A Quantitative Study of Social Capital Components, Self Reported Health Status and Social Determinants of Health

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Dedication:

This project would not have been possible without my amazing children, my incredible partner, my ever enthusiastic parents, my animated siblings and a truly amazing group of extended family and friends. I will forever be grateful for you helping me realize my dream and supporting me through good times and bad. A very special thank you to Dr. Heather Kilty for believing in me, putting up with my ranting and for walking through this journey with me and always pushing me to do more.

Abstract:

This quantitative descriptive co-relational study used telephone survey interviews and stratified random sampling to collect data related to Social Capital (SC) and its components (trust and safety, reciprocity, civic engagement and collective action) and selected determinants of health variables in Niagara Region, Canada. Among the four components of social capital, *trust and safety* levels were highest among all participants (m=5.42, SD=1.0), with *community engagement* yielding the lowest mean score for the sample (m=1.93, SD=.8). *Reciprocity* had the strongest association with all other components of SC (r=0.51). Those most likely to report low levels of SC and health were unattached and low-income females. Males were more likely to report higher trust and safety levels and higher levels of self-rated health. In this study, a linear relationship between self-reported health status and SC was not found.

Marital and employment status were associated with differences in mean scores of SC and self-reported health.

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CHAPTER ONE: INTRODUCTION

i) Theories and concepts of Social Capital

The study of social capital (SC) has been undertaken in an attempt to describe and quantify our formal and informal relationships and to explore how those associations act as a non-financial resource for individuals, groups and communities. Much like financial capital, social capital can affect the way that we access resources, but without the exchange of money. A variety of terms have been developed to define and describe the social links and networks that people form within communities (Grootaert & VanBastelear, 2002). Researchers have examined SC and its associated components of *trust, reciprocity, civic engagement and collective action* based on the foundational works of Robert Putnam (Putnam, 2001; Putnam, Leonardi & Nanetti, 1993) and James Coleman (Coleman, 1988).

Social exchanges are framed by the types of interactions that exist between people and groups of people. According to Putnam (2001) 'bonding' refers to the social networks between homogeneous groups of people and the term 'bridging' refers to the social networking among socially heterogeneous groups. Both types of exchanges influence the ways in which our societies exchange goods, services and resources without the exchange of money or property (Bebbington & Perreault, 1999; Bourdieu, 1986; Portes, 1998).

There has been a growth in research centered on the theories, concepts and components of social capital over the last decade (Ostrom & Ahn, 2009, p.18). Definitions and theories related to social capital (SC) have been developed to guide research that has been conducted primarily in the disciplines of sociology, political science, health and economics. Studies have been conducted to examine social capital as

a predictor of the health of individuals and communities and to explain how SC relates to physical, social and economic health (Bourdieu, 1986; Coleman, 1998, Portes, 1998; Putnam, 2001, Van Kemedade, 2001).

In 1986, the *Ottawa Charter of Health Promotion* described health as "a resource for everyday life, not the objective of living. Health is a positive concept emphasizing social and personal resources, as well as physical capacities" (p. 1). Self-reported health status is considered to be an accurate indicator of health that crosses both cultural and geographic boundaries and has been used effectively in the assessment of overall health (Idler & Benyamini 1997; Shields & Shooshtari, 2001; Statistics Canada, 2001). Overall health has been linked to the effective interaction of a variety of different health determinants. In 1946, the World Health Organization (WHO) established parameters to measure the functionality of the individual that is rooted in the person's physical, social and mental health (World Health Organization [WHO], 1946).

Research studies have linked social capital with many community variables such as safety, security, community engagement, social participation and economic involvement (Bourdieu, 1986; Coleman, 1988; Grootaert & Van Bastelear, 2002; Portes, 1998; Putnam, 2001; Van Kemenade, 2001). Reported levels of SC have also been associated with levels of stress, variances in perceived social isolation and the experience of control (Adams, Sanders & Auth, 2004; Greaves & Farbus, 2006; Havens, Hall, Sylvestre & Jivan, 2004). A self-reported high level of SC has been associated with lower mortality rates and higher levels of perceived homeostasis (Al-Windi, Dag & Kurt, 2002; Melchior, Niedhamer, Berkman & Goldberg, 2003; Miilunpalo, Vuori, Oja, Paranen & Urponenunpalo, 1997; White, Richter & Fry, 1992).

Researchers in Canada have examined factors that impact on the health of the population. The Canadian Community Health Survey has been conducted by Statistics Canada every two years since 2000 to examine a wide variety of factors that influence overall health; however, few Canadian surveys have focused on the specific components of SC and health in Canada (Kilty, 2004; Mata & Pendakur, 2010; Scott & Hofmeyer, 2007).

Although research has been conducted in Canada separately regarding social capital and population health status, few co-relational studies have been conducted within a Canadian context. In this study, age, gender, income, education, marital status and geographic population density variables were measured using a quantitative survey of those people living within the boundaries of the Niagara Region in Ontario, Canada. Respondents were asked to rate components of their social capital. Following this, relationships were examined between the components, their self-reported health status and the demographic variables in the sample. This project and its findings provide beneficial information to potentially inform health promotion and health planning.

Reliable tools to measure social capital have been developed internationally to examine variances in population SC such as the New (Onyx, & Bullen 2000; Saguaro Seminar, 2000). In addition, the World Bank has devoted a section of its website resources to promote community development and to disseminate information and surveys that have been developed and used to measure SC in developing countries (World Bank, 2010). As cultural norms shift, additional knowledge needs to be continually developed to examine the relationships between levels of SC in the population and its effects on health, or conversely, how levels of health might also affect

community and individual SC. A deeper understanding of how the dimensions of SC are linked with self-perceived health status could enhance an understanding of how to better develop community connections among community members in the Niagara Region where this study was conducted.

Components of social capital and elements of self-reported health were measured using a telephone survey of a sample of the population of people living within the geographical boundaries of the Niagara Region in Ontario, Canada. Participation in this survey was extended to a randomly selected sample of residents over the age of 20 years from across the 12 municipalities in the Region. The findings may have implications for regional planners by providing a better understanding of the relationship between SC and health. Data collected provided base-line measures of social capital in the Niagara Region which may help to guide community action projects and future research to monitor levels of the components of SC over time.

This research study examines components of social capital and their relationship with self-rated health of individuals and groups. It has been suggested that by measuring each component of SC and their relationship with the determinants of health variables that were selected, a better understanding of SC and health in Niagara will emerge. The relationship between health and social wellbeing is regarded as shared and mutually reinforcing (Frankish, Milligan & Reid 1996). Health is considered to be a resource. A range of social, economic and physical environmental determinants contribute to health (Frankish et al. 1996). This research was conducted to further develop a deeper understanding of how to better quantify social capital assets in a region and how they may be connected to individual and community health.

CHAPTER TWO: LITERATURE REVIEW

i) Theories and Concepts of Social Capital

SC and the health of persons living in communities can both be quantified as resources that affect the physical and financial assets of individuals and neighbourhoods. Although neither SC nor health can be measured using monetary units, components of both can directly impact the strength and sustainability of people and communities. Health and social capital can both be viewed as foundational components of daily living experiences and both vary in the ways in which they are perceived, experienced and measured. The literature review examined the research paradigms of social capital theorists and outlined the relevant components of both SC and the determinants of health as they pertain to this research proposal. Each component has been described in conducting this co-relational investigation.

Primary development of the concepts associated with social capital have been attributed to foundational models developed by Pieere Bourdieu (Bourdieu, 1986), James Coleman (Coleman, 1988) and Robert Putnam (Putnam, 2001; Putnam et al. 1993). The most notable differences between Bourdieu, Coleman and Putnam are their differing views on whether SC is an attribute of the individual or an attribute of the community. Coleman first postulated that social capital could only exist inside the relationships that people build with one another (Coleman, 1988). Putnam expanded on these concepts and suggested that social capital functions at a level above individuals and exists as a component of social organization (Putnam, 2001; White, 2002). Putnam also stated that analysis should be focused on social capital as a resource at the community level (Putnam, 2001; White, 2002). Thus, Putnam challenged the ideas of social capital as an

attribute only realized by the individual and suggested that it was also possessed by groups of people in communities. Coleman saw SC as a resource to be accessed by individuals, whereas, Putnam presented SC as a public good. These perspectives raise the issue of whether social capital, as a resource, belongs to individuals, to groups or to both (White, 2002). Bourdieu related social capital to other economic capital and claimed that the production and reproduction of social capital is a process that is inherently about power. He used SC in an analysis of power relations (Bourdieu; 1986, White, 2002). He argued that SC can be unevenly distributed and that those experiencing higher levels of SC are able to put social networks to the most effective use. In addition, those with high levels of SC are able to access more resources than those with lower levels of SC (Bourdieu, 1986; White, 2002).

Pieere Bourdieu, in his writings on *The Forms of Capital* (1986) defined social capital as "the sum of the resources, actual or virtual, that accrue to an individual or a group by virtue of possessing a durable network of more or less institutionalized relationships of mutual acquaintance and recognition" (p. 119). SC can be understood as either an individual or group-specific characteristic that is associated with those who are engaged in networks that have similar goals, beliefs and social attitudes. For Bourdieu, social capital is a personal asset for which individuals compete in an attempt to improve their own positions. Bourdieu’s perspective represents the conflict theory perspective of social capital, wherein strong economic, cultural and social elements of communities provide people with essential resources as they strive to achieve goals, including health goals. Bourdieu did not look upon social capital as a public good. Bourdieu postulated that social capital is not equally distributed among groups, but rather, is higher in specific

areas or groups and is reliant on the levels of various forms of capital that is prevalent in these areas or groups (Bourdieu, 1986).

According to James Coleman's work in *Social Capital in Creation of Human Capital* (1988 p. 98), social capital is a type of resource related to the social structure, for the purpose of facilitating meaningful activity. Coleman identifies the main components of social capital as: 1) the requirement of reciprocity (including trust), 2) information channels and the flow of information and 3) norms (including effective sanctions).

These forms of social capital, Coleman described as resources that individuals can utilize to achieve their interests. Furthermore, he suggested that the maintenance of norms requires a closed network structure such as close social relations that allows each member of the network to monitor, interact with and observe others. Social capital exists in the relations and connections formed among people, and in this sense becomes a component of a public resource. The actors, according to Coleman (1988), may be either individuals or organizations.

Robert Putnam referred to SC as social trust, norms and networks and the stocks of those components that exist among citizens. He noted in his writing of *Making Democracy Work* (1993) *and Bowling Alone* (2001) that SC can improve the efficiency of communities and societies. To Putnam, SC is a collective component of the community. This attribute belongs first and foremost to a civil society, whereby *collective action* in the local communities is made possible. He holds that SC is inherently productive and compatible with the common good. Because of its collective nature, SC cannot be converted into anyone's private property (Putnam et al. 1993).

Putnam suggests that stocks of social capital such as trust, social norms and networks accumulate with use and can also dwindle if they are not used. Putnam's views on social capital represent a perspective that underscores the significance of the civilization of society and involves the civic participation of individuals that are bonded together through trust, relationships and networks.

ii) Components of Social Capital

The term "capital" is used in the description of SC as a metaphor with other forms of capital, since it is an asset that may have other benefits. Although differing views exist on how to measure these linkages and benefits, generally accepted terms have been developed to describe and quantify the way that people and groups interact and connect with each other.

The notion of participation in interlocking networks between individuals and groups is fundamental to the study of SC. Onyx & Bullen (2000) ascertained that equal contributions and participation of people engaged in these networks provide an equitable distribution of resources and support. SC cannot be generated by individuals acting on their own. It is the collaboration and intertwining of individuals acting collectively that is believed to produce increases in SC.

The study of inclusion theories supports the belief that strong links exist between healthy development and self-perceived levels of belonging on the part of participants (Bourdieu, 1986). Alternatively, some researchers conclude that participation may not always be healthy. For instance, they postulate that low levels of supervision of youth-at-risk activities can increase the likelihood of youth to accept the normative actions of the collective group. If deviant actions are perceived to be

normative, it increases the likelihood they may engage in these deviant behaviours (Mahoney, Stattin & Magnusson, 2001). The perceived norms of the group and the strength of the association between its members can greatly affect the actions of the participants, either positively or negatively.

Theories of social exclusion focus on the shortcomings and barriers that prevent members of marginalized groups from improving their life circumstances. According to Royce (2009), the failure of the marginalized group to improve can perpetuate social inequality. By strengthening social ties and fostering a sense of community connectivity, resource availability increases and stocks of SC can then be accessed, which will ultimately enhance the lived experience of members of the community. Researchers have demonstrated that social isolation is strongly associated with lower rates of physical, psychological and mental health problems, particularly among seniors (Caplan, 1974; Ramos, 2002; Tomaka, Thompson & Palacios, 2006; Turner, Frankel & Levin, 1983). It may follow that higher levels of social connectivity in populations could improve the experiences and perceptions of overall health, as those with a higher density of SC have more access to supports to buffer mental, physical and emotional stressors.

Research literature supports the idea that health practices are largely influenced by the strength of our networks and peer influences within communities. Yet preventative strategies are often targeted at individual behaviours rather than group behaviours (Kok, Gottlieb, Commers & Smerecnik, 2008; Minkler & Wallerstein, 2005; Ramos, 2002). Targeting personal behaviours that focus on individual experiences and lifestyle behaviours remains a prevalent form of health promotion in most public health

campaigns. A community approach to population health promotion is aimed at reducing prevalence of disease in communities rather than only in individuals (Kok, et al., 2008; Minkler & Wallerstein, 2005; Ramos, 2002). Fostering a greater understanding of social capital in our neighbourhoods, communities and nations has the potential to promote social capital development and, thereby strengthen community cohesion. This represents an opportunity to improve the effectiveness of health enhancing strategies at a population health level.

Reciprocity is a component of SC and can be described as the mutual exchange of goods, services or favours exchanged between individuals, groups or nations. Reciprocity is rooted in the notion that exchanges that are offered to another could be returned in-kind and in the same spirit through which they were extended. Social studies that have focused on *reciprocity* among communities have demonstrated that norm-driven performance among members is directly correlated with the level of *reciprocity* (Berg, 1995; Kanagaretnam, Mestelman, Nainar & Shehata, 2009). If communities are grounded in normative behaviours to help their neighbour in need, then it becomes a generally accepted pattern that the members of these communities will adopt similar behaviours to collectively support each of its members (Lopez-Perez, 2009). Additional studies have provided evidence that the levels of *trust* and *reciprocity* are highly linked to individuals' preferences towards payoffs, prior experience, capacity to learn more about the personal characteristics of each other and social distance (Berg, 1995; Kanagaretnam, et al., 2009; Taylor & Brown, 1984). Levels of *reciprocity* experienced by members have a strong correlation with social satisfaction and sense of inclusion in communities (Ramos, 2002; Rook, 1987).

Strong levels of *reciprocity* in communities can directly impact health on many levels. Providing support for elders to maintain independence, assisting a young mother who has increased stress levels or providing resources for teens to ask and answer questions all increase levels of reciprocity while providing boundaries for healthy choices (Crnic, Greenberg, Ragozin, Robinson, Basham, 1983; Greaves & Farbus, 2006; Greenberg, Ragozin, Robinson & Basham, 1983; Ramos, 2002). Workplace groups that support making investment in their communities by facilitating their members participation in volunteer activities have been found to increase the levels of reciprocity experienced by the members, and enhancing both SC and the health of those around them (Onyx & Bullen, 2000).

Trust is a complex and multi-faceted component of SC. Trust entails a willingness to participate in groups and to take risks based on a sense of confidence that others will respond as expected in mutually supportive ways (Onyx & Bullen, 2000). By developing strong relationships that are grounded in mutual trust, the ability to share information and to act on that information with confidence is enhanced. Trust and engagement are both strongly linked to building networks. The higher degree of faith in a person's dependability, the more confidence one has in their follow-through, thus creating stronger bonds between the participants (Putnam, 2001).

Health care provider trust has been shown to be a fundamental factor in patient medication adherence (Kerse, Buetow, Mainous, Young, Coster & Arroll, 2004). A patient's trust in their clinician's advice and the clinician's trust in their patient's adherence to recommended treatments are key components of chronic illness management and follow-up appointment attendance (Kraetschmer, Sharpe, Urowitz &

Deber, 2004). Those who report low trust levels in their physicians have been shown to prefer autonomous roles in their recoveries (Kraetschmer, et al., 2004). Trust of the organization providing health services varies depending on the sense of vulnerability that the patient experiences and is linked with previous personal knowledge and experience (Abelson, Miller & Giacomini, 2009). Research suggests that the trust established between the clinician and the patient is foundational to positive outcomes (Kraetschmer, et al., 2004; Piette, Heisler, Krein & Kerr, 2004). To enhance these experiences and trust levels, it has been recommended that patients become more collaborative with their health providers in order to build a trusting and participatory relationship (Registered Nurses Association of Ontario, 2006). This suggests that it is not solely the responsibility of the health provider but, patients also have a shared responsibility to manage their illness and to gain an understanding of their obligations to achieve the best results utilizing practitioner's advice and consultation.

