% Variation Explained (Variation Explained / (5) Differences in Life Satisfaction							**55.4**		**36.0**		**62.7**
	t stat	Level of Statistical Significance									
Statistical Significance:	-5.35	1%									

Appendix Table 34 : Explaining Variation in Life Satisfaction in Yukon/NWT/Nunavut

						Ordered Probit		Linear Probability (4,5)		Linear Probability (5)	
	Average for Canada (%) (1)	Average for YK (%) (2)	Standardized Average for Canada (Scale 1-5) (3)	Standardized Average for YK (Scale 1-5) (4)	Difference in Standardized Averages (5)=(4)-(3)	Weight (6)	(7)= (6)*(5)	Weight (8)	(9)= (8)*(5)	Weights (10)	(11)= (10)*(5)
Life Satisfaction			4.26	4.26	0.004						
Perceived Health			3.64	3.57	-0.070	0.107	-0.007	0.105	-0.007	0.108	-0.008
Perceived Mental Health			4.07	3.95	-0.113	0.206	-0.023	0.240	-0.027	0.207	-0.023
Stress Level			2.79	2.66	-0.134	-0.092	0.012	-0.113	0.015	-0.084	0.011
Sense of Belonging to Local Community			3.38	3.78	0.403	0.081	0.033	0.102	0.041	0.076	0.031
Proportion of Married (including common law)	65.6	63.7	3.28	3.18	-0.098	0.189	-0.019	0.181	-0.018	0.198	-0.019
Proportion of Physically Active Individuals	22.6	20.8	1.13	1.04	-0.087	0.061	-0.005	0.030	-0.003	0.076	-0.007
Proportion of Individuals Who Often Have Difficulties	11.3	9.2	0.56	0.46	-0.103	-0.033	0.003	-0.029	0.003	-0.012	0.001
Proportion of Students	7.8	6.0	0.39	0.30	-0.092	0.054	-0.005	0.088	-0.008	0.041	-0.004
Proportion of Males	49.0	50.9	2.45	2.55	0.094	-0.056	-0.005	-0.055	-0.005	-0.056	-0.005
Proportion of Recent Immigrants	6.0	2.0	0.30	0.10	-0.199	-0.114	0.023	-0.058	0.012	-0.143	0.028
Variation Explained							0.006		0.003		0.006
% Variation Explained (Variation Explained / (5) Differences in Life Satisfaction							**167.5**		**72.7**		**150.0**
	t stat	Level of Statistical Significance									
Statistical Significance:	-0.28	N.A									

Appendix Table 35 : Explaining Variation in Life Satisfaction in British Columbia

						Ordered Probit		Linear Probability (4,5)		Linear Probability (5)	
	Average for Canada (%) (1)	Average for BC (%) (2)	Standardized Average for Canada (Scale 1-5) (3)	Standardized Average for BC (Scale 1-5) (4)	Difference in Standardized Averages (5)=(4)-(3)	Weight (6)	(7)= (6)*(5)	Weight (8)	(9)= (8)*(5)	Weights (10)	(11)= (10)*(5)
Life Satisfaction			4.26	4.24	-0.021						
Perceived Health			3.64	3.62	-0.013	0.107	-0.001	0.105	-0.001	0.108	-0.001
Perceived Mental Health			4.07	3.97	-0.094	0.206	-0.019	0.240	-0.023	0.207	-0.019
Stress Level			2.79	2.76	-0.033	-0.092	0.003	-0.113	0.004	-0.084	0.003
Sense of Belonging to Local Community			3.38	3.46	0.083	0.081	0.007	0.102	0.008	0.076	0.006
Proportion of Married (including common law)	65.6	65.1	3.28	3.26	-0.025	0.189	-0.005	0.181	-0.005	0.198	-0.005
Proportion of Physically Active Individuals	22.6	27.6	1.13	1.38	0.252	0.061	0.015	0.030	0.007	0.076	0.019
Proportion of Individuals Who Often Have Difficulties	11.3	11.7	0.56	0.58	0.022	-0.033	-0.001	-0.029	-0.001	-0.012	0.000
Proportion of Students	7.8	7.9	0.39	0.40	0.007	0.054	0.000	0.088	0.001	0.041	0.000
Proportion of Males	49.0	49.0	2.45	2.45	0.001	-0.056	0.000	-0.055	0.000	-0.056	0.000
Proportion of Recent Immigrants	6.0	7.0	0.30	0.35	0.051	-0.114	-0.006	-0.058	-0.003	-0.143	-0.007
Variation Explained							-0.007		-0.012		-0.005
% Variation Explained (Variation Explained / (5) Differences in Life Satisfaction							**31.7**		**57.2**		**23.5**
	t stat	Level of Statistical Significance									
Statistical Significance:	3.13	1%									

B. CMAs

i. Top 5 CMAs by Life Satisfaction

Appendix Table 36 : Explaining Variation in Life Satisfaction in Brantford

						Ordered Probit		Linear Probability (4,5)		Linear Probability (5)	
	Average for Canada (%) (1)	Average for BF (%) (2)	Standardized Average for Canada (Scale 1-5) (3)	Standardized Average for BF (Scale 1-5) (4)	Difference in Standardized Averages (5)=(4)-(3)	Weight (6)	(7)= (6)*(5)	Weight (8)	(9)= (8)*(5)	Weights (10)	(11)= (10)*(5)
Life Satisfaction			4.24	4.36	0.115						
Perceived Health			3.65	3.63	-0.021	0.107	-0.002	0.105	-0.002	0.108	-0.002
Perceived Mental Health			4.08	4.06	-0.018	0.206	-0.004	0.240	-0.004	0.207	-0.004
Stress Level			2.81	2.86	0.051	-0.092	-0.005	-0.113	-0.006	-0.084	-0.004
Sense of Belonging to Local Community			3.34	3.39	0.046	0.081	0.004	0.102	0.005	0.076	0.003
Proportion of Married (including common law)	64.2	68.0	3.21	3.40	0.192	0.189	0.036	0.181	0.035	0.198	0.038
Proportion of Physically Active Individuals	22.4	22.5	1.12	1.13	0.004	0.061	0.000	0.030	0.000	0.076	0.000
Proportion of Individuals Who Often Have Difficulties	10.7	13.4	0.53	0.67	0.135	-0.033	-0.004	-0.029	-0.004	-0.012	-0.002
Proportion of Students	8.8	6.1	0.44	0.31	-0.134	0.054	-0.007	0.088	-0.012	0.041	-0.005
Proportion of Males	48.8	49.1	2.44	2.45	0.011	-0.056	-0.001	-0.055	-0.001	-0.056	-0.001
Proportion of Recent Immigrants	7.8	1.2	0.39	0.06	-0.330	-0.114	0.038	-0.058	0.019	-0.143	0.047
Variation Explained							0.055		0.030		0.071
% Variation Explained (Variation Explained / (5) Differences in Life Satisfaction							**47.7**		**26.1**		**61.5**
	t stat	Level of Statistical Significance									
Statistical Significance:	4.20	1%									

Appendix Table 37 : Explaining Variation in Life Satisfaction in Québec City

						Ordered Probit		Linear Probability (4,5)		Linear Probability (5)	
	Average for Canada (%) (1)	Average for QC (%) (2)	Standardized Average for Canada (Scale 1-5) (3)	Standardized Average for QC (Scale 1-5) (4)	Difference in Standardized Averages (5)=(4)-(3)	Weight (6)	(7)= (6)*(5)	Weight (8)	(9)= (8)*(5)	Weights (10)	(11)= (10)*(5)
Life Satisfaction			4.24	4.35	0.108						
Perceived Health			3.63	3.75	0.118	0.107	0.013	0.105	0.012	0.108	0.013
Perceived Mental Health			4.06	4.25	0.188	0.206	0.039	0.240	0.045	0.207	0.039
Stress Level			2.86	2.80	-0.063	-0.092	0.006	-0.113	0.007	-0.084	0.005
Sense of Belonging to Local Community			3.39	3.16	-0.227	0.081	-0.018	0.102	-0.023	0.076	-0.017
Proportion of Married (including common law)	64.2	62.4	3.21	3.12	-0.091	0.189	-0.017	0.181	-0.017	0.198	-0.018
Proportion of Physically Active Individuals	22.4	19.7	1.12	0.98	-0.138	0.061	-0.008	0.030	-0.004	0.076	-0.010
Proportion of Individuals Who Often Have Difficulties	10.7	6.5	0.53	0.33	-0.208	-0.033	0.007	-0.029	0.006	-0.012	0.003
Proportion of Students	8.8	9.9	0.44	0.49	0.054	0.054	0.003	0.088	0.005	0.041	0.002
Proportion of Males	48.8	48.2	2.44	2.41	-0.032	-0.056	0.002	-0.055	0.002	-0.056	0.002
Proportion of Recent Immigrants	7.8	2.1	0.39	0.11	-0.284	-0.114	0.032	-0.058	0.016	-0.143	0.041
Variation Explained							0.057		0.050		0.058
% Variation Explained (Variation Explained / (5) Differences in Life Satisfaction							**52.5**		**46.1**		**53.7**
	t stat	Level of Statistical Significance									
Statistical Significance:	6.40	1%									

Appendix Table 38 : Explaining Variation in Life Satisfaction in Trois-Rivières

						Ordered Probit		Linear Probability (4,5)		Linear Probability (5)	
	Average for Canada (%) (1)	Average for TR (%) (2)	Standardized Average for Canada (Scale 1-5) (3)	Standardized Average for TR (Scale 1-5) (4)	Difference in Standardized Averages (5)=(4)-(3)	Weight (6)	(7)= (6)*(5)	Weight (8)	(9)= (8)*(5)	Weights (10)	(11)= (10)*(5)
Life Satisfaction			4.24	4.33	0.090						
Perceived Health			3.63	3.67	0.038	0.107	0.004	0.105	0.004	0.108	0.004
Perceived Mental Health			4.06	4.22	0.160	0.206	0.033	0.240	0.038	0.207	0.033
Stress Level			2.86	2.76	-0.100	-0.092	0.009	-0.113	0.011	-0.084	0.008
Sense of Belonging to Local Community			3.39	3.27	-0.122	0.081	-0.010	0.102	-0.012	0.076	-0.009
Proportion of Married (including common law)	64.2	65.7	3.21	3.28	0.074	0.189	0.014	0.181	0.013	0.198	0.015
Proportion of Physically Active Individuals	22.4	20.8	1.12	1.04	-0.082	0.061	-0.005	0.030	-0.002	0.076	-0.006
Proportion of Individuals Who Often Have Difficulties	10.7	8.7	0.53	0.44	-0.099	-0.033	0.003	-0.029	0.003	-0.012	0.001
Proportion of Students	8.8	5.1	0.44	0.25	-0.185	0.054	-0.010	0.088	-0.016	0.041	-0.008
Proportion of Males	48.8	49.5	2.44	2.47	0.031	-0.056	-0.002	-0.055	-0.002	-0.056	-0.002
Proportion of Recent Immigrants	7.8	2.0	0.39	0.10	-0.288	-0.114	0.033	-0.058	0.017	-0.143	0.041
Variation Explained							0.070		0.054		0.078
% Variation Explained (Variation Explained / (5) Differences in Life Satisfaction							**77.2**		**59.8**		**86.2**
	t stat	Level of Statistical Significance									
Statistical Significance:	5.13	1%									

Appendix Table 39: Explaining Variation in Life Satisfaction in Victoria

						Ordered Probit		Linear Probability (4,5)		Linear Probability (5)	
	Average for Canada (%) (1)	Average for VI (%) (2)	Standardized Average for Canada (Scale 1-5) (3)	Standardized Average for VI (Scale 1-5) (4)	Difference in Standardized Averages (5)=(4)-(3)	Weight (6)	(7)= (6)*(5)	Weight (8)	(9)= (8)*(5)	Weights (10)	(11)= (10)*(5)
Life Satisfaction			4.24	4.33	0.094						
Perceived Health			3.63	3.74	0.110	0.107	0.012	0.105	0.012	0.108	0.012
Perceived Mental Health			4.06	4.05	-0.010	0.206	-0.002	0.240	-0.003	0.207	-0.002
Stress Level			2.86	2.72	-0.138	-0.092	0.013	-0.113	0.016	-0.084	0.012
Sense of Belonging to Local Community			3.39	3.41	0.020	0.081	0.002	0.102	0.002	0.076	0.002
Proportion of Married (including common law)	64.2	66.2	2.79	3.31	0.517	0.189	0.098	0.181	0.094	0.198	0.102
Proportion of Physically Active Individuals	22.4	33.2	1.12	1.66	0.536	0.061	0.033	0.030	0.016	0.076	0.041
Proportion of Individuals Who Often Have Difficulties	10.7	11.9	0.53	0.60	0.062	-0.033	-0.002	-0.029	-0.002	-0.012	-0.001
Proportion of Students	8.8	9.2	0.44	0.46	0.018	0.054	0.001	0.088	0.002	0.041	0.001
Proportion of Males	48.8	47.3	2.44	2.36	-0.079	-0.056	0.004	-0.055	0.004	-0.056	0.004
Proportion of Recent Immigrants	7.8	3.7	0.39	0.18	-0.207	-0.114	0.024	-0.058	0.012	-0.143	0.030
Variation Explained							0.181		0.152		0.200
% Variation Explained (Variation Explained / (5) Differences in Life Satisfaction							**194.0**		**162.9**		**213.5**
	t stat	Level of Statistical Significance									
Statistical Significance:	4.46	1%									