Trust of health care organizations varies between communities and is linked with the overall trust that individuals report having with government organizations (Ahern & Hendryx, 2003, Whetten, et al., 2006). Quality research needs to be developed in this area to provide a better understanding of the Canadian experience of trust related to health care organizations and providers of care. Since governmental trust is an important indicator of overall SC, it is possible that it may be related to self-reported health status.

Another component of care provider trust is related to the participant's prior experiences. Much of the research conducted to date has examined the care experiences from the clinician's point of view rather than the recipient's perspective (Abelson et al., 2009; Ahern & Hendrix, 2003; Hibbard & Pope, 1983; Kerse, et al., 2004; Kinsler,

Wong, Sayles, Davis & Cunningham, 2007), however the perspective of the clinician may be drastically different than that of those receiving care (Charmaz, 1983, Kleinman, Eisenberg & Good, 1978). Since trust has been shown to be an intregral part of participant engagement and adherence to the health provider's recommendations, it is essential that those receiving care have a positive care experience. There has been a shift in patients' and providers' attitudes. Trust is no longer characterized as blind faith in provider care, but has transitioned to include perceived clinician competence and reciprocal expectations that each player will do the things that they promise to do (Thorne & Robinson, 1988).

Social norms, another component of SC, provide a form of control that decreases the need for more formal structures (Onyx & Bullen, 2000). These behavioural cues are structured within the context of communities and relationships and refer to how people will generally behave in a given setting, based on the perceived acceptability of their actions (Onyx & Bullen, 2000, White, 2002). Behavioural expectations are generally the unwritten, but commonly understood rules and standards for governing behaviour that determine what behaviours are expected in a given social context, and they define what forms of customary behaviours are expected (Onyx & Bullen, 2000, White, 2002). Where there is a reported low level of trust and few social norms, people will cooperate in joint action only under a system of formal rules and regulations. These rules and regulations have to be negotiated, agreed upon, litigated, enforced, and supported by public policies and laws (Fukyama, 1999).

Social norms play an important role in health. The definition of the sick role was first introduced by Talcott Parsons in 1951. The sick role postulates that those in poor

health are exempt from normal societal roles and they are not responsible for their conditions. Parsons suggested that the obligations of a sick person are that they are expected to try to get better and that they should seek help for their condition and cooperate with the medical professional (Parsons, 1951). This framework for socially acceptable behaviours for those in poor health is generally reflected in the establishment of insured and accessible supports within a health care system.

In recent years, there has been a growing shift toward community and self-responsibility to maintain health. The use of alternative therapies and an increased awareness of what constitutes healthy lifestyle behaviours are growing trends. Shifting government policies, such as developing smoking bylaws creating harsher penalties for those operating a motor vehicle while under the influence of substance and school boards mandating healthy food choices in cafeterias, are also supportive examples of this shift to encourage citizens to be more aware of lifestyles choices, thereby strengthening individual and community responsibility for health promotion and health care.

Civic engagement and *collective action* are essential components of SC as evidenced in the literature. The levels of trust, cohesion and the social norms of communities impact the ability to collectively build stronger communities through civic engagement and collective action. When collective groups respond synergistically, they are better able to produce stronger communities that have increased abilities to respond to adverse events (Dynes, 2002, Mathbor, 2008). By supporting both individual and collective efficacy, voluntary engagement in community capacity building is increased (Dynes, 2002, Mathbor, 2008). Establishing community connections and engaging participants to formulate local approaches to problem solving has been demonstrated to

be more effective, both in the change process and in the embracing of change transformations by the community (Cornish & Campbell, 2009.) While community participation has been an on-going part of public processes for decades, little evaluation has been conducted to measure the effectiveness of the process (Abelson & Gauvin, 2006). It has been recommended that citizen concerns about information quality, decision maker's concerns about sharing information and the recognition of participant's knowledge all be addressed in order to support more effective and meaningful public participation (Abelson, et al. 2004).

iii) Health and Social Capital

The determinants of health are those elements that affect our overall health status and wellbeing. In the past, health treatments were generally focused on the genetic, biological and physiological aspects of health and disease. Since the acceptance of the World Health Organization's definition of health being "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" (WHO, 1946), an array of contributing factors have been examined to develop a more comprehensive view of what constitutes overall health. The determinants were adopted by the Public Health Agency of Canada in 1999 are based on the findings from the *Second Report on the Health of Canadians* (1999). This comprehensive report identified the factors that influence the health of Canadians as: i) income and income distribution, ii) education, iii) unemployment and job security, iv) employment and working conditions, v) early childhood development, vi) food insecurity, vii) housing, viii) social exclusion, ix) social safety network, x) health services, xi) aboriginal status, xii) gender, xiii) race and xiv) disability (Mikkonen & Raphael, 2010). This paradigm of health

includes not only biological or microbial elements that affect disease prevalence, but also include the environments in which populations live and access resources and services that directly impact their physical, emotional and social wellbeing. It is postulated that each element does not stand alone and all components are in interaction and synergy with each other.

In 2009, Williamson and Carr postulated that as a resource, health is appropriately thought of as a type of capital that can be invested in by individuals and societal institutions to increase positive health returns. They point out that similar to human capital, health is embodied in individuals and is not an exchangeable resource such as money. In addition, health cannot be traded for goods and services and it cannot be obtained directly in exchange for goods and services. Instead, as a type of capital, health is a stock of resources that people can draw on to increase their participation in society (Williamson & Carr, 2009). Similarly, if SC is viewed as a resource, it suggests that the healthier individuals and groups are, the more likely they are to participate in components related to SC, thereby enriching the overall intangible resources within communities.

Social support networks are referred to as components of SC and have been found to have an association with health status. Research by White, Richter & Fry (1992) and L. White (2002) supported the premise that those with higher levels of participation and, thus, those having a number of connections to organizations, have been shown to have higher levels of SC along with a better self-reported sense of well-being. These researchers also suggested that those with dense and intertwined networks are better able to cope with chronic disease and have better access to supports when ill. Additional

research has indicated that those with support have shorter recovery periods after acute illnesses (White et al., 1992).

Income and social status have been identified in determining the health of groups. Income affects where people and groups live, how much money is available for access to healthy food choices and access to health care such as dental treatment, pharmaceuticals and healthy lifestyle programmes.

Education, as a resource and a determinant of health, is closely tied with employment, and thus affects income. Those who have a higher level of education are also generally better able to understand health care providers, which results in an increased ability to navigate complex health care systems and services (Lee, 1999; Nelson, 2002). Research has suggested that the value that a society places on education is often linked with the number of people who complete and participate in school (Kanagaretnam, et al., 2009). In Niagara, 29.9 % of all residents reported completion of high school and 13.1% of the population reported completion of a university education. This percentage is below provincial and federal levels reported by Statistics Canada census data which states that 20.5% of those in Ontario and 18.1% in Canada have completed a university degree (Statistics Canada, 2007). Studies have suggested that higher levels of education can also be linked to increased social and societal participation (Dynes, 2002; Statistics Canada, 2003; Mathbor, 2008; White, 2002). Literacy rates have similarly been linked to higher rates of volunteerism and civic participation, which includes voting (Eccles, Barber, Stone & Hunt, 2003; Thoits & Hewitt, 2001). It also stands to reason that those with a higher level of education might be more financially able to donate money to charities (Hall, Lasby, Ayer & Gibbons: 2009). Since volunteering

and civic participation enriches the overall resources in communities, it is optimal to have a better educated population.

The social environment reflects the mores that influence people in their daily lives. This environment includes the cultural norms that our societies and communities value and support. Social environments are largely influenced by public policies developed to reflect the changes in social norms (Nyborg, 2003). Social and moral norms effectively guide civilized sustainable community development. Research postulates that social norms are affected by changes in social approval or disapproval, economics, internalized moral motivations and self-sectioning (Coleman, 1988; Rege & Telle, 2002).

Community and family structures are important for strengthening the components of SC among families and children. Healthy child development has been determined to be a reliable indicator of population health and is a strong predictor of future chronic disease prevalence and health care needs among groups (Mikkonen & Raphael, 2010). Research suggests that socio-economic status (SES) is associated with a range of health outcomes in children, beginning prior to birth and continuing into adulthood (Bradley & Corwyn, 2002). A variety of factors linking SES to child health have been suggested, with most involving differences in access to material and social resources or reactions to stressful conditions by both the children themselves and their parents (Bradley & Corwyn, 2002). For children, SES impacts well-being at many levels and the effects are moderated by children's individual living conditions and the availability of community resources (Bradley & Corwyn, 2002).

Communities with lower levels of community organization have a higher incidence of low birth-weight babies, higher infant mortality rates and increased reported

incidents of child abuse (Furstenberg, 1990; Sampson, 1992; Shaw & McKay, 1942). In Niagara, only 4.06% of all babies born in 2006/2007 were considered to be low birth weight versus 6.0% nationally.

Gender is a variable that affects our health in different ways (Statistics Canada, 2006). The experience of SC also differs by gender based on social norms and expected actions based on societal values and cultural cues. Aside from specific diseases pertaining to gender, cultural norms also affect the way that gender groups access, receive and adhere to the advice of practitioners (Anson, Paran, Neumann & Chernochovsky, 1993; Denton, Prus & Walters, 2004; Hibbard & Pope, 1983; Verbrugge, 1989). Similarly, cultural practices play an integral role in a plethora of health affecting behaviours including dietary practices, health seeking behaviours and health treatment beliefs (Betancourt, Green, Carrillo & Ananeh-Firempong, 2003; Congress & Lyons, 1992; Kilty, 2010). Gender and perceived norms, practices and barriers need to be constantly examined to be attentive to shifts in practices and behaviour changes.

With the evolution of social research as it pertains to health, focus on our social connections and the strength of those connections has demonstrated the link between our formal and informal ties. These linkages relate to our levels of trust and connections in our families and communities and how they impact our overall social, physical, emotional and spiritual health. Social well-being is associated with strong social relationships (Coleman, 1988). Robert Putnam described in *Bowling Alone* that our levels of civic engagement are important and he observed that this has been eroding at an alarming rate during the past 40 years of his exploration of the topic (Putnam, 2001). Putnam also postulated that communities that report a substantial overall stock of social

capital have better economic and social performance (Putnam, 2001). These communities have lower crime rates and lower rates of tax evasion. Individuals were found to be more tolerant and good-humoured, and children had a higher level of well-being and were reported to be more successful in school (Putnam, 2001).

Strong cohesion within communities has been linked to lower rates of disease and death (Ren, Skinner, Lee & Kazis, 1999; Rose, 2000). Higher self-reported levels of social support are linked to lower rates of age-adjusted mortality (Berkman & Syme, 1979; House, Robbins & Metzner, 1982). Research has ascertained that there is a strong link between social support and the frequency of required hospital admissions and the length of time required to recover after experiencing an adverse medical condition (Koenig & Larson, 1998; Kulik & Mahler, 1989; Tak & Laffrey 2003). Strong social support has been positively associated with the rate of adjustment for those experiencing chronic disease and illness (Coppel, 1980). Those with closer community supports and social ties also report higher rates of medication compliance and adherence to the physician's recommendations.

Canada first established a socialized medicine program in 1957 under *The Hospital Insurance and Diagnostic Services Act*, and ensured that most hospital and physician care would be provided for all Canadians, regardless of ability to pay. This Act was later revised to the current *Canada Health Act* in 1984 (Madore, 2005). Studies have demonstrated that those who are perceived to be in a lower income bracket are often marginalized by health care organizations (Kinsler, et al., 2007, Thornicroft, 2006). Health, as a non-economic resource has many connections to SC and it can be suggested that healthier populations have an increased likelihood to have stronger bonds, an

increased ability to engage in effective reciprocity, more active participation in their communities and a better sense of trust in others (Minkler & Wallerstein, 2005).

The physical environment can impact overall health and encourage citizenship and networking. Access to fresh water, clean living environments and pollution free living directly impacts our biological health and the health of communities. In developing countries, environmental hygiene is particularly of note as the prevalence of certain diseases is directly impacted by access to clean drinking water. Industrial countries that have limited regulations about clean air also experience increases in breathing related illnesses (Halbert et al., 2006). It is essential that governments and citizens work together to develop strategies and policies to protect and preserve natural resources (Adger, 2003). Effective engagement of citizens is a key element of environmental program development as it will, in turn, increase the program's sustainability (Adger, 2003). By adopting new habits and creating new policies with popular support, communities can better continue to define and address environmental concerns.

Access to and distribution of health services are key determinants of health. When there are clusters of acute care services that provide allopathic care and health education to foster health promotion and prevention, increases in health status among populations occurs predicted by increases in our connections and trust in others (Chan, Hart & Goodman, 2007; Havens, et al., 2004; Smith, Humphries & Wilson, 2008).

In 1866, the work of Johann Gregor Mendel popularized theories of biologic and genetic endowment. Before this time, illness was identified as a unique experience and not considered to be linked to genetically inheritable traits. As microbiologists began to

identify chromosomes which could be passed on to descendents, more and more diseases could be causally attributed to predisposing factors passed on to them by their parents (McKusick, 1998). Since that time, research has demonstrated that genetic predisposition, while not the sole cause of health in a population, remains a contributor to disease prevalence.

Mental health has also been shown to be impacted by the relationships that we have. Linking with social networks and employment can assist with recovery and sustain periods of improved mental health (Corrigan, 2005; Thornicroft, 2006). Particular studies have focused on isolation and increases in the incidence of depression among those who perceive themselves to be socially isolated and not connected with others (Adams et al., 2004; Aneshensel & Stone, 1983; Caplan, 1974). Research has suggested that strong social networks can also act as a psychological buffer during periods of stress (Greenblatt, Becerra & Serafetinidest, 1982). Research has further indicated that barriers exist for those with mental illness. They become stigmatized by relatives, health care professionals, employers and landlords (Corrigan, 2005; Thornicroft, 2006). When those in the community place stigma on those that have been labelled as `mentally ill', those with mental illness may experience other adverse conditions. This in turn may increase levels of self-stigmatization which may subsequently increase the likelihood of other acute illness incidence (Corrigan, 2005, Thornicroft, 2006). When the negative impacts of social isolation on those with mental illness are considered, there is much to be done in an effort to support these individuals in order to assist them with network connections.

iv) The Measurement of Social Capital

A wide variety of measurement tools have been developed to gain a better understanding of SC in various population groups around the world. The World Bank

(2010) has demonstrated a commitment to developing a better understanding of SC as it generally pertains to developing economic strength in developing countries. The World Bank has an extensive collection of surveys and papers that have been used to quantify community driven development among participating countries. The majority of these surveys are administered during face-to-face interviews and use ranked variables to examine dynamics of: groups and networks; trust and solidarity; collective action and cooperation; information and communication; social cohesion and inclusion; empowerment; or political action. Those measurement tools are useful for research and for community development with their main focus being to provide information (World Bank, 2010).

One of the largest challenges with measuring SC is lack of consistency in measurement tools (Claridge, 2012). This lack of consistence arises from the on-going debates and lack of academic consensus about how to best measure it (Fukuyama, 1999).There remains a lack of consistency in both theoretical definitions and tools to measure these concepts. Due to the complexity of terms related to SC, the debate remains surrounding survey design and indexing of factors related to SC (Grooteart & Van Bastelear, 2002, Onyx & Bullen, 2000). It is generally agreed, however, that SC is a measurable concept and that its variability exists within both individuals and within communities (Putnam, 2001, Onyx & Bullen, 2000). Additional debate continues about the individual or group nature of SC and that many studies are criticized for over-aggregating data (Knack, 2002).

The *Social Capital Community Benchmark Survey* (2000) is the largest study of Social Capital conducted to date in the United States and is based largely on work

developed by Robert Putnam (Putnam, 2001; Putnam et al, 1993), and strategies discussed in the Saguaro Seminar report entitled *Better Together* (2000). This quantitative survey was administered across the United States between July and November, 2000 and is comprised of national respondents (n=3,000) and community respondents (n=26,200) from across twenty-nine states. Random telephone dialling was used to survey participants and ask questions related to national and local levels of voluntary donations, friendship associations, group participation and association, levels of trust, participation in group arts and group sports, and friendship diversity patterns. The survey was designed by the Saguaro Seminar and developed from discussions held at the Social Capital Measurement Workshop held at Harvard University in October 1999. This tool was developed to better measure levels of SC among Americans and has provided valuable base level measurements to provide information and for the development of future research (Saguaro Seminar, 2000). Principal findings include that unequal access to SC existed in most American communities and that rates of social participation were different across the surveyed population. The survey also found that ethnic diversity of communities was a factor in levels of trust and connections with others. This study further suggests that social connections are a strong predictor of perceived quality of life and that personal happiness is closely tied to the level of community connections and trust than levels of income or educational attainment (Saguaro Seminar, 2000).