Appendix Table 40: Explaining Variation in Life Satisfaction in Calgary

						Ordered Probit		Linear Probability (4,5)		Linear Probability (5)	
	Average for Canada (%) (1)	Average for CAL (%) (2)	Standardized Average for Canada (Scale 1-5) (3)	Standardized Average for CAL (Scale 1-5) (4)	Difference in Standardized Averages (5)=(4)-(3)	Weight (6)	(7)= (6)*(5)	Weight (8)	(9)= (8)*(5)	Weights (10)	(11)= (10)*(5)
Life Satisfaction			4.24	4.33	0.095						
Perceived Health			3.65	3.79	0.134	0.107	0.014	0.105	0.014	0.108	0.014
Perceived Mental Health			4.08	4.13	0.051	0.206	0.010	0.240	0.012	0.207	0.010
Stress Level			2.81	2.82	0.010	-0.092	-0.001	-0.113	-0.001	-0.084	-0.001
Sense of Belonging to Local Community			3.34	3.21	-0.131	0.081	-0.011	0.102	-0.013	0.076	-0.010
Proportion of Married (including common law)	64.2	66.9	3.21	3.35	0.135	0.189	0.026	0.181	0.025	0.198	0.027
Proportion of Physically Active Individuals	22.4	27.7	1.12	1.38	0.261	0.061	0.016	0.030	0.008	0.076	0.020
Proportion of Individuals Who Often Have Difficulties	10.7	9.5	0.53	0.47	-0.059	-0.033	0.002	-0.029	0.002	-0.012	0.001
Proportion of Students	8.8	7.1	0.44	0.35	-0.085	0.054	-0.005	0.088	-0.007	0.041	-0.003
Proportion of Males	48.8	50.5	2.44	2.52	0.082	-0.056	-0.005	-0.055	-0.004	-0.056	-0.005
Proportion of Recent Immigrants	7.8	8.9	0.39	0.45	0.056	-0.114	-0.006	-0.058	-0.003	-0.143	-0.008
Variation Explained							0.041		0.031		0.045
% Variation Explained (Variation Explained / (5) Differences in Life Satisfaction							**43.4**		**32.3**		**47.9**
	t stat	Level of Statistical Significance									
Statistical Significance:	6.36	1%									

ii. Bottom 5 CMAs by Life Satisfaction

Appendix Table 41 : Explaining Variation in Life Satisfaction in Toronto

						Ordered Probit		Linear Probability (4,5)		Linear Probability (5)	
	Average for Canada (%) (1)	Average for TO (%) (2)	Standardized Average for Canada (Scale 1-5) (3)	Standardized Average for TO (Scale 1-5) (4)	Difference in Standardized Averages (5)=(4)-(3)	Weight (6)	(7)= (6)*(5)	Weight (8)	(9)= (8)*(5)	Weights (10)	(11)= (10)*(5)
Life Satisfaction			4.24	4.16	-0.082						
Perceived Health			3.65	3.63	-0.025	0.107	-0.003	0.105	-0.003	0.108	-0.003
Perceived Mental Health			4.08	4.08	0.000	0.206	0.000	0.240	0.000	0.207	0.000
Stress Level			2.81	2.86	0.053	-0.092	-0.005	-0.113	-0.006	-0.084	-0.004
Sense of Belonging to Local Community			3.34	3.31	-0.032	0.081	-0.003	0.102	-0.003	0.076	-0.002
Proportion of Married (including common law)	64.2	64.4	3.21	3.22	0.011	0.189	0.002	0.181	0.002	0.198	0.002
Proportion of Physically Active Individuals	22.4	19.4	1.12	0.97	-0.152	0.061	-0.009	0.030	-0.005	0.076	-0.012
Proportion of Individuals Who Often Have Difficulties	10.7	10.3	0.53	0.51	-0.019	-0.033	0.001	-0.029	0.001	-0.012	0.000
Proportion of Students	8.8	10.0	0.44	0.50	0.062	0.054	0.003	0.088	0.005	0.041	0.003
Proportion of Males	48.8	48.5	2.44	2.43	-0.015	-0.056	0.001	-0.055	0.001	-0.056	0.001
Proportion of Recent Immigrants	7.8	14.9	0.39	0.75	0.357	-0.114	-0.041	-0.058	-0.021	-0.143	-0.051
Variation Explained							-0.053		-0.028		-0.066
% Variation Explained (Variation Explained / (5) Differences in Life Satisfaction							**64.6**		**34.3**		**80.5**
	t stat	Level of Statistical Significance									
Statistical Significance:	-9.67	1%									

Appendix Table 42 : Explaining Variation in Life Satisfaction in Vancouver

						Ordered Probit		Linear Probability (4,5)		Linear Probability (5)	
	Average for Canada (%) (1)	Average for VC (%) (2)	Standardized Average for Canada (Scale 1-5) (3)	Standardized Average for VC (Scale 1-5) (4)	Difference in Standardized Averages (5)=(4)-(3)	Weight (6)	(7)= (6)*(5)	Weight (8)	(9)= (8)*(5)	Weights (10)	(11)= (10)*(5)
Life Satisfaction			4.24	4.18	-0.058						
Perceived Health			3.63	3.63	-0.002	0.107	0.000	0.105	0.000	0.108	0.000
Perceived Mental Health			4.06	3.96	-0.095	0.206	-0.020	0.240	-0.023	0.207	-0.020
Stress Level			2.86	2.78	-0.077	-0.092	0.007	-0.113	0.009	-0.084	0.006
Sense of Belonging to Local Community			3.39	3.44	0.050	0.081	0.004	0.102	0.005	0.076	0.004
Proportion of Married (including common law)	64.2	62.3	3.21	3.11	-0.095	0.189	-0.018	0.181	-0.017	0.198	-0.019
Proportion of Physically Active Individuals	22.4	25.2	1.12	1.26	0.135	0.061	0.008	0.030	0.004	0.076	0.010
Proportion of Individuals Who Often Have Difficulties	10.7	9.5	0.53	0.48	-0.058	-0.033	0.002	-0.029	0.002	-0.012	0.001
Proportion of Students	8.8	10.1	0.44	0.50	0.064	0.054	0.003	0.088	0.006	0.041	0.003
Proportion of Males	48.8	49.1	2.44	2.46	0.014	-0.056	-0.001	-0.055	-0.001	-0.056	-0.001
Proportion of Recent Immigrants	7.8	11.1	0.39	0.56	0.166	-0.114	-0.019	-0.058	-0.010	-0.143	-0.024
Variation Explained							-0.033		-0.026		-0.039
% Variation Explained (Variation Explained / (5) Differences in Life Satisfaction							**56.2**		**43.9**		**67.5**
	t stat	Level of Statistical Significance									
Statistical Significance:	-5.17	1%									