Measuring Social Capital in Five Communities in New South Wales is the published work that resulted from a quantitative study that was conducted in 1996 across five rural and urban areas in Australia (Onyx & Bullen, 2000). Local agencies in each of

the five communities were engaged to assist researchers to randomly distribute surveys to local residents between 18 and 65 years of age (n=1,211). Factor analysis was conducted by the original researchers on the original 84 questions used in their survey. The principle researchers in this study then fully explored relationships between and among each of the questions to determine which questions were most related to the components of social capital. Using this method, they narrowed the survey into what they referred to as the 'best 36 questions' for future research. With approval, these 36 questions were used verbatim in the Niagara Survey. The New South Wales research project supported previous studies that examined the elements of SC and their linkages. These researchers recommended that future research should focus on the association of the factors generally attributed to SC (Onyx & Bullen, 2000). The principal findings of the NSW report include that social capital is an empirical concept and that 'measuring social capital is possible in communities and that there is a general social capital factor that can be measured" (Onyx & Bullen, 2000, p. 15). The NSW report found that social capital is not correlated with demographic variables; however, they reported that men were more likely to report higher levels of trust and safety. Their study was able to measure differences in the reported levels of SC across the 5 communities that were surveyed.

A variety of surveys have been conducted by Statistics Canada that have examined a variety of SC dimensions among Canadian residents (1996 General Social Survey on Social and Community Support; 1998 General Social Survey on Time Use; 1999 General Social Survey on Victimization; 2000 General Social Survey on Access to and Use of Information Communication Technology; 2002 General Social Survey on Aging and Social Support 2009 National Population Health Survey; Canadian

Community Health Surveys (annual); 2006 National Survey of Giving, Volunteering and Participating [Hall et al, 2009]; 2006 Participation and Activity Limitation Survey [Bizier et al. 2010]; 2003 Ethnic Diversity Survey)

The *General Social Survey* is administered by Statistics Canada every two years and focuses its area of inquiry on the dynamics between social connectivity among Canadians and how these networks impact a wide variety of elements such as activity limitations, mobility, personal well-being, abuse prevalence, technology use and aging. Random telephone sampling is used to administer this quantitative scale survey to 30,000 Canadian residents over the age of 12 years old. Recommendations conclude that on-going research in this area is important to continue to understand dimensions of health and social capital as they relate to Canadian populations. In addition, it is acknowledged that comprehensive research has not been conducted to fully analyze full relationships between SC and health (Health Canada, 2006).

The Fort Erie Social Capital Survey was conducted on behalf of the Community Health and Wellness Committee for the Town of Fort Erie in the Region of Niagara. This inquiry was conducted in 2003 and collected responses from those living in the Fort Erie area that were 18 years of age or older (Kilty, 2004). This survey used quantitative, Likert scale measures to rank components of social capital. Using randomly selected telephone numbers, this study was conducted to enhance the local understanding of SC in an effort to develop strategies that would address local health issues and bolster local healthcare access. One of the most specific recommendations that came from this study was that these findings only provided a baseline measure of SC in Fort Erie and, based on the data, it was difficult to determine if the levels of SC that were reported were good or

bad. Conducting a similar, follow-up survey with comparison data, will provide this specific Niagara community an understanding of the variances that have occurred since the initial findings were presented. The Living in Niagara Report and the Niagara Research and Action Council further supported this recommendation by suggesting baseline measures of SC be researched and measured across the Niagara Region (Kilty, 2008).

The primary methods for obtaining data related to SC have been face-to-face interviews, self-completed questionnaires and telephone interviews (Aday, 1989). Personal interviews, generally, have the lowest non-responsive rate of all the methods; however, they are the most expensive and generally achieve comparable findings to telephone interviews (Perkins & Sanson-Fisher, 1998). Mail-out surveys are reportedly the least expensive; however, low response rates limit the ability of the researcher in obtaining additional respondents when targets are not met (Aday, 1989; Brogger, Bakke, Elde & Gulsvik, 2002; Erhart, Wetzel, Krugel & Ravens-Sieberer, 2009). Computer administered surveys are difficult to randomize and limit the participants to those with both computer knowledge and internet access (Aday, 1989; Erhart, et al., 2009). As of December 2006, Statistics Canada reported that 90.5% of surveyed households reported having a land-line telephone (Statistics Canada, 2007). By using telephone surveys, administered by trained research assistants, the Niagara Social Capital Survey research study yielded results that are representative of the population. In addition, it enhanced the capacity to increase the number of respondents based on the high number of published telephone numbers. There are several limitations to this method which include: exclusion of those that have no published land-line phone number, individuals

that reside in institutional settings, persons that are hearing impaired or individuals that have limited English proficiency to understand the questions.

Social Capital theorists have developed differing views on how to quantify SC; however, they generally agree on the components of SC as reviewed in the literature. Self-reported health will be co-related to these dimensions of SC. This research study was conducted to explore the relationships between social capital components and self-reported health status and selected determinant of health variables to foster a better understanding of how these components relate to each other. Understanding these interrelations in a regional Canadian context may provide information for future research and program development that could have a positive effect on building social capital as an asset and health as a resource.

CHAPTER THREE: METHODOLOGY

i) Overview

This quantitative descriptive research study used telephone interview surveys of a stratified random sample of participants over 20 years of age in the Niagara Region. The objective of this research study was to measure and describe social capital components, self-reported health status and the selected determinant of health variables in the Niagara Region from a sample population and to explore relationships between each of these variables and their respective components.

The hypothesis of this study was that

1) There are variances in both the experiences of social capital among different variables and that there are differences in the way that people report their health.

2) That those with higher levels of social capital report themselves to have higher levels of self-rated physical and mental health and that the levels of both social capital and of health may be influenced by a range of factors such as: i) age, ii) gender, iii) marital status, iv) income, v) education, vi) employment status and vii) where a participant resides (high or low density population area).

Appendix A outlines the framework for the hypothesis testing that was used to conduct this exploration. Analysis was conducted to explore variations in levels of SC and self-rated health status and relationships between SC and self-rated health based on variables related to the selected determinants of health.

ii) Sampling Method

The Onyx and Bullen's measurement tool initially used in Measuring Social Capital in Five Communities in New South Wales (2000) was used to study and quantify SC components. Additional sections were developed with questions related to self-rated health and quality of life. Specific demographic variables were collected about age, gender, marital status, income, education and location of residence. Self-reported health status questions were adapted from the Fort Erie Social Capital Report (Kilty, 2004; Sawatzky, P., Ratner. A., Johnson, J., Kopec, J. & Zumbo, B., 2010). The proposed Niagara Social Capital Survey, opening script and questions can be found in Appendix B and C

iii) Research Procedures

The Principal Investigator (PI) conducted the interviews along with six research assistants (RAs) who were trained in a two-hour session which standardized the delivery methods of the survey. The PI and RAs signed a confidentiality agreement prior to conducting this research (Appendix D). After successfully completing the training program, RAs conducted telephone survey interviews of randomly selected participants over four weeks in February, 2011. Obtaining data during a specific period of time minimized the amount of time to conduct the surveys and decreased the potential for historical and/or maturation bias which has the potential to decrease internal and external validity. Participants over the age of 20 years were asked to participate in the study. This study was limited to those over the age of 20 as Statistics Canada reports populations in five year age ranges. In order to calculate the sample size that was

required and to exclude those under the age of legal of consent, it was determined to restrict this survey to those over age 20.

Based on the Statistics Canada community profile data (2006), the 12 towns and cities that comprise the Niagara Region are: Fort Erie, Grimsby, Lincoln, Niagara Falls, Niagara-on-the-Lake, Pelham, Port Colborne, St. Catharines, Thorold, Wainfleet, Welland and West Lincoln. In the Region of Niagara there is a total population aged 20 years and over of 322,860. The confidence interval for a population mean of 95% was calculated and the minimum target and actual number of respondents surveyed is presented in Table 3.1.

Table 3.1: Calculation of Sample Size

City	Population > 20 (2006)	% of Total Population > 20 in Niagara	Minimum Sample Size (n=)	Actual Sample Obtained
Fort Erie	22825	7.07	27	29
Grimsby	17895	5.54	21	21
Lincoln	15850	4.91	19	22
Niagara Falls	59835	18.53	71	87
Niagara-on-the-Lake	11635	3.6	14	16
Pelham	12140	3.76	14	21
Port Colborne	14610	4.53	17	20
St. Catharines	102060	31.61	121	134
Thorold	13780	4.27	16	18
Wainfleet	4950	1.53	6	8
Welland	38685	11.98	46	52
West Lincoln	8595	2.66	10	11
Total	322860	100	384	439

This survey was initially planned for data collection over a three week period, and was extended to four weeks to achieve a better response rate and because there was RA availability to strengthen the baseline number of participations. Each interview took approximately 20 minutes to complete.

iv) Research Protocol

Systematic random sampling of phone numbers currently listed in the Bell telephone books for the Niagara Region was employed. The variance in the number and letter to begin with was selected at the beginning of each day for each geographically identified area in the Niagara Region. Telephone sampling assisted in controlling for selection bias. Ac accurately calculated sample size may partially control for non-response bias, however, in this study non-response was a limitation due to people being out of the home at the time of call, a low number of call-backs and those that declined participation. The RAs started at the selected letter and counted out each number. Consistent audits were conducted during the interview period to examine variable levels of participation or to address challenges in obtaining completed questionnaires. Targeted random sampling was used to collect data when under-represented areas were identified. Geographic location was ascertained by using Bell Canada data based on the respondent's phone number. This method was further supported by asking each respondent what area of the region they lived in.

Data was checked for accuracy using random draws, audits and number of responses from each of the identified areas across Niagara. The PI was present during each of the survey days and selected 10 completed surveys each day to examine collected data collection during the study period for discrepancies.

v) Ethics

This study was submitted for review to the Brock University Research Ethics Board and received approval for instigation in January 2011 (Appendix F). All participants were given information regarding the purpose of this research prior to verbally consenting to be engaged with the study. Respondents were informed of their right to withdraw consent or to stop participation at any time. This process was consistently followed. If the participant had chose to withdraw consent after completing the questionnaire, the data was to be shredded and all data relating to that participant was deleted from all files and analysis; however, no such requests were received. Consent was implied based on the respondent giving affirmative verbal consent to proceed with the survey after the purpose of the study was verbally reviewed and consent was outlined. All surveys were coded with sequential case numbers and no phone numbers were entered into SPSS. All original surveys were stored in a locked filing-cabinet in a locked research office in the Nursing Department at Brock University and will be shredded upon completion of this study. Only the principal investigator and the thesis advisor had access to data during the study period.

vi) Bias Reduction for Reliability and Validity

Research design validity and reliability refers to the likelihood that the test truly measures what it is intended to measure with accuracy (Creswell, 2009; Loiselle & Profetto-McGrath, 2011). The selected tool was developed over time and this project used the recommended 36 best questions as defined by Onyx and Bullen (2000).

Research controls were put into place in an effort to reduce influence on the dependent variables such as consistent training of RAs and conducting interviews in a

consistent setting. These protocols and procedures were established prior to conducting the research to ensure attention to detail during data collection (Creswell, 2009; Loiselle & Profetto-McGrath, 2011). These were attended to by strict adherence to the survey instrument and using interviewers that had been trained using the same trainer and information. By using closed, Likert scale questions, variation in the way that the questions were asked was not perceived to be a factor in response variation.

Researcher bias may be generally described as a bias that occurs when a researcher influences the outcomes of a study. This may occur in the selection of the respondents or through the manipulation of the responses. It may involve failing to maintain objectivity during the data collection or during the analysis phase (Creswell, 2009; Loiselle & Profetto-McGrath, 2011). To minimize researcher bias, this project was based on previous studies and used pre-established guidelines for analysis. A mechanism of stratified random sampling was used to minimize selection bias.

Response bias is defined as variability in participants' responses based on the changes that take place during the data collection phase (Creswell, 2009; Loiselle & Profetto-McGrath, 2011). Response bias can occur when a participant changes their answers based on the setting of the interview or differences in responses based on adjustments that the respondent makes in an attempt to satisfy the researcher (Brick, Kim, Nolin & Collins, 1996). To minimize response bias, interviews were conducted using telephone surveys limiting the participants' engagement with the researcher, maintaining anonymity and to minimizing researcher influence. In addition, the surveys took place in a familiar setting to the participant, ideally their home, which reduced the potential of

changes in the respondent's setting. This research may be vulnerable to measurement bias due to the use of self-reported information.

Selection bias occurs when the sample population is not representative of the general population (Loiselle & Profetto-McGrath, 2011; Creswell, 2009). Sampling bias also occurs when a non-representative sample of the population occurs. Stratified random sampling by geographic area and telephone number assisted in controlling for this. In addition, calling at different times of the weekday and including calls on weekends assisted in reaching those that work shift work or those that were not home during the day. This element was also controlled for by using population counts and statistical calculation for a 95 percent confidence interval.

As with most population studies, external factor influences were also considered. These are the changes in attitudes that may occur over time in any given population due to factors such as governmental shifts, changes in socio-cultural norms or natural changes that occur over time in all populations. This factor was controlled for by limiting the time of the survey to a 3 to 4 week period in an effort to minimize changes in public perceptions that may have occurred.

vii) Research Analysis

The data was analyzed using the Statistical Package for the Social Sciences software version 19.0 (SPSS) and descriptive statistics, factor analysis and co-relational testing was conducted. In addition, Cronbach's Alpha was calculated to examine scale reliability. Statistical analysis was conducted using Pearson Correlation, ANOVA and t-tests, and used Cronbach's Alpha to explores scale reliability

a. Missing Values

Missing values were calculated using list-wise analysis and found to be at a low level (4%) for combined scales. These values were replaced with mean values based on the series mean. This method of missing value replacement may increase Type 1 error rate, however, it was considered to be the most effective method of preserving all participant responses.

b. Pearson Correlation

The Pearson Correlation Coefficient was used to examine relationships between variables to examine potential linear effects between previously identified elements of SC, self-rated health and demographic variables. Correlation coefficients are used to calculate and examine relationships between two or more categorical variables. The conditions of Pearson Correlation Coefficient are that a) there must be at least three cases, b) there must be at least two variables for each measure using an ordinal or ratio scale and c) there must be variability on both *X* and *Y* (Corty, 2007). Values for a Pearson's *r* can fall between 0.00 (no correlation) and 1.00 (perfect correlation). A positive correlation is evidence of a general tendency that large values of X are associated with large values of Y and small values of X are associated with small values of Y. Negative correlations are evidence of a general tendency that large values of X are associated with small values of Y and small values of X are associated with large values of Y (Corty, 2007). The correlation coefficient is always between -1 and +1. The closer the correlation is to +/-1, the closer to a perfect linear relationship (Corty, 2007).

c. Comparison Testing

Variable comparison analysis was also conducted using ANOVA and t-tests when appropriate based on the general assumptions and parameters of each test in an effort to examine differences between the means of various groupings. Significant differences in comparisons were determined at alpha = 0.05 level.

The general assumptions for independent sample t-tests are that each category is independent from each other, as is the case with gender comparisons and low-density/high-density population contrasts. The second assumption is that the dependent variable is interval or ratio data, as is also the case with this study. All samples being used for comparison must be random. This parameter was met by using stratified random sampling among the population. For the analysis of this study, t-tests were used to measure differences where only two variables were present, such as in the cases of gender and low-density/high-density comparisons. Since it is the general assumption that these two categories are independent of each other, and are mutually exclusive, independent sample tests were conducted rather than dependent tests. Based on the general assumption of the t-test, that there be only two categories and that the dependant variable is an interval/ratio measure, the t-test was the appropriate test to be used for both gender and high-density/low-density comparisons (Corty, 2007 pg. 307).

ANOVA testing is used when more than two-samples are being compared that are comprised of interval/ratio data. This test is also used when comparing overall means of several groups. As with the t-tests, each group is considered to be independent of each other, which indicated that one-way ANOVAs were the appropriate tests to be conducted. The four basic assumptions for conducting an ANOVA are that the expected values of the

errors are zero, the variances of all errors are equal to each other, the errors are independent and that all values are normally distributed (Corty, 2007, pg. 364).

d. Combined Scale Analysis

Onyx and Bullen (2000) define the 36 best questions to determine SC. In this study each of these questions was scored individually. The average mean score of the questions combined represented the score in each category. Cronbach's alpha was calculated to determine the internal consistency or average correlation of items in each of the five areas. Table 3.2 lists the questions that were included in each of the scales to give overall measurements of the components related to social capital and health along with a Cronbach's Alpha score for scale reliability. According to Corty (2007), alphas between .65-.70 are minimally acceptable; between .70-.80, respectable; between .80-.90, very good; and very acceptable when above .90. Based on the above description, two scales can be considered respectable; two *very good* and one *poor* measures of each dimension. When conducting a full exploration of scale reliability, further analysis was done to determine if, by excluding any questions, the scale reliability of each component might be increased. Based on that examination and because of current changes to safety and cellular phone use, question 8: "If someone's car broke down outside of your home, would you invite them in to use your phone?"' was excluded from the *Trust and Safety* combined score to increase the Cronbach's Alpha (CA) score. All other original questions were included in analysis as it was not possible to increase the CA in any other component level of the scale by exclusion of specific questions. Analyses were conducted using the overall measure for all other areas of SC.

Table 3.2 Scale Development for Social Capital and Overall Health Questions

Trust and Safety Questions (Cronbach's Alpha = 0.81)	**Community Engagement / Participation Questions**: (Cronbach's Alpha = 0.76)	**Collective Action / Social Proactivity Questions:** (Cronbach's Alpha = 0.47)	**Reciprocity / Neighbourhood Connections Questions:** (Cronbach's Alpha = 0.72)
1. Does your local community feel like home?	15. Do you help out any groups in your community as a volunteer?	33. Have you ever picked up other people's trash / garbage in a public place?	9. Can you get help from friends when you need it?
2. Does the Niagara Region feel like home	16. Do you help out any groups in other parts of the Niagara Region (excluding the answer above)?	34. If you need information to make a life decision, do you know where to find that information?	10. If you were caring for a child and needed to go out for a while, would you ask a neighbour for help?
3. Do you feel safe walking down your street after dark	17. In the past 3 years, have you ever joined a community action in your community to deal with an emergency?	35. Do you go outside your community to other parts of the Niagara Region to visit your family?	11. Have you visited a neighbour in the past week?
4. Do you feel safe in your community after dark?	18. In the past 3 years, have you joined any community actions in other parts of the Niagara Region to deal with an emergency?	36. Do you go outside of the Niagara Region to visit your family?	12. When you go shopping in your (community/town/village) are you likely to run into friends and acquaintances?
5. Do you feel safe going to an event outside of your town but within the region after dark?	20. In the past 3 years, have you ever taken part in a community project or working group in the Niagara Region?	37. If you disagree with what everyone else agreed to, would you feel free to speak out?	13. When you go shopping in the Region are you likely to run into friends and acquaintances?
6. Does your community have a reputation for being a safe place	21. Have you ever been part of a project to organize a new service in the region (e.g., youth club, scout hall, child care, recreation)?	38. If you have a dispute with your neighbours, are you willing to seek mediation (or the help of someone outside of the conflict to help you reach an agreement)?	14. In the past 6 months, have you done a favour for a sick neighbour
7. Does the Niagara region have a reputation for being a safe place?	22. Over the last 6 months, have you attended any events in the region? (e.g.. Church bazaar, school concerts, craft show?		47. Please rate your sense of belonging to your community
46. In Niagara, do you agree that most people can be trusted?	29. Are you an active member of any organizations or clubs in Niagara (sport, craft, social, etc.)?		48. Please rate your sense of belonging to the Niagara Region

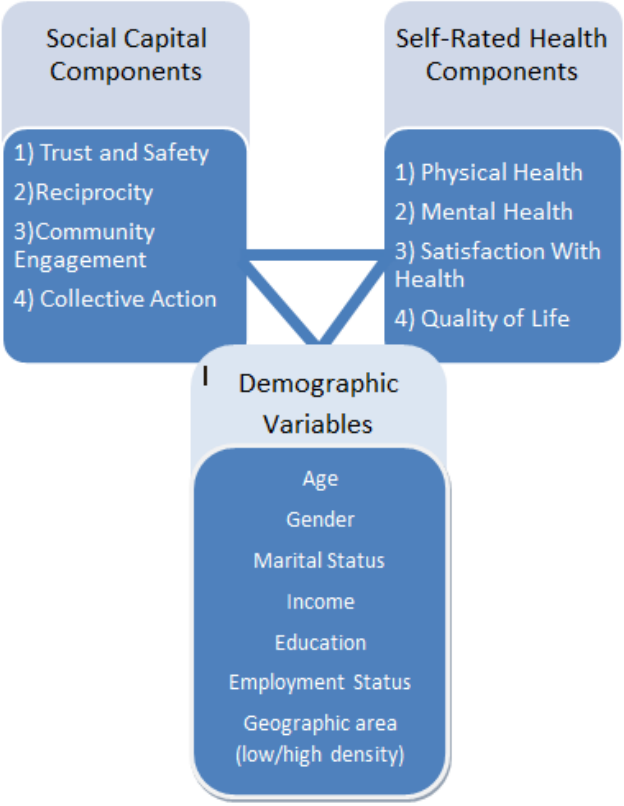
Scale Note: Question 8 "If someone's car broke down outside of your house, would you invite them in to use your phone" was suggested as a question related to trust and safety in the original survey. This question was removed from the scale calculation due to variances in the responses resulting from assumed changes in technology which have occurred since the first survey was conducted in New South Wales.

CHAPTER FOUR: ANALYSIS AND FINDINGS

i) Demographic Description of Sample

This quantitative study used the social capital components as described by Putnam (2000). The study measured and described the levels of SC and its components and levels of self-rated health for the Region of Niagara, Ontario. It was the hypothesis of this study that measurable statistically significant relationships exist between social capital, self-rated health and demographic variables. The objective of this study was to explore the differences in measures of social capital and self-rated health and which variables might impact these differences. Demographic questions were developed to determine if any population sub-groups had statistically significant differences in levels of SC and its components and their self-rated health. Demographic data included: i) age, ii) gender, iii) marital status, iv) income, v) education, vi) employment status, and vii) where a participant resided (high or low density population area). Figure 4.1 outlines the pathway that provided a framework for the co-relational analysis. It was used to systematically organize and report the results of this study to explore which factors might be linked to variances in reported levels.

Figure 4.1 Niagara Social Capital Survey Conceptual Analysis Pathway



This study collected and analyzed data to explore social capital and self-reported health in the Niagara Region. The Niagara Social Capital Survey (NSCS) was conducted February 1st to 28, 2011 with a stratified random sample of 439 persons from across the Niagara Region using a telephone survey. Comparative and descriptive statistics were used to comprehensively describe participants' levels of SC and self-rated health. This method was used to determine reported levels of social capital and health in the Niagara Region as well as to investigate differences in these variables according to demographics.

Data from respondents were separated into two main categories to explore how social capital might be reported as different for those living in high-density or low-density areas of residence in Niagara. A growing body of literature has explored the differences between social networks based on population density which suggest that

those living in lower density population areas report higher trust levels and higher levels of civic engagement (Grenier, Li, Kawachi, Hunt & Ahluwalia 2004; McCulloch, 2003,). Niagara is comprised of both urban city centers and rural areas made up of towns and villages. It was hypothesized that separating participants into categories of low-density and high-density population areas for analysis would explore this variance in social capital and self-reported health. The report, *From Urban Areas to Population Centres* (Statistics Canada, 2011) defines small population areas as those places where less than 30,000 persons reside and medium population areas as those areas with populations between 30,000 and 99,999 persons and large urban populations are those where 100,000 persons or more dwell (Statistics Canada, 2011). For this research study, it was decided to define the urban areas of Niagara Falls, Welland and St. Catharines as high density population areas. It was determined that, in an effort to make a reasonable comparison between high and low density population areas as determined by this study, that all areas with less than 35,000 residents be defined as low density population areas and be aggregated for analysis. This study was not intended to collect a representative sample from across each city, town and village but, rather, it is a study based on a representative sample from the Niagara Region as a whole. It was determined that high (+35,000) and low (-35,000) density population areas would be the two distinct categories used to explore if there were differences based on geographical groupings in Niagara. One limitation for conducting this method of analysis is there may be variances in population demographics among some of the lower or higher density population areas. In this study, St. Catharines, Welland and Niagara Falls were classified as high density because their base population exceeds 35,000 persons. Niagara on the Lake, Fort Erie, Port Colborne,

Wainfleet, Pelham, Lincoln, West Lincoln and Grimsby were classified as low-density because their populations were less than 35,000.

All questions related to social capital and health in this survey were posed using Likert Scale questions. All the SC questions used a 1 to 6 ranking with 1 being very low and 6 being very high with no middle or neutral number choice given. This was done to be able to classify responses as either having a positive or negative association with the question with no neutral ranking. There was an additional choice category included for a non-response for those that opted to not answer a specific question or if they had no opinion of the specific SC question. All health questions were posed using 1 to 5 Likert Scale ratings with 1 being very low and 5 being very high. All health questions were based on the questions and scale, as posed by the Canadian Community Health Survey (CCHS) and each question was asked in a similar manner as those rankings posed by the CCHS. This was done in an effort to compare this survey's responses to those as reported by CCHS.

The participants were asked several demographic questions and these responses and Table 1 show the comparison of respondents based on Statistics Canada demographic descriptors (Statistics Canada, 2007). Of the 96.8% that responded to the marital status question, 64 % were married, 19.1% were single, 9% were separated or divorced and 8.9% were widowed. Of the 96.8 % that indicated an ethnicity, 90.8 % reported that they were Caucasian, and 94.6 % of the sample indicated that English was the primary language spoken at home. The Statistics Canada Community Profile data (2006) reported that 70% of those living in Niagara are married, 20% single and 10% separated or divorced. Statistics Canada (2007) further reported that 94% of the population self-

identified themselves as Caucasian, with 80.4% indicating English as the primary household language.

The average length of time that the sample of respondents had lived in the Niagara Region was 29.38 years (min=0.5, max=84, SD=21.42) and 86.1 % of the participants reported that they lived in private homes, 10.6 % in apartments and 3.2 % in public housing or other accommodations. An average of 2.77 people lived in each home. According to Statistics Canada Community Profile data, in 2006, 76% of those living in Niagara lived in a private home while 24.3% were reported to live in rental accommodations with an average of 2.9 persons living in each dwelling.

Table 4.1 describes the study sample demographics and also compares it to the relevant community profile census data for the Niagara Region based on 2006 data (Statistics Canada, 2007).

Table 4.1: Demographic Description of Survey Participants

		Age					
		High Density Population		Low Density Population			
		Number of participants (N)	% of total (%)	Number of Participants (N)	% of total (%)	Total %	% of pop. from 2006 Community Census Profile
20-29		61	14.6%	13	3.1%	17.7%	15%
30-39		33	7.9%	3	0.7%	8.6%	15.7%
40-49		43	10.3%	20	4.8%	15.1%	20.7%
50-59		68	16.2%	18	4.3%	20.5%	18.6%
60-69		62	14.8%	20	4.8%	19.6%	13.2%
70-79		45	10.7%	6	1.4%	12.1%	10.2%
>80		21	5.0%	6	1.4%	6.4%	6.6%
Total	**N**	333	79.5%	86	20.5%		
			Gender				
Male		102	23.8%	29	6.8%	30.6%	47.5%
Female		240	55.9%	58	13.5%	69.4%	52.5%
Total	**N**	342	79.7%	87	20.3%		
			Marital Status				
Married/Common Law		202	47.5%	60	14.1%	61.6%	51.9%
Divorced/Separated/Widowed		66	15.5%	10	2.4%	17.9%	19.4%
Single/Other		70	16.5%	17	4.0%	20.5%	28.8%
Total	**N**	338	79.5%	87	20.5%		
			Education Level				
High School or Less		130	30.7%	19	4.5%	35.2%	54%
College / Trade School		117	27.7%	32	7.6%	35.2%	30%
University BA, Masters or Doctorate		91	21.5%		8.0%	29.6%	16%
Total	**N**	338	79.9%	85	20.1%		

The mean age of all survey participants was 51.78 years (Median=53.5; SD=18.45). The 2006 Census indicated that the mean age of the population over 20 years of age was 50.23 years of age (Statistics Canada, 2007) which suggests that this survey is similar to the overall population profile of the Niagara Region although not all age sub-

groups were comparable. The survey respondents were 30.5 % male and 69.5 % female which differs from the census data that reported that 47.5 % of the population over the age of 20 years is male and 52.5% of the population is female.

When asked about their highest level of completed education, 64.8% of all respondents indicated that they had completed a college diploma, or higher, which is higher than the 2006 Statistics Canada profile which reported a regional average of 46.1% with a completed post-secondary education. Of those that responded to the education question, 35.2% (n=149) had completed high school or less; 35.2% (n=149) had completed college or vocation training; and 29.6% (n=125) had completed university at a bachelors, masters or doctoral degree. There was a statistically significantly higher number of people in this survey that reported living in a low-density area that also indicated that they had achieved a higher level of education ($t(421) = -4.27$, $p=0.01$); however there were no differences in educational level attainment based on gender.

Of the 63% that reported average household income, the mean income was reported to be 55-64 thousand dollars per year, which is slightly higher than the median income of all private households in Niagara reported in 2006 as $54,495 (Statistics Canada, 2006 Census of Population). Those living in low-density areas reported statistically higher earnings ($t(274) = -3.46$, $p=0.001$) which is consistent with the 2006 Statistics Canada Community Profiles (Statistics Canada, 2006 Census of Population). According to Statistics Canada, higher wage earners were reported to live in Wainfleet, Lincoln, West Lincoln, Pelham and Grimsby than those living in Port Colborne, Fort Erie and Niagara-on-the-Lake. Data in the Niagara SC Survey was aggregated based on

population density to reflect differences between high and low density population groups as defined in this study.

Those living in low-density areas were more likely to report being employed full-time ($t(421) = -3.03$, $p=0.003$) with 25.3 % of all respondents reporting full-time employment, 31.4% were retired, 13.9% were employed part-time and 9.6 % indicated that they were currently unemployed. Of those that were employed full-time or part-time, 91.9% worked in the Niagara Region with 61.2% of all respondents working in the same community that they lived in. The sample in this survey matched the community profile data in mean age and mean income levels; however, there were more female participants in this sample than that of the general population and a higher percentage of respondents with post-secondary education completed than that of the general population.

ii) Social Capital Description:

All questions related to Social Capital were calculated using Likert Scale questions which participants ranked from 1 to 6 (Appendix C). The New South Wales (NSW) scale was used to calculate overall scores and mean values of each component level of SC. Table 4.2 outlines the mean calculations for each of the component areas of SC. It was found that reported levels of *community engagement* were low, compared to all other components of SC across Niagara. All elements had comparable levels of deviations from the mean. The components of *trust and safety*, *collective action* and *reciprocity* all exhibited positive skewness while *community engagement* was negatively skewed.

Table 4.2 Social Capital Components Means Comparison

	Trust and Safety	Community Engagement	Collective Action	Reciprocity
Mean	4.75 (.99)	1.93 (.8)	4.50 (.88)	4.16 (.98)
Skewness	-1.1	1.1	-.25	-.23
Kurtosis	1.25	1.43	-.52	-.69

Note: Standard Deviation levels are reported beside mean values in parenthesis

The Pearson Product Moment Correlation Coefficient (Pearson *r*) was used to calculate the relationships between each of the sub-scales for *trust and safety*, *community engagement*, *collective action* and *reciprocity*. The Niagara SC Survey found values ranging between r =.407 (*trust and safety* and *reciprocity*) and .152 (*trust and safety* and *community engagement*)

Table 4.3 Pearson Correlations between Mean Values of Components of Social Capital

	Variable			
Variable	Trust & Safety	Community Engagement	Collective Action	Reciprocity
1. Trust & Safety	…			
2. Community Engagement	0.152*	…		
3. Collective Action	0.157*	0.225*	…	
4. Reciprocity	0.407*	0.288*	0.336*	---

*p< 0.01 (2-tailed)

From this analysis it may be postulated that there is an underlying impact of *reciprocity* on all other components of *social capital*, as it was found to have the largest positive effect on all other components. It could be suggested that, although some areas have weaker connections, all components of *social capital* have a positive linear association with each other. The most strongly associated element of SC found in this study is that of *reciprocity*, as it has a stronger association with all other elements of SC. Since there is a positive linear association with all other elements, *reciprocity* could be a foundational component of increasing overall SC. It may be further postulated that by increasing *reciprocity*, this may have a positive increase in components of *trust and safety*, *community engagement* and *collective action* levels associated with SC. Conversely, by increasing levels of *community engagement*, *collective action* and perceptions of *trust and safety*, levels of *reciprocity* may also be positively affected.

a. Social Capital Components by Age

Figure 4.2 indicates that there is a rise in SC scores in all component levels as the ages of respondents increased in this sample; however, mean values decreased after age 70 and there is in increase in *trust and safety* after age 80; however, and a notable decrease in levels of *collective action* after that age.