Appendix Table 43 : Explaining Variation in Life Satisfaction in Hamilton

						Ordered Probit		Linear Probability (4,5)		Linear Probability (5)	
	Average for Canada (%) (1)	Average for HM (%) (2)	Standardized Average for Canada (Scale 1-5) (3)	Standardized Average for HM (Scale 1-5) (4)	Difference in Standardized Averages (5)=(4)-(3)	Weight (6)	(7)= (6)*(5)	Weight (8)	(9)= (8)*(5)	Weights (10)	(11)= (10)*(5)
Life Satisfaction			4.24	4.21	-0.027						
Perceived Health			3.63	3.60	-0.029	0.107	-0.003	0.105	-0.003	0.108	-0.003
Perceived Mental Health			4.06	4.05	-0.007	0.206	-0.001	0.240	-0.002	0.207	-0.001
Stress Level			2.86	2.80	-0.060	-0.092	0.005	-0.113	0.007	-0.084	0.005
Sense of Belonging to Local Community			3.39	3.50	0.108	0.081	0.009	0.102	0.011	0.076	0.008
Proportion of Married (including common law)	64.2	68.8	3.21	3.44	0.229	0.189	0.043	0.181	0.042	0.198	0.045
Proportion of Physically Active Individuals	22.4	22.2	1.12	1.11	-0.011	0.061	-0.001	0.030	0.000	0.076	-0.001
Proportion of Individuals Who Often Have Difficulties	10.7	15.1	0.53	0.76	0.223	-0.033	-0.007	-0.029	-0.006	-0.012	-0.003
Proportion of Students	8.8	8.1	0.44	0.41	-0.035	0.054	-0.002	0.088	-0.003	0.041	-0.001
Proportion of Males	48.8	49.0	2.44	2.45	0.009	-0.056	-0.001	-0.055	-0.001	-0.056	-0.001
Proportion of Recent Immigrants	7.8	4.5	0.39	0.22	-0.165	-0.114	0.019	-0.058	0.010	-0.143	0.024
Variation Explained							0.061		0.054		0.072
% Variation Explained (Variation Explained / (5) Differences in Life Satisfaction							**-225.8**		**-197.1**		**-264.3**
	t stat	Level of Statistical Significance									
Statistical Significance:	-1.56	No									

Appendix Table 44 : Explaining Variation in Life Satisfaction in Windsor

						Ordered Probit		Linear Probability (4,5)		Linear Probability (5)	
	Average for Canada (%) (1)	Average for Win (%) (2)	Standardized Average for Canada (Scale 1-5) (3)	Standardized Average for Win(Scale 1-5) (4)	Difference in Standardized Averages (5)=(4)-(3)	Weight (6)	(7)= (6)*(5)	Weight (8)	(9)= (8)*(5)	Weights (10)	(11)= (10)*(5)
Life Satisfaction			4.24	4.21	-0.029						
Perceived Health			3.63	3.53	-0.105	0.107	-0.011	0.105	-0.011	0.108	-0.011
Perceived Mental Health			4.06	4.07	0.007	0.206	0.002	0.240	0.002	0.207	0.002
Stress Level			2.86	2.81	-0.053	-0.092	0.005	-0.113	0.006	-0.084	0.004
Sense of Belonging to Local Community			3.39	3.46	0.075	0.081	0.006	0.102	0.008	0.076	0.006
Proportion of Married (including common law)	64.2	63.3	2.79	3.16	0.369	0.189	0.070	0.181	0.067	0.198	0.073
Proportion of Physically Active Individuals	22.4	23.2	1.12	1.16	0.036	0.061	0.002	0.030	0.001	0.076	0.003
Proportion of Individuals Who Often Have Difficulties	10.7	14.9	0.53	0.74	0.210	-0.033	-0.007	-0.029	-0.006	-0.012	-0.003
Proportion of Students	8.8	8.6	0.44	0.43	-0.010	0.054	-0.001	0.088	-0.001	0.041	0.000
Proportion of Males	48.8	49.4	2.44	2.47	0.030	-0.056	-0.002	-0.055	-0.002	-0.056	-0.002
Proportion of Recent Immigrants	7.8	5.5	0.39	0.27	-0.116	-0.114	0.013	-0.058	0.007	-0.143	0.017
Variation Explained							0.077		0.070		0.088
% Variation Explained (Variation Explained / (5) Differences in Life Satisfaction							**-270.8**		**-246.2**		**-307.6**
	t stat	Level of Statistical Significance									
Statistical Significance:	-1.29	No									

Appendix Table 45 : Explaining Variation in Life Satisfaction in St Catharines-Niagara

						Ordered Probit		Linear Probability (4,5)		Linear Probability (5)	
	Average for Canada (%) (1)	Average for C-N (%) (2)	Standardized Average for Canada (Scale 1-5) (3)	Standardized Average for C-N (Scale 1-5) (4)	Difference in Standardized Averages (5)=(4)-(3)	Weight (6)	(7)= (6)*(5)	Weight (8)	(9)= (8)*(5)	Weights (10)	(11)= (10)*(5)
Life Satisfaction			4.24	4.22	-0.016						
Perceived Health			3.65	3.56	-0.096	0.107	-0.010	0.105	-0.010	0.108	-0.010
Perceived Mental Health			4.08	4.06	-0.021	0.206	-0.004	0.240	-0.005	0.207	-0.004
Stress Level			2.81	2.78	-0.031	-0.092	0.003	-0.113	0.003	-0.084	0.003
Sense of Belonging to Local Community			3.34	3.43	0.089	0.081	0.007	0.102	0.009	0.076	0.007
Proportion of Married (including common law)	64.2	65.4	3.21	3.27	0.060	0.189	0.011	0.181	0.011	0.198	0.012
Proportion of Physically Active Individuals	22.4	26.6	1.12	1.33	0.207	0.061	0.013	0.030	0.006	0.076	0.016
Proportion of Individuals Who Often Have Difficulties	10.7	18.3	0.53	0.92	0.382	-0.033	-0.013	-0.029	-0.011	-0.012	-0.005
Proportion of Students	8.8	5.8	0.44	0.29	-0.148	0.054	-0.008	0.088	-0.013	0.041	-0.006
Proportion of Males	48.8	48.7	2.44	2.44	-0.005	-0.056	0.000	-0.055	0.000	-0.056	0.000
Proportion of Recent Immigrants	7.8	2.9	0.39	0.14	-0.245	-0.114	0.028	-0.058	0.014	-0.143	0.035
Variation Explained							0.027		0.005		0.047
% Variation Explained (Variation Explained / (5) Differences in Life Satisfaction							**-172.2**		**-30.0**		**-297.2**
	t stat	Level of Statistical Significance									
Statistical Significance:	-0.71	No									