Figure 4.2 Components levels of SC by age

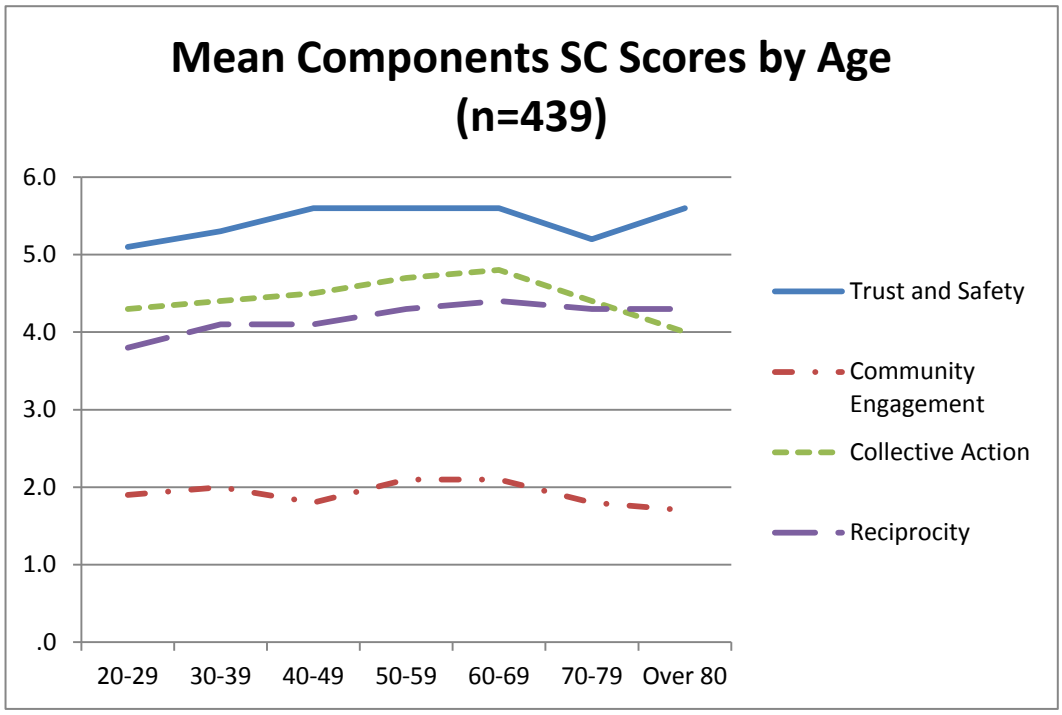


Figure 4.2 suggests that the younger demographic in this survey reported lower levels of all components of SC than their older counterparts. It would appear from this analysis that those between the ages of 40 to 69 have higher levels of *trust* and *safety*, *community engagement*, *collective action* and of *reciprocity*, with the exception of those in the 40-49 age range which reported lower levels of *community engagement*.

There were statistically significant differences between levels of *trust and safety*, *collective action*, *reciprocity* when explored by the age group variable. The difference found in the *trust and safety* category by age was determined to be statistically significant (m=5.1, SD=1.1) F(20, 398) = 3.5, p=0.002, with those in the 20-29 age range having the lowest mean value (m=5.1, SD=1.09) and those in the 50-59 age range having the highest mean score of *trust and safety* (m=5.62, SD=.93).

When *collective action* was explored by age, there was also an indication of statistically significant differences within age groups (m=4.5, SD=.89) F(20, 383) = 3.6,

p<.001. Those over the age of 80 had the lowest mean scores (m=4.0, SD=.85) and those in the 60-69 age range had the highest mean scores of *collective action* (m=4.8, SD=.81).

Mean scores of *reciprocity* were also found to have statistically significant differences between age groups (m=4.17, SD=.98) F(20, 383) = 3.6, p=.002, with those in the 20-29 age category having the lowest levels of *reciprocity* (m=3.8, SD=.97) and those in the 60-69 age range having the highest mean scores (m=4.4, SD=.99).

From this analysis, it would suggest that those in the younger age categories are less inclined to participate in activities related to SC and community action and engagement and that as the ages of the participants increased in the sample they were more likely to engage in activities related to SC with the exception of the those aged 70 and over which supports the hypothesis that SC is impacted by age.

b. Social Capital By Gender

The findings in this study suggest that women are more likely to report higher levels of *community engagement* and higher levels of *collective action* than those levels for males, while males have higher overall levels of *reciprocity*. The only statistically significant variation was in mean values by gender related responses were related to the SC component of *trust and safety*. Males reported a statistically significantly higher overall rating than women. This finding was similar to results found by the NSW study (Onyx & Bullen, 2000).

Table 4.4 Components of Social Capital Means Comparison for Males and Females

	Gender			
	Males	Females	*t*	*df*
Trust & Safety	5.593 (.859)	5.343 (1.05)	**2.401***	427
Community Engagement	1.9094 (.757)	1.909 (.827)	-.586	427
Collective Action	4.47 (.886)	4.52 (.885)	-.451	427
Reciprocity	4.23 (.946)	4.14 (.994)	.917	427

Note: Standard Deviation levels are reported below mean values
* *p =.01*

c. Social Capital by Marital Status.

Although there were variances in levels of *trust and safety* and *community engagement*, statistically significant differences were not found in the elements related to marital status. Statistically significant differences with respect to marital status groups were found in reported levels of *collective action* and *reciprocity*. Levels of *collective action* were found to be statistically significantly different (m=4.5, SD=.89) F(16, 318) = 4.24, p=.001. Those that were single had the lowest levels (m=4.3, SD=.89) and those that reported as married or common-law had the highest mean score calculation (m=4.6, SD=.91) of *collective action*.

Statistically significant differences were also found between marital status groups (m=4.2, SD=.98) F(7.8, 400) = 4.12, p=.02. As with *collective action*, those that were single had the lowest mean scores (m=3.9, SD=.98) and those that reported as married or

common-law had the highest mean values on the *reciprocity* component of SC (m=4.2, SD=.99).

d. Social Capital by Income

The sole areas of statistically significant difference in levels of income related to SC was among reported levels of *collective action* (m=4.5, SD=.87) F(14.9, 243.2) =2.9, p=0.006. Those in the lowest income category (25 thousand dollars or less) were found to have the lowest calculated mean value of *collective action* (m=4.2, SD=.79) whereas those with the highest levels of activity related to *collective action* were those that reported household incomes of over 85 thousand dollars per year (m=4.7, SD=.87).

e. Social Capital by Level of Education

Participants' responses to highest level of completed education ranged from less than high-school to Doctoral studies. Of those that responded to this question (n=423), there were neither statistically significant differences among reported levels of *trust and safety* nor differences related to *reciprocity*.

There were statistically significant differences among education levels relating to *community engagement* and *collective action*. *Community engagement* was calculated to have statistically significant differences (m=1.9, SD=.81) F(7.5, 269) = 5.8, p=.003. Those reporting having completed high school or less having the lowest mean score (m=1.8, SD=.69) and those having completed a baccalaureate degree or above had the highest calculated mean score of responses related to *community engagement* (m=2.14, SD=.8). Levels of *collective action* were also calculated to be statistically significantly different among the groupings in the education variable (m=4.5, SD=.89) F(106, 321) = 6.9, p=.001. Similar to the results calculated with *community engagement*, those with the

lowest levels of education also had the lowest mean scores of *collective action* (m=4.3, SD=.94). However, those with college or trade school completed education reported the highest in responses related to the analysis of *collective action* (m=4.62, SD=.8) with only slight difference in the calculated mean score of those with a university education or above (m=4.61, SD=.87).

f. Social Capital by Employment Status

Participants were asked to classify their current employment status and responses were categorized as: i) employed full-time, ii) employed part-time iii) students iv) unemployed v) retired vi) 'other'. Of those that responded to this question and indicated themselves in the 'other' category (n=36) the largest majority of these respondents were self-employed, semi-retired or responded that they worked from home. There were no statistically significant differences calculated in levels of *community engagement* based on employments status. However, there were statistically significant differences calculated in levels of *trust and safety* (m=5.4, SD=1.0) $F(20, 404) = 4.1$, $p=.001$, *collective action* (m=4.5, SD=.89) $F(18, 313) = 4.9$, $p<.001$, and *reciprocity* (m=4.17, SD=.98) $F(23, 382) = 5.12$, $p<.001$.

Those that reported the lowest levels of *trust and safety* were those that were unemployed (m=5.2, SD=1.1) and those with the highest levels were those that classified their employment status as 'other' (m=5.4, SD=.93). Those with the lowest levels of responses related to *collective action* questions were either students (m=4.1, SD=.89) or those that were unemployed (m=4.1, SD=.81). Those that were calculated to have the highest mean scores were also among those that indicated their employment status to be 'other' (m=4.9, SD=.8). Mean calculated scores of *reciprocity* were among those

reporting themselves as students (m=3.5, SD=.98) and those with the highest mean scores were those reporting themselves as retired (m=4.2, SD=.85).

g. Social Capital by High and Low Density Population Area

Those living in low-density areas reported higher overall levels of all components of SC. The analysis indicates that all components of SC had higher mean values in low-density populations than those living in high-density areas although none of these comparisons were found to be statistically significantly different. Perceptions of *trust and safety*, however, had statistically significantly differences as higher mean levels were calculated in low-density settings than for those living in high-density areas. These values further support the research previously conducted which suggest that responses related to SC are higher among low-density populations than of those that live in higher density population areas (Grenier et. al. 2004; McCulloch, 2003).

Table 4.5 Social Capital Means Comparison for High-density and Low-density Residents

	High-density and Low-density			
	High-density	Low-density	*t*	*df*
Trust &Safety	5.36 (..99)	5.68 (.964)	**-2.77***	437
Community Engagement	1.91 (.784)	2.03 (.87)	-1.19	437
Collective Action	4.47 (.859)	4.60 (.943)	-1.21	437
Reciprocity	4.15 (.992)	4.21 (.941)	-.529	437

* p=.05
Note: Standard Deviation levels are reported below mean values

h. Summary of Social Capital Analysis

As the analysis indicates, there are variances in the measures of responses related to SC based on demographic variables. This analysis suggests that there is not a linear relationship between any of the SC categories. However, based on analysis of demographic sub-groups, different groups experience SC in different ways. This finding is supportive of the hypothesis which proposed that diversity existed within the range of variables set out by this research study. There are a variety of statistically significant differences that were found among sub-group variables related to levels of *collective action.* When exploring these sub-groups, employment status and age groups were most often demonstrated statistically significant differences among the components of SC. Education was the sole sub-group component that demonstrated statistically significant differences in levels of *community engagement* (see Table 4.8).

iii) Self-Rated Health Status Analysis

This study elicited responses from participants and used questions that were adopted from the Canadian Community Health Survey, 2008 (Statistics Canada, 2007). Self-rated health is considered to be a predictor of real health (Manderbacka, Kåreholt, Martikainen, & Lundberg, 2003) and a reliable indicator of population health and has been used by the Canadian Community Health Survey since 2000 and was used prior to that in the National Population Health Survey which commenced in 1994 (Statistics Canada, 2012).

In this particular study, participants were asked to rate their current physical health, their current mental health, their current satisfaction with their health and their overall quality of life using a five-point Likert Scale with 1 being *very poor* and 5 being *excellent* (Appendix C). Table 4.6 summarizes overall mean values of responses related to

calculated mean scores. This further demonstrates that overall, few participants rated their mental health and quality of life as *poor* and that a higher percentage of participants had lower ratings of physical health and satisfaction with health.

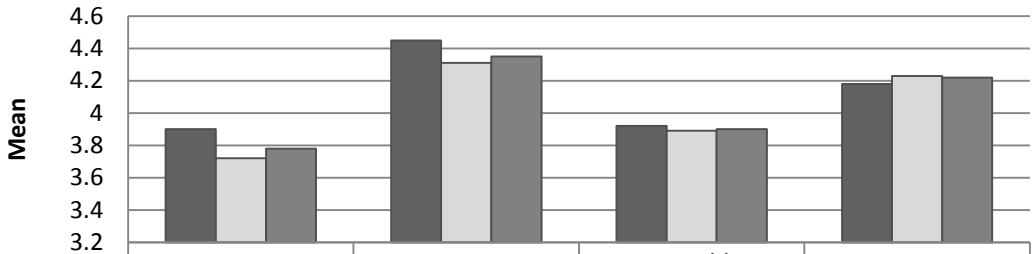
Table 4.6 Self-Rated Health Status Components Means Comparison

	Current Physical Health	Current Mental Health	Satisfaction with Health	Overall Quality of Life
Mean	3.78 (1.05)	4.35 (.84)	3.90 (1.1)	4.21 (.88)

Note: Standard Deviation levels are reported beside mean values in parenthesis

As with the Canadian Community Health Survey [CCHS] (Statistics Canada, 2007), there were a low percentage of respondents that ranked their physical health status *poor* or *very poor*. Among this surveyed population, 12.3% reported low levels of physical health whereas the CCHS (Statistics Canada, 2007) reported 11.7% of those living in the Regional Municipality of Niagara reporting their health as *very poor* or *poor*. Further, of the participants that were involved in this survey, 68.1% reported their health as *very good* or *excellent* which is above the reported Canadian Community Health Survey (Statistics Canada, 2007) results which reported that 59.1% of Niagara residents reported health as *very good* or *excellent*. Figure 4.3 summarizes the calculated mean scores of responses related to health status by gender and illustrates that males generally self-rated their physical health, mental health and satisfaction with health higher than females; however, females were more likely to rate to their overall quality of life higher.

Figure 4.3 Self Rated Health Status Mean Scores by Gender



	How would you rate your physical health in general now?	How would you rate your mental health in general now?	How would you rate your satisfaction with your overall health?	How would you rate your overall quality of life?
Male	3.9	4.45	3.92	4.18
Female	3.72	4.31	3.89	4.23
Total	3.78	4.35	3.9	4.22

The Niagara Social Capital Survey findings suggest that there are no evident differences in the self-reported health status rankings between those that live in low-density or high-density settings and there were no statistical differences between how genders reported their current or past self-rated health status. Additionally, there were no statistically significant findings regarding current self-rated health versus how respondents ranked their health one year ago.

a. Self Rated Health by Age

ANOVA calculations were conducted to explore differences in self-rated physical and mental health, satisfaction with health and overall quality of life. Although there were variations in responses, there were no statistically significant differences among different age groups with respect to how they reported their health.

b. Self Rated Health by Gender

Gender responses were explored to examine any differences in self-rated health and, as with age groups, there were no statistically significant differences calculated between gender groups and how they reported their physical health, their mental health, their satisfaction with health, nor their quality of life.

Table 4.7 Mean Values of Self-Rated Health Status by Gender

	Gender			
	Male	Female	*t*	*df*
Self-rating of current physical health	3.9 (1.0)	3.72 (1.7)	1.6	427
Self-rating of current mental health	4.45 (.75)	4.31 (0.9)	1.6	427
Satisfaction with health	3.92 (1.1)	3.89 (1.1)	.334	427
Overall Quality of Life	4.18 (0.9)	4.23 (0.9)	-.64	427

Note: Standard Deviation levels are reported below mean values

c. Self Rated Health by Marital Status

When self-rated health was controlled for by marital status, there were statistically significant differences found among participants rating of their current physical health $F(16.7, 461.2) = 7.6$, $p=.001$, their satisfaction with their health $F(8.9, 486.5) = 3.9$, $p=.02$, and their overall quality of life $F(7.4, 330.6) = 4.8$, $p=.009$, but no statistically significant findings of current mental health status.

Of those that reported their marital status and current physical health (n=424), those with the lowest self-rated physical health were those that were single, divorced or widowed (m=3.4, SD=1.1) and those with the highest self-rated physical health were those that were married or in a common-law relationship (m=3.9, SD=1.0). Those with the lowest calculated level of satisfaction with health were those that reported themselves

as single (m=3.7, SD=1.1) and those with the highest levels were also those that were married or in a common-law relationship (m=4.0, SD=1.1). As with health satisfaction, those reporting the lowest levels of quality of life were singles (m=4.03, SD=.89) and those with the highest satisfaction with quality of life were those that were married (m=4.3, SD=.81).

d. Self Rated Health by Income

As with age categories, ANOVA analysis was conducted to explore differences between participants' rating of health, satisfaction of health and quality of life. Based on analysis, there were no statistically significant differences between reported household income and self-rated health status questions.

e. Self Rated Health by Education

Similarly to both age and income, there were no statistically significant differences found between differing levels of education and how participants responded to self-rated health status questions. The one area of interest in this component of analysis was that those in the category of education level completed as high-school or less (n=149), those who had completed college or trade-school (n=149) and those with a baccalaureate degree or higher (n=125) were all found to have the same Quality of Life mean score (m=4.21).

f. Self Rated Health by Employment Status

Of those that reported their current employment status (n=417), there was a statistically significant difference found in how participants rated their physical health (m=3.78, SD=1.04) $F(16, 445.5) = 3.0$, $p=0.012$ and their satisfaction with their health

F(17, 446) = 3.04, p=.01, but no statistically significant difference with respect to their rating of mental health nor of their quality of life satisfaction.

Those that rated their current physical health as lowest were those that were unemployed (m=3.45, SD=1.2) and those with the highest mean scores of current health were those that were employed full-time (m=4.0, SD=.84) or part-time (m=4.0, SD=.85). Participants' rating of satisfaction with current health was lowest among those that were unemployed (m=3.9, SD=.96) and highest among retired persons (m=4.32, SD=.85) and part-time workers (m=4.30, SD=.82).

These findings suggest that unemployment may have a contributing negative influence on self-rated physical health and satisfaction with health and that employment or secure income may contribute to a better sense of self-rated health and satisfaction with current health.

g. Self Rated Health by High and Low Density Population Area

Self-rated health measures were examined using mean values of those indicating that they lived in either high or low density population areas. Those living in low-density population areas have consistently higher mean scores of physical and mental health, satisfaction with health and quality of life. Results were not found to be statistically significant different.

h. Summary of Self-Rated Health Findings

There were a lower number of statistically significant differences in variables when exploring self-rated health status than existed in the comparison of SC. There were however, consistent findings in relation to lower overall rates of health among those that were unemployed and those that reported lower household income levels while those that

were married and employed or retired had higher mean values overall. This analysis also supports the previously stated hypotheses that health status was impacted by a range of variables in this sample and that measureable differences exist in this sample.

iv) Relationships between Social Capital Components and Self-Rated Health

Overall self-rated health was compared to the various components of SC to explore any connections that might exist between how respondents rated their overall health and how they reported their measures of *trust and safety, community engagement, collective action and reciprocity* and to explore any relationships that might exist between these components.

There were positive linear associations when comparing specific components of SC and overall self-rated health status among those that were surveyed with the strongest positive association being among those with mean scores when comparing levels of *collective action* and self-rated health (r=.25).

a) Trust and Safety and Self-Rated Health

When a comprehensive exploration of *trust and safety* and self-rated health was analyzed, there was low linearity between mean values of raking of physical health (r=.14), current mental health (r=.15), satisfaction with health (r=.1) and overall quality of life (r=.2). When comparing *trust* and *safety* mean values to self-rated health, there were many statistically significant differences found in the data, F(22, 400) = 1.947, p=.007. Males (m=5.59, SD=.86) reported higher levels of *trust and safety* and health than females (m=5.35, SD=1.04) F(21, 407) = 1.607, p=0.03. Education also impacted mean values of *trust* and *safety* with those that had completed college or trade school (m=5.51, SD=1.06) had a higher ranking of *trust and safety* than those with high school

or less education being completed (m=5.29, SD=1.02) F(21, 401) = 1.63, p=.04. Those earning over 75 thousand dollars per year (m=5.65, SD=.629) were more likely to report a higher sense of *trust and safety* and overall health than those earning 25-34 thousand (m=5.2, SD=1.08) F(18, 257) = 1.648, p=0.049. Those in the 50-59 age group (m=5.63, SD=.925) also reported a stronger sense of *trust*, *safety* and health than those in the youngest age category (m=5.04, SD=1.29) F(21, 398) = 1.690, p=0.03. In terms of population density, low-density residents (m=5.68, SD=.96) reported a stronger sense of trust, safety and health than those living in more densely populated areas (m=5.36, SD=.99) F(21, 417) = 1.69, p=0.02. In addition, married participants (m=5.46, SD=.99) had the strongest mean values of *trust*, *safety* and health than those that were unattached (m=5.32, SD=1) F(21, 403) = 1.631, p=0.04.

Statistically significant differences were also found in mean score analysis of levels of overall self-rated health and *reciprocity*, F(22, 400) = 2.730, p< .001. Those that were 50-59 years of age (m=4.29, SD=.976) had the highest mean scores of *reciprocity* and self-rated health, while those that were less than 20 years old had the lowest mean levels (m=3.74, SD=.854) F(20, 398) = 2.72, p<.001. As with *trust and safety*, those living in low-density settings also had higher mean scores (m=4.21, SD=1) than those living in high-density centres (m=4.15, SD=.629) F(21, 417) = 2.72 p<.001. Gender also played a role in differing levels between gender groups with males (m=4.23, SD=.76) scoring slightly higher than females (m=4.14, SD=.924), F(21, 407) = 2.696, p<.001. Those that were married (m=4.24, SD=.726) had higher mean scores than those who were single (m=3.9, SD=1.1) F(21, 403) = 2.63, p<.001. Participants in the highest income classification also indicated higher mean scores of *reciprocity* and overall health

(m=4.83, SD=.82) than those in lower income brackets, specifically those in the 45-54 thousand income range (m=4.00, SD=1) F(18, 257) = 1.755, p=.031. Those with college or trade school education were more likely to report a stronger level of *reciprocity* and health (m=4.23, SD=.781) than those that had completed a baccalaureate degree or higher (m=4.1, SD=.98) F(21, 401) = 2.596, p<.001.

Statistically significant differences were also found in the correlation of *collective action* and overall self-rated health, F(22, 400) = 2.22, p=.001. The largest associations of *collective action* and health status were among those living in low-density areas (m=2.02, SD=.87) versus those living in high-density areas (m=1.91, SD=.848), F(18, 257) = 1.264, p=0.04. Although, there is a statistically significant difference between overall mean scores, there were no statistically significant differences found between different income levels, between genders, ages, varying levels of education or marital status situations.

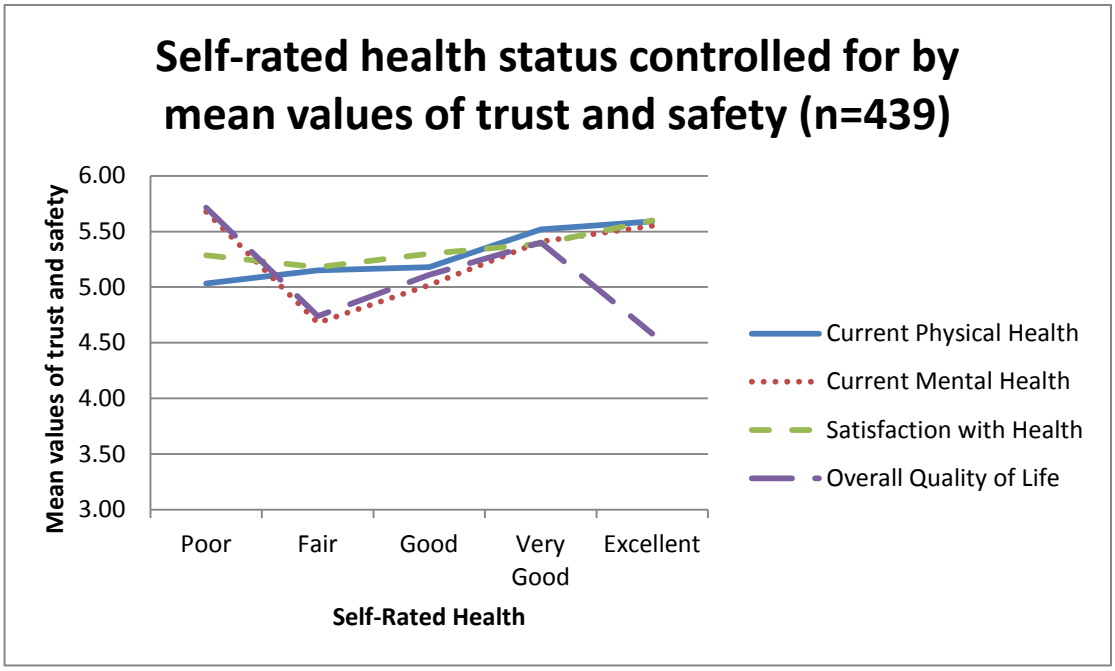
There were several statistically significant differences in a range of sub-groups when mean scores of *community engagement* and overall health rankings were compared. Those living in low-density settings (m=4.6, SD=353) had higher mean scores than those living in high-density areas (m=4.47; SD=.442) F(21, 417) = 2.246, p=.001. Females (m=4.52), overall, reported higher mean scores than those of males (m=4.47, SD=1.44) F(21, 407) = 2.220, p=0.002. In addition, those that were college/trade school educated (m=4.63, SD=.82) were more likely to have stronger mean values of *community engagement* and health than those with having completed high school or less (m=4.3, SD=.265), F(21, 401) = 2.226, p=0.02. Income also played a role in levels of *community engagement* and health with those earning over 75 thousand (m=5.17; SD=.805) having a

greater mean score than those earning less than 25 thousand dollars per year (m=4.19, SD=.961) F(18, 257) = 1.785, p=0.027. Married respondents (m=4.62, SD=.745) also had a higher mean score than those of singles (m=4.28, SD=.44) F(21, 403) = 2.219, p=0.002.

Analysis was conducted to explore relationships between mean values of the components of SC and individual questions related to self-rated health status to explore if there were specific elements that might be more strongly related among different groups. Mean values of self-rated health questions were compared to mean values of *trust and safety*, *reciprocity*, *community engagement* and *collective action* to explore connections between these variables. Further, these mean scores were explored using the predefined variables to explore any variables which may have a larger impact on overall mean scores.

There were statistically significant differences among most areas when comparing *trust and safety* to self-rated health status components; current physical health, F(4, 434) = 4.080, p=.003; current mental health, F(4, 434) = 4.625, p=.001; and overall quality of life, F(4, 434) = 4.761, p=.001. Figure 4.4 illustrates the increases in mean values of *trust and safety* as self-rated health mean scores increase. This table also illustrates that mean values of those that ranked their health as *poor* had the highest mean values of current mental health status (m=5.67, SD=1.3) and overall quality of life (m=5.7, SD=.96); however, there was no statistically significant differences found in mean scores of satisfaction of health based on mean values of *trust and safety*.

Figure 4.4 Self-rated health status controlled for by mean values of trust and safety



Mean values of self-rated health and mean values of *trust and safety* were explored by the pre-defined variables to explore which sub-population groups might have higher or lower combined mean values and if any of these values might be co-related.

Among age groups, there was a slight difference in mean values. Those in the 50-59 age group had the highest combined mean scores (m=5.6, SD=.93) while those in the 20-29 age range had the lowest mean scores (m=5.04, SD=1.0). Among gender groups, mean scores of self-rated physical health and *trust and safety* were found in the male population (m=5.59, SD=.86) who reported a higher mean score than that of women (m=5.34, SD=1.05). When combined mean scores were explored by marital status, those that were married had higher mean scores (m=5.5, SD=.99) than those that reported themselves to be single (m=5.3, SD=1.0). When income levels were explored, those

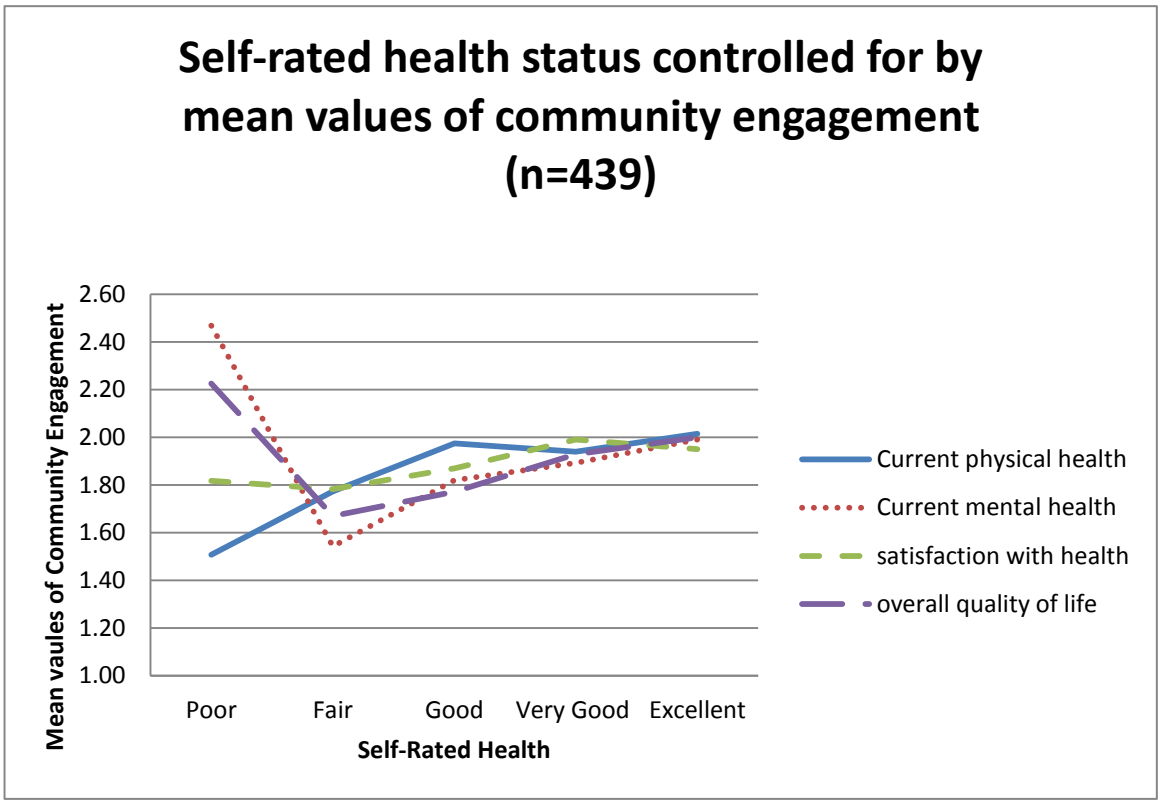
reporting household income in excess of 75 thousand dollars per year had the highest calculated mean values (m=5.65, SD=.75) than those in the lowest income classifications (m=5.2, SD=1.1). In reference to education levels, those with college or trade school education completed had the highest mean levels of *trust and safety* and health (m=5.5, SD=.93) than those with high-school completed or less (m=5.3, SD=1.0). Among employment status groups, those that reported their employment status as 'other' (semi-retired, self-employed) had the highest combined mean values (m=5.8, SD=.93) while students had the lowest mean scores (m=4.8) of self-rated physical health and *trust and safety*. There was also a difference between ratings of *trust and safety* and physical health between those that lived in low-density settings (m=5.68, SD=.96) and those that resided in high-density areas (m=5.36, SD=.99).

b) Community engagement and Self-Rated Health Status

Although there were minor fluctuations among health ratings and levels of *community engagement*, there were no indications of any statistically significant differences between how people rated their health and how they responded to questions relating to SC. When linearity was exploration between *community engagement* mean scores and questions related to self-rated health was analyzed, there was low linearity between mean values of raking of physical health (r=.1), current mental health (r=.07), satisfaction with health (r=.06) and overall quality of life (r=.08).When explored fully, *community engagement* was not statistically significant different based on self-rating of current physical health F(4, 414) = 2.127, p=0.75, self-rating of current mental health F(4, 414) = 1.4, p=.234, satisfaction with health F(4, 414) = 1.36, p=.247 nor responses to gauge their self-rating of quality of life F(4, 414) = 2.14, p=.0.75. These findings may

suggest that there may be little connection between physical or mental health, satisfaction with health and overall quality of life and how frequently a person engages in activities related to their communities.