Health Regions

i. Top 5 Health Regions by Life Satisfaction

Appendix Table 46 : Explaining Variation in Life Satisfaction in Renfrew

						Ordered Probit		Linear Probability (4,5)		Linear Probability (5)	
	Average for Canada (%) (1)	Average for RN (%) (2)	Standardized Average for Canada (Scale 1-5) (3)	Standardized Average for RN (Scale 1-5) (4)	Difference in Standardized Averages (5)=(4)-(3)	Weight (6)	(7)= (6)*(5)	Weight (8)	(9)= (8)*(5)	Weights (10)	(11)= (10)*(5)
Life Satisfaction			4.26	4.40	0.142						
Perceived Health			3.64	3.53	-0.114	0.107	-0.012	0.105	-0.012	0.108	-0.012
Perceived Mental Health			4.07	3.96	-0.112	0.206	-0.023	0.240	-0.027	0.207	-0.023
Stress Level			2.79	2.70	-0.089	-0.092	0.008	-0.113	0.010	-0.084	0.007
Sense of Belonging to Local Community			3.38	3.73	0.358	0.081	0.029	0.102	0.036	0.076	0.027
Proportion of Married (including common law)	65.6	72.0	3.28	3.60	0.318	0.189	0.060	0.181	0.058	0.198	0.063
Proportion of Physically Active Individuals	22.6	25.2	1.13	1.26	0.131	0.061	0.008	0.030	0.004	0.076	0.010
Proportion of Individuals Who Often Have Difficulties	11.3	16.3	0.56	0.81	0.250	-0.033	-0.008	-0.029	-0.007	-0.012	-0.003
Proportion of Students	7.8	3.7	0.39	0.19	-0.203	0.054	-0.011	0.088	-0.018	0.041	-0.008
Proportion of Males	49.0	47.3	2.45	2.37	-0.086	-0.056	0.005	-0.055	0.005	-0.056	0.005
Proportion of Recent Immigrants	6.0	0.0	0.30	0.00	-0.300	-0.114	0.034	-0.058	0.017	-0.143	0.043
Variation Explained							0.090		0.066		0.108
% Variation Explained (Variation Explained / (5) Differences in Life Satisfaction							63.6		46.7		76.5
	t stat	Level of Statistical Significance									
Statistical Significance:	5.30	1%									

Appendix Table 47: Explaining Variation in Life Satisfaction in Oxford County

						Ordered Probit		Linear Probability (4,5)		Linear Probability (5)	
	Average for Canada (%) (1)	Average for OXF (%) (2)	Standardized Average for Canada (Scale 1-5) (3)	Standardized Average for OXF (Scale 1-5) (4)	Difference in Standardized Averages (5)=(4)-(3)	Weight (6)	(7)= (6)*(5)	Weight (8)	(9)= (8)*(5)	Weights (10)	(11)= (10)*(5)
Life Satisfaction			4.26	4.39	0.132						
Perceived Health			3.64	3.69	0.048	0.107	0.005	0.105	0.005	0.108	0.005
Perceived Mental Health			4.07	4.03	-0.039	0.206	-0.008	0.240	-0.009	0.207	-0.008
Stress Level			2.79	2.65	-0.142	-0.092	0.013	-0.113	0.016	-0.084	0.012
Sense of Belonging to Local Community			3.38	3.90	0.526	0.081	0.043	0.102	0.054	0.076	0.040
Proportion of Married (including common law)	65.64	75.70	3.28	3.78	0.503	0.189	0.095	0.181	0.091	0.198	0.099
Proportion of Physically Active Individuals	22.55	16.59	1.13	0.83	-0.298	0.061	-0.018	0.030	-0.009	0.076	-0.023
Proportion of Individuals Who Often Have Difficulties	11.26	11.39	0.56	0.57	0.006	-0.033	0.000	-0.029	0.000	-0.012	0.000
Proportion of Students	7.80	3.85	0.39	0.19	-0.197	0.054	-0.011	0.088	-0.017	0.041	-0.008
Proportion of Males	49.04	49.70	2.45	2.49	0.033	-0.056	-0.002	-0.055	-0.002	-0.056	-0.002
Proportion of Recent Immigrants	6.00	0.84	0.30	0.04	-0.258	-0.114	0.029	-0.058	0.015	-0.143	0.037
Variation Explained							0.147		0.143		0.153
% Variation Explained (Variation Explained / (5) Differences in Life Satisfaction							111.4		108.7		115.8
	t stat	Level of Statistical Significance									
Statistical Significance:	4.92	1%									

Appendix Table 48 : Explaining Variation in Life Satisfaction in Région des Laurentides

						Ordered Probit		Linear Probability (4,5)		Linear Probability (5)	
	Average for Canada (%) (1)	Average for LA (%) (2)	Standardized Average for Canada (Scale 1-5) (3)	Standardized Average for LA (Scale 1-5) (4)	Difference in Standardized Averages (5)=(4)-(3)	Weight (6)	(7)= (6)*(5)	Weight (8)	(9)= (8)*(5)	Weights (10)	(11)= (10)*(5)
Life Satisfaction			4.26	4.38	0.118						
Perceived Health			3.64	3.75	0.106	0.107	0.011	0.105	0.011	0.108	0.011
Perceived Mental Health			4.07	4.19	0.118	0.206	0.024	0.240	0.028	0.207	0.024
Stress Level			2.79	2.92	0.125	-0.092	-0.012	-0.113	-0.014	-0.084	-0.010
Sense of Belonging to Local Community			3.38	3.04	-0.333	0.081	-0.027	0.102	-0.034	0.076	-0.025
Proportion of Married (including common law)	65.6	69.3	3.28	3.46	0.183	0.189	0.035	0.181	0.033	0.198	0.036
Proportion of Physically Active Individuals	22.6	20.8	1.13	1.04	-0.087	0.061	-0.005	0.030	-0.003	0.076	-0.007
Proportion of Individuals Who Often Have Difficulties	11.3	7.9	0.56	0.39	-0.169	-0.033	0.006	-0.029	0.005	-0.012	0.002
Proportion of Students	7.8	6.1	0.39	0.30	-0.086	0.054	-0.005	0.088	-0.008	0.041	-0.004
Proportion of Males	49.0	49.5	2.45	2.48	0.025	-0.056	-0.001	-0.055	-0.001	-0.056	-0.001
Proportion of Recent Immigrants	6.0	0.4	0.30	0.02	-0.282	-0.114	0.032	-0.058	0.016	-0.143	0.040
Variation Explained							0.058		0.034		0.067
% Variation Explained (Variation Explained / (5) Differences in Life Satisfaction							48.9		29.0		56.6
	t stat	Level of Statistical Significance									
Statistical Significance:	6.46	1%									

Appendix Table 49 : Explaining Variation in Life Satisfaction in Région de la Gaspésie -Îles-de-la-Madeleine

						Ordered Probit		Linear Probability (4,5)		Linear Probability (5)	
	Average for Canada (%) (1)	Average for MD (%) (2)	Standardized Average for Canada (Scale 1-5) (3)	Standardized Average for MD (Scale 1-5) (4)	Difference in Standardized Averages (5)=(4)-(3)	Weight (6)	(7)= (6)*(5)	Weight (8)	(9)= (8)*(5)	Weights (10)	(11)= (10)*(5)
Life Satisfaction			4.26	4.37	0.108						
Perceived Health			3.64	3.54	-0.104	0.107	-0.011	0.105	-0.011	0.108	-0.011
Perceived Mental Health			4.07	4.09	0.024	0.206	0.005	0.240	0.006	0.207	0.005
Stress Level			2.79	2.54	-0.250	-0.092	0.023	-0.113	0.028	-0.084	0.021
Sense of Belonging to Local Community			3.38	3.91	0.537	0.081	0.044	0.102	0.055	0.076	0.041
Proportion of Married (including common law)	65.6	67.7	3.28	3.39	0.105	0.189	0.020	0.181	0.019	0.198	0.021
Proportion of Physically Active Individuals	22.6	17.5	1.13	0.87	-0.255	0.061	-0.016	0.030	-0.008	0.076	-0.019
Proportion of Individuals Who Often Have Difficulties	11.3	10.7	0.56	0.53	-0.029	-0.033	0.001	-0.029	0.001	-0.012	0.000
Proportion of Students	7.8	4.0	0.39	0.20	-0.191	0.054	-0.010	0.088	-0.017	0.041	-0.008
Proportion of Males	49.0	49.4	2.45	2.47	0.017	-0.056	-0.001	-0.055	-0.001	-0.056	-0.001
Proportion of Recent Immigrants	6.0	0.0	0.30	0.00	-0.300	-0.114	0.034	-0.058	0.017	-0.143	0.043
Variation Explained							0.089		0.090		0.091
% Variation Explained (Variation Explained / (5) Differences in Life Satisfaction							82.4		83.2		84.6
	t stat	Level of Statistical Significance									
Statistical Significance:	5.07	1%									

Appendix Table 50 : Explaining Variation in Life Satisfaction in Région de la Côte-Nord

						Ordered Probit		Linear Probability (4,5)		Linear Probability (5)	
	Average for Canada (%) (1)	Average for CN (%) (2)	Standardized Average for Canada (Scale 1-5) (3)	Standardized Average for CN (Scale 1-5) (4)	Difference in Standardized Averages (5)=(4)-(3)	Weight (6)	(7)= (6)*(5)	Weight (8)	(9)= (8)*(5)	Weights (10)	(11)= (10)*(5)
Life Satisfaction			4.26	4.37	0.113						
Perceived Health			3.64	3.63	-0.015	0.107	-0.002	0.105	-0.002	0.108	-0.002
Perceived Mental Health			4.07	4.24	0.171	0.206	0.035	0.240	0.041	0.207	0.035
Stress Level			2.79	2.58	-0.210	-0.092	0.019	-0.113	0.024	-0.084	0.018
Sense of Belonging to Local Community			3.38	3.75	0.371	0.081	0.030	0.102	0.038	0.076	0.028
Proportion of Married (including common law)	65.6	71.0	3.28	3.55	0.268	0.189	0.051	0.181	0.049	0.198	0.053
Proportion of Physically Active Individuals	22.6	20.8	1.13	1.04	-0.086	0.061	-0.005	0.030	-0.003	0.076	-0.007
Proportion of Individuals Who Often Have Difficulties	11.3	7.4	0.56	0.37	-0.194	-0.033	0.006	-0.029	0.006	-0.012	0.002
Proportion of Students	7.8	2.8	0.39	0.14	-0.248	0.054	-0.013	0.088	-0.022	0.041	-0.010
Proportion of Males	49.0	50.8	2.45	2.54	0.090	-0.056	-0.005	-0.055	-0.005	-0.056	-0.005
Proportion of Recent Immigrants	6.0	0.0	0.30	0.00	-0.300	-0.114	0.034	-0.058	0.017	-0.143	0.043
Variation Explained							0.151		0.143		0.156
% Variation Explained (Variation Explained / (5) Differences in Life Satisfaction							133.2		126.5		137.7
	t stat	Level of Statistical Significance									
Statistical Significance:	5.77	1%									

ii. Bottom 5 Health Regions by Life Satisfaction

Appendix Table 51 : Explaining Variation in Life Satisfaction in City of Toronto

						Ordered Probit		Linear Probability (4,5)		Linear Probability (5)	
	Average for Canada (%) (1)	Average for PEI (%) (2)	Standardized Average for Canada (Scale 1-5) (3)	Standardized Average for PEI (Scale 1-5) (4)	Difference in Standardized Averages (5)=(4)-(3)	Weight (6)	(7)= (6)*(5)	Weight (8)	(9)= (8)*(5)	Weights (10)	(11)= (10)*(5)
Life Satisfaction			4.26	4.11	-0.148						
Perceived Health			3.64	3.61	-0.031	0.107	-0.003	0.105	-0.003	0.108	-0.003
Perceived Mental Health			4.07	4.07	-0.003	0.206	-0.001	0.240	-0.001	0.207	-0.001
Stress Level			2.79	2.81	0.025	-0.092	-0.002	-0.113	-0.003	-0.084	-0.002
Sense of Belonging to Local Community			3.38	3.27	-0.105	0.081	-0.009	0.102	-0.011	0.076	-0.008
Proportion of Married (including common law)	65.6	59.2	3.28	2.96	-0.323	0.189	-0.061	0.181	-0.058	0.198	-0.064
Proportion of Physically Active Individuals	22.6	18.1	1.13	0.91	-0.221	0.061	-0.014	0.030	-0.007	0.076	-0.017
Proportion of Individuals Who Often Have Difficulties	11.3	11.7	0.56	0.58	0.020	-0.033	-0.001	-0.029	-0.001	-0.012	0.000
Proportion of Students	7.8	10.4	0.39	0.52	0.130	0.054	0.007	0.088	0.011	0.041	0.005
Proportion of Males	49.0	48.0	2.45	2.40	-0.052	-0.056	0.003	-0.055	0.003	-0.056	0.003
Proportion of Recent Immigrants	6.0	16.4	0.30	0.82	0.518	-0.114	-0.059	-0.058	-0.030	-0.143	-0.074
Variation Explained							-0.139		-0.099		-0.161
% Variation Explained (Variation Explained / (5) Differences in Life Satisfaction							93.9		66.8		108.3
	t stat	Level of Statistical Significance									
Statistical Significance:	-11.74	1%									

Appendix Table 52: Explaining Variation in Life Satisfaction in Peel Health Region