Figure 4.5 Self-rated health status controlled for by mean values of community engagement

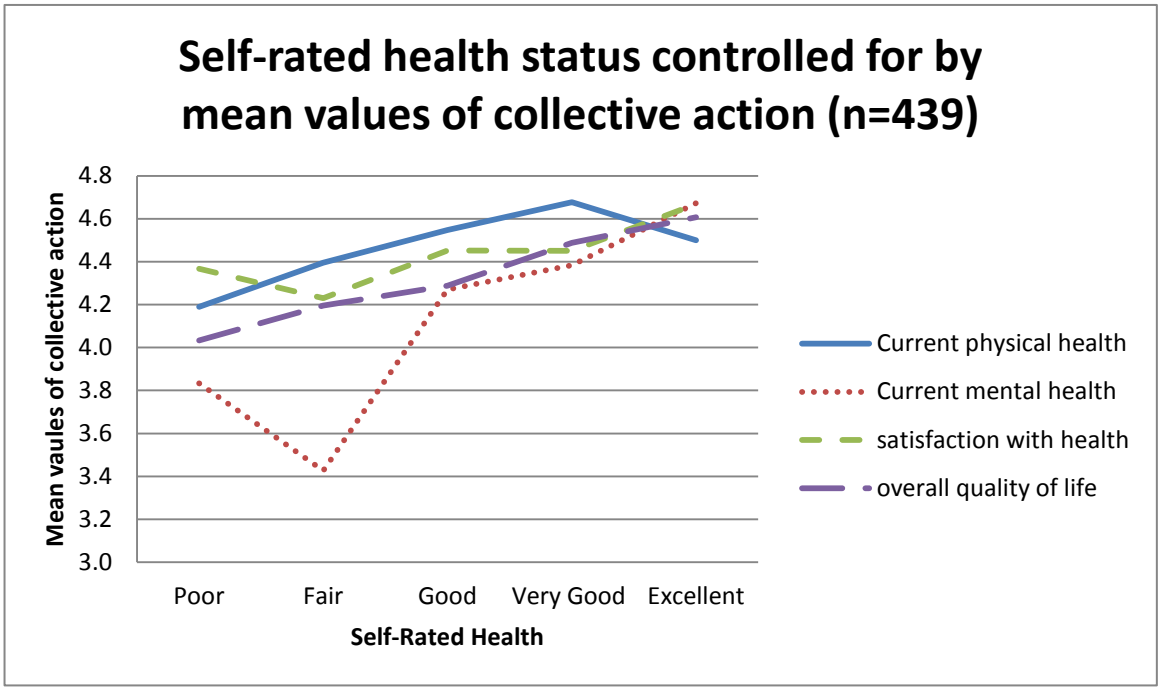


c) Collective Action and Self-Rated Health Status

Collective action mean values were compared to the mean values of self-rated health scores and calculated that there were three areas where statistically significant differences were indicated. When linearity was exploration between *collective action* mean scores and questions related to self-rated health was analyzed, there was low linearity between mean values of raking of physical health (r=.19), current mental health (r=..25), satisfaction with health (r=.13) and overall quality of life (r=.15).When mean values were

compared for these categories, there was a statistically significant difference found in mean scores of *collective action* and i) physical health F(4, 434) = 4.215, p=.002, ii) mental health, F(4, 434) = 8.297, p<.001 and iii) satisfaction with their health, F(4, 434) = 2.576, p=.037. There was no statistically significant difference in the mean sores of *collective action* and quality of life ranking F(4, 414) = 2.01, p=0.09. There was a positive linear association between self-rated physical health when compared to levels of *collective action* (r=.29).

Figure 4.6 Self-rated health status controlled for by mean values of collective action



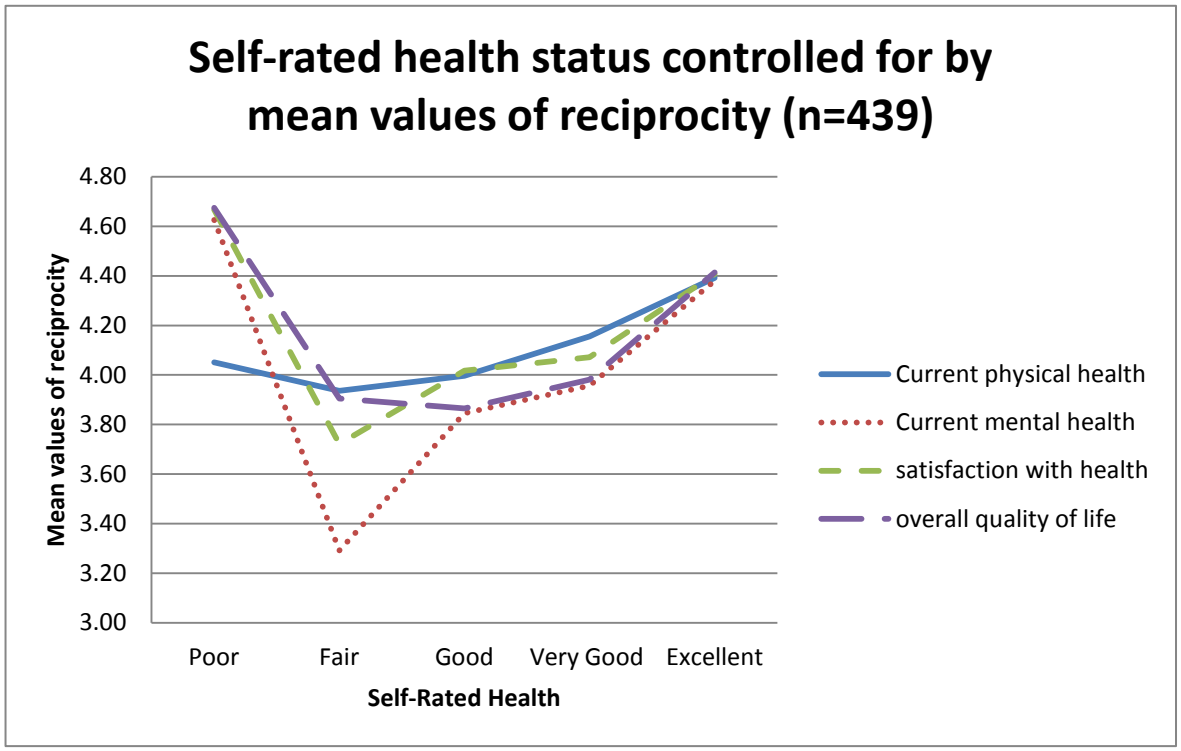
When examining the mean scores of *collective action* and of health status using variable rankings, it was found to be highest among those in the 60-69 age range (m=4.8, SD=.81) and lowest among those over 80 years of age (m=4.0, SD=.85). Based on gender, female respondents had only a slightly higher mean score (m=4.5, SD=.88) than male respondents (m=4.4, SD=.88). Those that were in a married or common-law relationship had higher mean values (m=4.6, SD=.91) than those that were single (m=4.2,

SD=.85) and those in the highest income classifications that reported household earnings of over 75 thousand dollars per year had higher mean scores (m=5.2, SD=.57) than those reporting income of less than 25 thousand dollars per year (m=4.2, SD=.79). Levels of *collective action* and health rankings were highest among college / trade school educated respondents (m=4.6, SD=.87) and lowest with high school or less completed (m=4.3, SD=.94). As with other categories, those that were semi-retired or self-employed had the highest mean values *collective action* and health (m=4.9, SD=.81) with those that were unemployed (m=4.2, SD=.81) or students (m=4.1, SD=.89) having similarly low mean scores. Those that lived in low density population areas had higher mean scores (m=4.6, SD=.94) than those that lived in higher density population areas (m=4.4, SD=.86).

d) Reciprocity and Self-Rated Health Status

A comprehensive exploration was conducted to explore differences in mean scores of *reciprocity* and self-rated health questions and the variables were used to explore differences in these responses. When linearity was exploration between *reciprocity* mean scores and questions related to self-rated health was analyzed, there was again, low linearity between mean values of raking of physical health (r=.14), current mental health (r=.22), satisfaction with health (r=.12) and overall quality of life (r=.17).There were statistically significant differences in the mean scores of *reciprocity* related to i) current physical health $F(4, 434) = 2.8$, $p=0.03$. ii) current mental health $F(4, 443) = 8.3$, $p<.001$, satisfaction with health $F(4, 434) = 6.2$, $p<.001$, and overall quality of life $F(4, 434) = 6.8$, $p<.001$.

Figure 4.7 Self-rated health status controlled for by mean values of reciprocity



Reciprocity and self-rated health was then explored by the identified variables to examine differences in sub-categories of respondents. Among age groups they were found to be highest among those aged 60-69 years old (m=4.4, SD=1.0) and lowest among those participants aged 20-29 years of age (m=3.8, SD=.97). Gender comparison suggest that males in this sample had higher mean scores (m=4.23, SD=.95) than those of females (m=4.1, SD=1.0). Similar to previously presented results, those that were married or common law had the highest mean scores in this category as well (m=4.2, SD=1.0) with singles having the lowest mean scores (m=3.9, SD=.95). Those in the 75-84 thousand dollars per year category had the highest mean values of self-rated health and reciprocity (m=4.8, SD=1.2) while those earning less than 35 thousand per year having the lowest mean score (m=4.1, SD=1.0). Education exploration revealed that those who had a completed college or trade school had the highest mean score (m=4.2,

SD=.96) while those having completed a baccalaureate degree or higher had the lowest mean score (m=4.1, SD=.99). With respect to employment status, mean scores were highest among retired persons (m=4.4, SD=.96) and lowest among students (m=3.5, SD=.98). Place of residence was also found to be statistically significantly different with those living in low-density population areas having higher mean scores (m=4.2, SD=.94) than those living in higher density areas (m=4.1, SD=.99).

v) Overall Summary

A summary of statistically significant findings can be found in Table 4.8 and provides a summary of the areas in both SC analysis and self-rated health analysis where there were statistically significant differences found in the selected variable sub-groups. From this table, it is evident that this sample most commonly reported statistically significant differences in SC and health when factors of marital status and employment status were controlled for. Those that were single, divorced or separated most often scored lowest among levels related to SC and health while those that were married or common-law reported highest. While there were variances among categories relating to high levels of SC and health components, low levels were found to be statistically significantly lowest most often among those that were students or unemployed at the time of the survey. This table further reflects that social connectivity is more variable among a range of demographic groupings and that, when responses were controlled for based on these variables, there were a wider range of differences among component levels of SC than those of health.

From this data, it can be suggested that the two variables where statically significant differences can be related to variability in both SC and self-rated health are

those of marital status and employment status and that those differences alone accounted for statistically significant differences in health status reporting. The SC component where the largest statistically significant differences can be calculated is among variable groups related in the component of *collective action*.

vi) Descriptive Analysis of Additional Questions

During the formation of this survey, additional questions relating to quality of life, physical limitations, and trust were formulated to augment this survey and to provide additional information about the participants' perceptions of life in their communities. Some of these questions provided additional descriptive information that is relevant to the study of health and social capital particularly related to physical limitations, sports involvement, community engagement, volunteering, trust and a sense of belonging.

Participants were asked a range of questions about limitations in daily living activities. A high percentage of participants indicated that they were able to wash their face on their own, 94.2% (n=403), and 90.9% (n=390) could carry in their own groceries.

Table 4.8 Summary Table of SC and Self-Rated Health: Areas of Statistically Significant Differences

		SC Components				Self-Rated Health Components			
		Trust and Safety	Community Engagement	Collective Action	Reciprocity	Current Physical Health	Current Mental Health	Satisfaction with Health	Overall Quality of Life
Overall Mean		4.75 (SD.99)	1.95 (SD .8)	4.50 (SD .88)	4.16 (SD .66)	3.78 (SD 1.05)	4.35 (SD .84)	3.90 (SD 1.1)	4.21 (.88)
Age	**high**	50-59*		60-69	60-69				
	low	20-29*		> 80**	20-29*				
		F(20, 398)=3.5		F(20,383)=3.6	F(20,383)=3.6				
Gender	**high**	male							
	low	female*							
		t(427)-2.40							
Marital Status	**high**			married/cl	married/cl	married/cl		married/c.l.	married/c.l.
	low			singles/div/sep.*	singles/div/sep.*	singles/div/sep.**		singles/div/sep.*	singles/div/sep.*
				F(16,318)=4.24	F(8,400)=4.12	F(17,461)=7.6		F(8,486)=3.9	F(7,330)=4.8
Income	**high**			> 80 k					
	low			< 35 k*					
				F(15,243)=2.9					
Education	**high**		college/trade school	h.s. or less					
	low		h.s. or less*	college/trade school**					
			F(8,269)=5.8	F(16,321)=6.9					
Employment Status	**high**	other		other	retired	full/part time		retired	
	low	students/unemp.**		students/unemp**	students/unemp.**	students/unemp.*		students/unemp.*	
		F(20,404)=4.1		F(18,313)=4.19	F(23,382)=5.12	F(16,446)=3.0		F(17,446)=3.04	
High/Low Density Area.	**high**	low den.							
	low	high den.*							
		t(437)=2.77							

**p< .001
* p< .01

Note: t statistics are reported when only two groups are compared using Independent Sample T-Tests such as the case with gender and high/low density population area

F Statistics are reported when more than 2 groups are compared using ANOVA such as age, marital status, income, and education and employment status

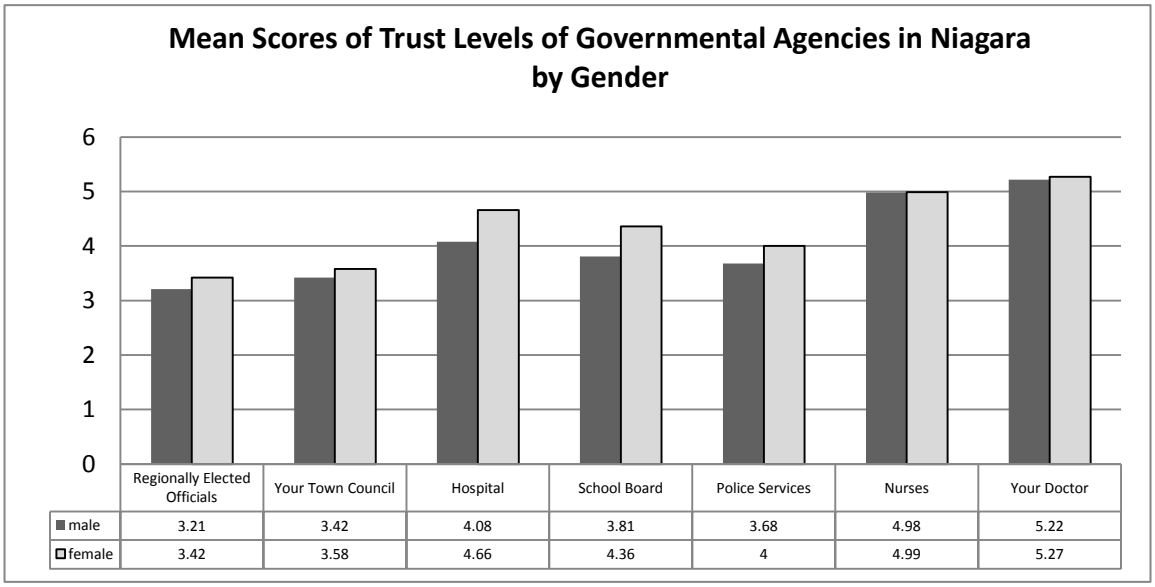
This finding would indicate that the large majority of survey participants were able to participate in their communities to a high degree and few had limitations that would prohibit them from daily living activities. Women, more than men, reported that they were unable to carry their groceries in, ($t(426) = -2.16$, $p<0.03$). When participants were asked if they had experienced a physical illness lasting longer than 6 months in the past year, 20% (n=84) indicated that they had, and 4.4% (n=19) indicated that they had experienced a mental health illness that had lasted longer than 6 months in the past year. There were a statistically significant number of respondents living in small towns and low-density settings reporting a higher frequency of experiencing mental illness over the past year, ($t(426) = 2.42$, $p=0.01$); however, there were no differences found between any other variables.

When asked about vigorous intensity sport participation, 54.9% (n=235) indicated that they did not participate in high-level activities. Men were significantly more likely to be active in vigorous-intensity sport ($t(426) = -.2821$, $p=0.005$). Of the 44.9% (n=192) and reporting being involved in physical activities as 78.7% (n=159) were involved with physical activities more than 3 times per week. There were no differences in activity participation between those living in high-density areas and those living in small towns or low-density settings.

Since 1976, the American based Gallup poll group has surveyed a broad range of populations about their trust of specific professional groups (gallup.com). The Niagara SC Survey chose some specific groups to get a snapshot of the public perceptions of governmental agencies or professionals in the Niagara Region. American participants have ranked nurses as the most trusted profession for the past eight years with physicians

and police officers following closely behind as reported by gallup.com. In Niagara, the surveyed population ranked physicians as most trusted, with nurses and police services following with Regionally Elected Officials rated as having the lowest level of reported trust. One limitation of this question is that the participants were asked to rank their trust levels based on occupational groups with the exception of doctors where the question was posed asking respondents to rank "Your Doctor". The results, then, may indicate overall variances of professional trust due to the relationships with a specific person rather than an organizational group.