						Ordered Probit		Linear Probability (4,5)		Linear Probability (5)	
	Average for Canada (%) (1)	Average for PEI (%) (2)	Standardized Average for Canada (Scale 1-5) (3)	Standardized Average for PEI (Scale 1-5) (4)	Difference in Standardized Averages (5)=(4)-(3)	Weight (6)	(7)= (6)*(5)	Weight (8)	(9)= (8)*(5)	Weights (10)	(11)= (10)*(5)
Life Satisfaction			4.26	4.14	-0.118						
Perceived Health			3.64	3.59	-0.054	0.107	-0.006	0.105	-0.006	0.108	-0.006
Perceived Mental Health			4.07	4.03	-0.035	0.206	-0.007	0.240	-0.008	0.207	-0.007
Stress Level			2.79	2.94	0.147	-0.092	-0.014	-0.113	-0.017	-0.084	-0.012
Sense of Belonging to Local Community			3.38	3.41	0.035	0.081	0.003	0.102	0.004	0.076	0.003
Proportion of Married (including common law)	65.6	69.3	3.28	3.47	0.183	0.189	0.035	0.181	0.033	0.198	0.036
Proportion of Physically Active Individuals	22.6	17.4	1.13	0.87	-0.255	0.061	-0.016	0.030	-0.008	0.076	-0.019
Proportion of Individuals Who Often Have Difficulties	11.3	8.8	0.56	0.44	-0.124	-0.033	0.004	-0.029	0.004	-0.012	0.002
Proportion of Students	7.8	11.0	0.39	0.55	0.158	0.054	0.009	0.088	0.014	0.041	0.006
Proportion of Males	49.0	49.2	2.45	2.46	0.007	-0.056	0.000	-0.055	0.000	-0.056	0.000
Proportion of Recent Immigrants	6.0	17.9	0.30	0.90	0.596	-0.114	-0.068	-0.058	-0.035	-0.143	-0.085
Variation Explained							-0.060		-0.019		-0.083
% Variation Explained (Variation Explained / (5) Differences in Life Satisfaction							51.1		16.2		70.6
	t stat	Level of Statistical Significance									
Statistical Significance:	-8.03	1%									

Appendix Table 53: Explaining Variation in Life Satisfaction in Vancouver Health Service Delivery Area (HSDA)

						Ordered Probit		Linear Probability (4,5)		Linear Probability (5)	
	Average for Canada (%) (1)	Average for PEI (%) (2)	Standardized Average for Canada (Scale 1-5) (3)	Standardized Average for PEI (Scale 1-5) (4)	Difference in Standardized Averages (5)=(4)-(3)	Weight (6)	(7)= (6)*(5)	Weight (8)	(9)= (8)*(5)	Weights (10)	(11)= (10)*(5)
Life Satisfaction			4.26	4.16	-0.098						
Perceived Health			3.64	3.69	0.054	0.107	0.006	0.105	0.006	0.108	0.006
Perceived Mental Health			4.07	3.95	-0.124	0.206	-0.025	0.240	-0.030	0.207	-0.026
Stress Level			2.79	2.75	-0.045	-0.092	0.004	-0.113	0.005	-0.084	0.004
Sense of Belonging to Local Community			3.38	3.37	-0.009	0.081	-0.001	0.102	-0.001	0.076	-0.001
Proportion of Married (including common law)	65.6	53.3	3.28	2.66	-0.619	0.189	-0.117	0.181	-0.112	0.198	-0.122
Proportion of Physically Active Individuals	22.6	30.4	1.13	1.52	0.392	0.061	0.024	0.030	0.012	0.076	0.030
Proportion of Individuals Who Often Have Difficulties	11.3	7.8	0.56	0.39	-0.171	-0.033	0.006	-0.029	0.005	-0.012	0.002
Proportion of Students	7.8	13.6	0.39	0.68	0.291	0.054	0.016	0.088	0.026	0.041	0.012
Proportion of Males	49.0	49.3	2.45	2.47	0.015	-0.056	-0.001	-0.055	-0.001	-0.056	-0.001
Proportion of Recent Immigrants	6.0	13.3	0.30	0.66	0.363	-0.114	-0.041	-0.058	-0.021	-0.143	-0.052
Variation Explained							-0.130		-0.112		-0.148
% Variation Explained (Variation Explained / (5) Differences in Life Satisfaction							132.6		113.6		150.4
	t stat	Level of Statistical Significance									
Statistical Significance:	-4.89	1%									

Appendix Table 54 : Explaining Variation in Life Satisfaction in Fraser South

						Ordered Probit		Linear Probability (4,5)		Linear Probability (5)	
	Average for Canada (%) (1)	Average for PEI (%) (2)	Standardized Average for Canada (Scale 1-5) (3)	Standardized Average for PEI (Scale 1-5) (4)	Difference in Standardized Averages (5)=(4)-(3)	Weight (6)	(7)= (6)*(5)	Weight (8)	(9)= (8)*(5)	Weights (10)	(11)= (10)*(5)
Life Satisfaction			4.26	4.18	-0.080						
Perceived Health			3.64	3.59	-0.051	0.107	-0.005	0.105	-0.005	0.108	-0.006
Perceived Mental Health			4.07	3.95	-0.115	0.206	-0.024	0.240	-0.028	0.207	-0.024
Stress Level			2.79	2.79	0.000	-0.092	0.000	-0.113	0.000	-0.084	0.000
Sense of Belonging to Local Community			3.38	3.46	0.081	0.081	0.007	0.102	0.008	0.076	0.006
Proportion of Married (including common law)	65.64	70.01	3.28	3.50	0.218	0.189	0.041	0.181	0.040	0.198	0.043
Proportion of Physically Active Individuals	22.55	21.10	1.13	1.06	-0.072	0.061	-0.004	0.030	-0.002	0.076	-0.006
Proportion of Individuals Who Often Have Difficulties	11.26	10.75	0.56	0.54	-0.025	-0.033	0.001	-0.029	0.001	-0.012	0.000
Proportion of Students	7.80	7.77	0.39	0.39	-0.001	0.054	0.000	0.088	0.000	0.041	0.000
Proportion of Males	49.04	49.19	2.45	2.46	0.008	-0.056	0.000	-0.055	0.000	-0.056	0.000
Proportion of Recent Immigrants	6.00	10.07	0.30	0.50	0.203	-0.114	-0.023	-0.058	-0.012	-0.143	-0.029
Variation Explained							-0.009		0.001		-0.015
% Variation Explained (Variation Explained / (5) Differences in Life Satisfaction							10.8		-1.1		18.5
	t stat	Level of Statistical Significance									
Statistical Significance:	-3.75	1%									

Appendix Table 55 : Explaining Variation in Life Satisfaction in Richmond

						Ordered Probit		Linear Probability (4,5)		Linear Probability (5)	
	Average for Canada (%) (1)	Average for PEI (%) (2)	Standardized Average for Canada (Scale 1-5) (3)	Standardized Average for PEI (Scale 1-5) (4)	Difference in Standardized Averages (5)=(4)-(3)	Weight (6)	(7)= (6)*(5)	Weight (8)	(9)= (8)*(5)	Weights (10)	(11)= (10)*(5)
Life Satisfaction			4.26	4.18	-0.080						
Perceived Health			3.64	3.56	-0.077	0.107	-0.008	0.105	-0.008	0.108	-0.008
Perceived Mental Health			4.07	3.98	-0.095	0.206	-0.019	0.240	-0.023	0.207	-0.020
Stress Level			2.79	2.70	-0.086	-0.092	0.008	-0.113	0.010	-0.084	0.007
Sense of Belonging to Local Community			3.38	3.56	0.190	0.081	0.015	0.102	0.019	0.076	0.014
Proportion of Married (including common law)	65.6	63.4	3.28	3.17	-0.110	0.189	-0.021	0.181	-0.020	0.198	-0.022
Proportion of Physically Active Individuals	22.6	23.4	1.13	1.17	0.041	0.061	0.002	0.030	0.001	0.076	0.003
Proportion of Individuals Who Often Have Difficulties	11.3	9.1	0.56	0.45	-0.109	-0.033	0.004	-0.029	0.003	-0.012	0.001
Proportion of Students	7.8	10.8	0.39	0.54	0.152	0.054	0.008	0.088	0.013	0.041	0.006
Proportion of Males	49.0	48.0	2.45	2.40	-0.050	-0.056	0.003	-0.055	0.003	-0.056	0.003
Proportion of Recent Immigrants	6.0	13.6	0.30	0.68	0.378	-0.114	-0.043	-0.058	-0.022	-0.143	-0.054
Variation Explained							-0.051		-0.023		-0.068
% Variation Explained (Variation Explained / (5) Differences in Life Satisfaction							64.0		29.0		85.7
	t stat	Level of Statistical Significance									
Statistical Significance:	-3.33	1%									

Appendix Table 56: Life Satisfaction by 102 Health Regions of Canada, 2007-2008

Canada	91.13	4.26
Newfoundland and Labrador		
Eastern Regional	92.13	4.30
Central Regional	95.25	4.30
Western Regional	95.58	4.28
Labrador-Grenfel	94.71	4.31
Prince Edward Island		
Kings County	95.40	4.42
Queens County	93.93	4.32
Prince County	93.79	4.31
Nova Scotia		
Zone 1 (dha 1&2)	92.67	4.21
Zone 2 (dha 3)	90.74	4.23
Zone 3 (dha 4&5)	92.06	4.23
Zone 4 (dha 6&7)	92.33	4.25
Zone 5 (dha 8)	91.99	4.25
Zone 6 (dha 9)	91.28	4.32
New Brunswick		
Region 1	91.20	4.25
Region 2	94.10	4.30
Region 3	93.74	4.34
Region 4	92.82	4.29
Region 5	92.23	4.28
Region 6	95.89	4.32
Region 7	93.91	4.30
Quebec		
Bas-St-Laurent	93.89	4.32
Sag./Lac St-Jean	92.05	4.30
Capitale-Nationale	93.16	4.35
Mauricie et du Centre-du-Québec	93.50	4.33
Estrie	91.67	4.31
Montréal	88.17	4.19
Outaouais	93.46	4.36
Abitibi-Témiscamingue	91.11	4.26
Côte-Nord	95.49	4.37
Nord-du-Quebec	95.80	4.41
Gasp.-Îles-Made.	94.32	4.37
Chau.-Appalaches	95.34	4.35
Laval	93.51	4.32
Lanaudière	93.62	4.35
Laurentides	94.23	4.38
Montérégie	93.36	4.32
Ontario		
District of Algoma	92.91	4.34
Brant County	93.48	4.36
Durham	91.29	4.25
Elgin-St. Thomas	94.91	4.30
Grey Bruce	92.32	4.23
Haldimand-Norfolk	89.77	4.24

Haliburton, Kawartha, Pine Ridge District	93.52	4.35
Halton	92.12	4.34
City of Hamilton	89.00	4.21
Hastings and Prince Edward Counties	91.96	4.27
Huron County	93.81	4.33
Chatham-Kent	91.59	4.22
Kingston, Frontenac and Lennox and Addington	91.10	4.27
Lambton	92.06	4.32
Leeds, Grenville and Lanark District	93.19	4.34
Middlesex-London	90.33	4.26
Niagara Regional Area	88.74	4.22
North Bay Parry Sound District	95.13	4.33
Northwestern	91.07	4.26
City of Ottawa	89.17	4.27
Oxford County	93.69	4.40
Peel	90.38	4.15
Perth	94.12	4.38
Peterbrough	93.98	4.31
Porcupine	91.70	4.25
Renfrew	94.34	4.41
East Ontarip	93.15	4.29
Simcoe Muskoka	92.20	4.29
Sudbury	92.09	4.32
Thunder Bay	91.25	4.25
Timiskaming	90.17	4.25
Waterloo	92.59	4.27
Wellington-Dufferin-Guelph	92.30	4.32
Windsor-Essex County	90.10	4.21
York	89.69	4.19
City of Toronto	86.81	4.12
Manitoba		
Winnipeg	90.94	4.23
Brandon	91.18	4.31
North Eastman	92.07	4.28
South Eastman	94.43	4.27
Interlake	92.10	4.27
Central Regional	94.93	4.28
Assiniboine	95.30	4.32
Parkland	93.36	4.29
Norman	90.40	4.19
Burntwood/Churchill	94.16	4.25
Saskatchewan		
Sun Country	95.38	4.37
Five Hills	92.54	4.23
Cypress	92.56	4.25
Qu'Appelle	91.11	4.27
Sunrise	87.74	4.12
Saskatoon	92.87	4.29
Heartland	94.52	4.32
Kelsey Trail	94.46	4.28
Prince Alberta	92.29	4.28

Prairie North	92.40	4.28
Mamawetan/Keewatin/Athabasca Parkland	87.77	4.15
Alberta		
Chinook	93.28	4.33
Palliser	92.20	4.25
Calgary	91.94	4.33
David Thompson	93.07	4.30
East Central Health	93.94	4.30
Capital Health	91.62	4.26
Aspen	92.17	4.24
Peace Country	92.62	4.30
Northern Lights	91.86	4.28
East Kootenay	93.14	4.36
Kootenay Bound	91.58	4.34
Okanagan	90.47	4.26
Thompson/Cariboo	90.36	4.25
Fraser East	90.34	4.23
Fraser North	91.77	4.22
Fraser South	89.07	4.18
Richmond	92.35	4.18
Vancouver	88.14	4.15
North Shore/Coast Garibaldi	92.63	4.33
South Vancouver Island	92.30	4.33
Central Vancouver Island	90.70	4.31
North Vancouver Island	91.82	4.32
Northwest	89.84	4.22
Northern Interior	89.07	4.22
Northeast	94.77	4.30
Territories		
Yukon	89.75	4.24
North West Territories	93.61	4.27
Nunavut	93.37	4.27