Figure 4.8 Mean Scores of Trust Levels Among Different Governmental Agencies in Niagara by Gender

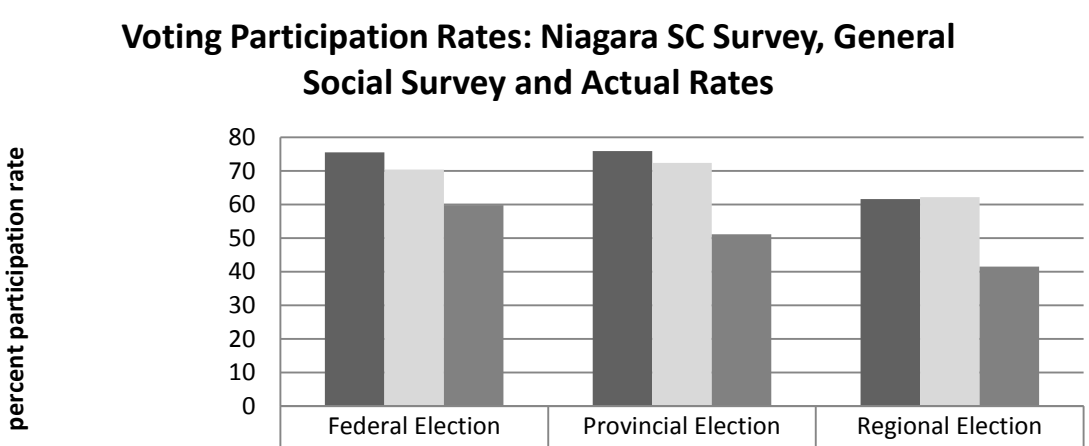


	Regionally Elected Officials	Your Town Council	Hospital	School Board	Police Services	Nurses	Your Doctor
male	3.21	3.42	4.08	3.81	3.68	4.98	5.22
female	3.42	3.58	4.66	4.36	4	4.99	5.27

The Niagara SC Survey also asked respondents to self-report their participation in voting, which has been be regarded as a measure of civic participation. Over 90% of those that participated in the Niagara SC Survey reported that they believed that it is important to vote; however they self-reported that they have lower voting participation in Regional Elections than in both federal and provincial elections. Those participating in

the Niagara SC Survey reflected a comparable self-reported level of voting in the last federal, regional and municipal election to rates reported by the 2008 General Social Survey (Statistics Canada, 2009). Self-rated health status has been established as a reliable indicator of actual health-status. However self-rated voting participation that was reported and the actual numbers of the population recording a vote according to Elections Ontario varied. As summarized in Figure 4.9, both the GSS and the Niagara SC Survey reflect that between 70.4% and 75.9% of persons were reported to have voted in the last federal and provincial elections. Based on Elections Canada results, the actual percentage of eligible voters casting a ballot was much lower than those who self-reported that they had voted in previous elections.

Figure 4.9 Voting Participation Rates: Niagara Social Capital Survey, General Social Survey and Actual Rates



	Federal Election	Provincial Election	Regional Election
Niagara SC Survey	75.6	75.9	61.7
General Social Survey	70.4	72.4	62.2
Actual Rates	59.8	51.2	41.6

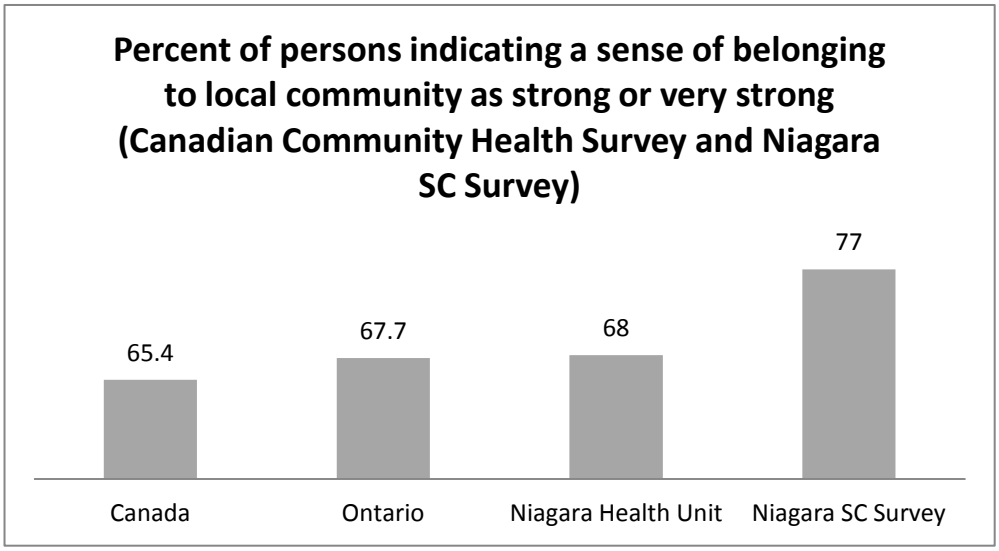
In this survey sample, 87% of respondents indicated that they had donated money to a charity over the last year, which was slightly lower than the reported 2007 Ontario average reported by those who participated in the *Canadian Survey of Giving,*

Volunteering and Participating (Hall, et al., 2009). Although there was a slight decrease in the amount of money that people reported donating to a charitable organization, the Niagara SC Survey participants indicated that their donation value was higher than that reported by Statistics Canada in 2007. The sample population reported the overall average donation was $750.00 and, in Ontario in 2007, an average of $501 was actually given to charitable organizations (Hall, et al., 2009)

The Canadian Survey of Giving Volunteering and Participating (Hall, et al., 2009) also examined patterns of volunteer engagement across Canada. Over 57 percent of those surveyed by the Niagara SC Survey indicated that they had spent time in volunteer activities in the past year which can be compared the Ontario rate of 50 percent as reported in 2007 by Statistics Canada (Hall, et al., 2009).

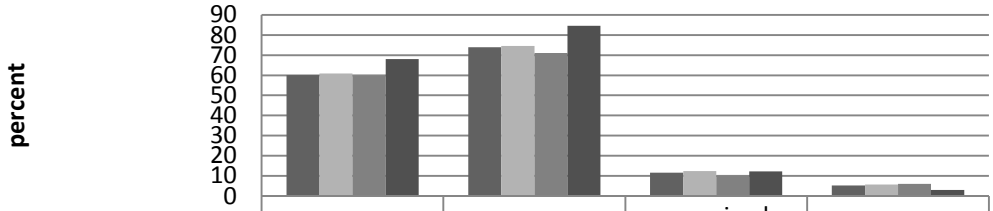
The Canadian Community Health Survey (Statistics Canada, 2005) is conducted each year to collect information about health status, health care utilization and health determinants among the Canadian population. Several of the questions related to health were adopted from this survey. The Niagara Social Capital Survey participants ranked their sense of belonging to their local community slightly higher than the most recent results from CCHS. The CCCS elicits information from residents in Canada aged 12 years and older, whereas the Niagara SC survey limited participation to those aged 20 years and over which may account for variations in the rankings (Statistics Canada Health Profile, 2011).

Figure 4.10 Percent of persons indicating a sense of belonging to local community as strong or very strong (Canadian Community Health Survey and Niagara SC Survey)



The results from the Niagara SC Survey indicated that those who responded to the physical and mental health statis questions were reported higher than those reported in Statistics Canada's *Health Profile* (Statistics Canada, 2011). A higher number of participants in the SC survey, however, perceived their health to be *fair* or *poor* compared to the *Health Profile* 2010 results, but fewer people in this sample reported *poor* mental health. Differences in sampling strategies and response choice availabilty may account for a portion of the difference. Most respondents had positive perceptions about both their physical and mental health status. Another limitation in making a fair comparison between both surveys is the sample inclusion criteria included participants aged 12 and over which may further account for differences in the sampled population (Statistics Canada Health Profile, 2011).

Figure 4.11 Percent of persons indicating physical and mental health as good for very good: Canadian Community Health Survey and Niagara SC Survey

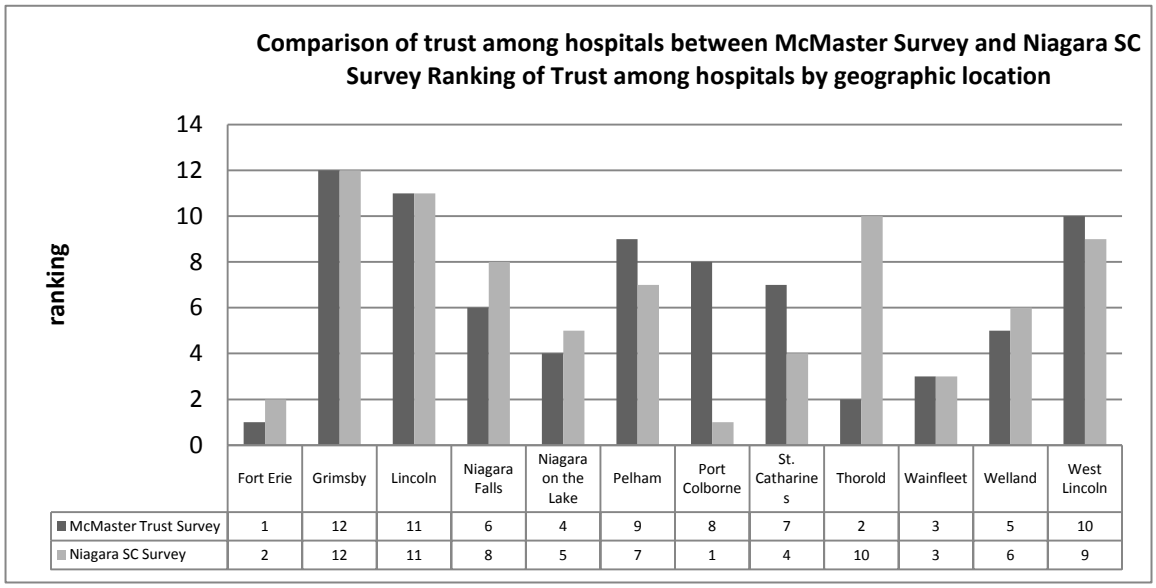


	Perceived health good or very good	perceived health fair or poor	perceived physical health fair or poor	perceived mental health fair or poor
Canada	60.1	73.9	11.6	5.3
Ontario	60.9	74.5	12.4	5.7
Niagara Health Unit	59.7	71	10	6.1
Niagara SC Survey	68.1	84.5	12.3	3

Since the Niagara Social Capital study commenced, another study was commissioned by the Niagara Health System examined public perceptions of trust of the local health Sytsem. This survey, conducted by Dr. T. Flynn at McMaster University was publically released in November 2011 (Flynn, Edgar, Calderwood-Smith & Hartford, 2011). The survey concluded that the lowest perceptions of hospital trust were among the residents of Fort Erie with the highest levels being reported among the residents of Grimsby and Lincoln. The hospital ranking of trust was comparable within all other commuities with the exception of results in Port Colborne and Thorold where the McMaster Survey (n=523) concluded a much higher trust ranking existed in Port Colborne and a much lower ranking existed in Thorold. The McMaster Trust of Hospital Survey was conducted and asked perceptions about the niagara Health System, whereas

the Niagara SC Survey asked repondents to rank their hospital. Since the McMaster Trust of Hospital Survey was conducted with different parameters, the variances in perceptions among communities is of note (Flynn et al., 2011).

Figure 4.12 Comparison of trust among hospitals between McMaster Survey and Niagara SC Survey Ranking of Trust among hospitals by geographic location



	Fort Erie	Grimsby	Lincoln	Niagara Falls	Niagara on the Lake	Pelham	Port Colborne	St. Catharines	Thorold	Wainfleet	Welland	West Lincoln
McMaster Trust Survey	1	12	11	6	4	9	8	7	2	3	5	10
Niagara SC Survey	2	12	11	8	5	7	1	4	10	3	6	9

vii) Overall Summary

This Niagara Social Capital Survey was based on the hypothesis that measurable differences exist in the way that people report their individual experiences related to social capital, self-reported health and demographic variables. Due to the range of statistically significant differences and variations found in participant responses, it can be then ascertained that the objectives set out on the onset of this study were met. As previously stated, the study objective was to fully explore these differences. It can then be

further postulated that a range of demographic factors account for these differences within certain population groups

CHAPTER FIVE: CONCLUSION

i) Overall findings

The purpose of this research study was to describe and analyze social capital (SC) and self-reported health status and selected determinants of health variables to better understand how these components are reported by residents and how these components related to each other in a region of Ontario, Canada. A range of questions was asked pertaining to component levels of SC as defined by Putnam (2001) along with questions pertaining to dimensions of self-rated health and questions related to selected determinants of health. Each of these component areas were investigated separately to describe overall mean levels of each area. Subsequently, correlational analysis was conducted between and among components and selected determinants of health variables.

A summary of the overall findings of this study are:

- Social Capital is an empirical concept and it is possible to measure it with individual self-reported surveys and to describe levels of its components for population sub-groups in a region or community.
- There were measureable differences in self-reported levels of SC components: *trust and safety* (m=5.42, SD=1.0), *community engagement* (m=1.93, SD=.8), *collection action* (m=4.5, SD=.88) and *reciprocity* (m=4.16), SD=.98) based on a 1-6 Likert scale rating.
- There were measureable differences in self-reported levels of health including: current physical health (m=3.78, SD=1.05), current mental health (m=4.35, SD=.84), satisfaction with health (m=3.9, SD=1.1) and overall quality of life (m=4.21, SD=.88) based on a 1-5 Likert scale rating.

- Among the four components of social capital, *trust and safety* levels were highest among all participants, with *community engagement* yielding the lowest mean score for the sample. *Reciprocity* was found to have the strongest association with all other components of SC (r=0.51).
- For the SC components of *trust and safety*, *reciprocity*, *community engagement* and *collective action*, employment status and age were most consistently linked variables to variances in mean scores. Those that were employed part-time or retired consistently had higher mean scores of all component levels with the exception of *collection action*. College / Trade School educated participants also reported higher levels of *community engagement* and *collective action*. Those in the 60-69 age range reported the higher levels of *reciprocity* and *collective action*. Those with the lowest mean scores were respondents in the 20-29 years of age range and those that reported that they were single, female and were in school or unemployed.
- Calculated levels of *collective action* experienced the most variance in the sub-group categories of age, marital status, income, education and employment status. Levels of *community engagement* were only statistically significant when separated by level of education.
- Variances in responses pertaining to self-rated health status were only found to have statistically significant differences in marital status and employment status sub-categories when compared to current physical health and satisfaction with health. Marital status alone was found to have

statistically significant differences when co-related with quality of life ratings. There were no statistically significant differences found in any of the sample sub-groups when rating mental health.

- When relationships were explored between SC, self-rated health status and selected determinants of health variables, *trust and safety* was found to be highest among those that rated their physical health as *poor*. Mean scores of *trust and safety* increased with overall self-rated physical and mental health status ratings which was similar to the results found when compared to participants' responses to their satisfaction with quality of life. Similarly, *reciprocity* had a positive direct association with levels of perceived physical health, with the exception of those that rated their physical health as *poor*. The highest overall levels of *reciprocity* were among males who rated their health as *poor* (m=4.9). When self-rated physical health was compared to levels of *collective action,* it is suggested that levels of *collective action* rise as the perception of physical health increases. As opposed to other dimensions of SC, *collective action* was lowest among those with the lowest self-rated health. The highest mean scores were among females that rated their health as *excellent* and the lowest mean scores were among females that ranked their physical health as *poor*.
- The analysis attempted to determine the association evident among and between participants' ratings of SC, health and aspects of the selected variables pertaining to the selected determinants of health variables for

this study and to examine if living in a high population density area or low population density area impacted the ratings or associations. There were no differences in mean self-rated health scores between those living in low-density settings or those living in high-density areas as defined by this study. In spite of geographic location, most people across Niagara reported similar rating levels of their physical and mental health and similar satisfaction with their health and quality of life. The main reported area of differences was in the ratings of *trust and safety* based on geographic location and population density. Those living in lower-density areas had a higher ranking of *trust and safety* and an overall rating of aggregate SC. This finding is also supported by previous research which indicates that areas of low-density populations have higher trust levels (Debertin, 2011).

- When reported region-wide, lower-density groups had both higher reported education levels and higher reported incomes. Fort Erie and Port Colborne had lower overall income and education levels than those of the other regional areas that were classified as being low-density. As education and income were both related to higher levels of SC and of self-rated health, it can then be assumed that, since it is not defined by low-density or high-density geography, income and education are perhaps more unique and influential components of health and SC than that of geographic location.

- Those that were most likely to report low levels of SC and health were females, specifically those that were unattached and had low incomes or reported that they were either enrolled in school or unemployed. This might suggest that barriers to accessing secure income and flexibility regarding work situations were also barriers to accessing interpersonal networks and supports. Although there were no overall differences between gender groups as a whole, there were differences between gender groups based on both employment status and household income. Unemployed females and females in school with low household incomes had the lowest SC scores and rated their current physical health the lowest and their satisfaction with health the lowest. Conversely, females in high-income situations that were either retired or self-employed were both the most satisfied with their health and the most likely to participate in activities related to strong SC. It could be further suggested that higher levels of education and income may create more time and security to be able to engage in civic activities related to stronger SC, as defined by Onyx & Bullen (2000).
- Evaluation of mean SC rankings suggest that the largest group impacted by low SC and health are within the low-income, low education, single female group. These findings pertain to both low-income females and females who reported that they were students, but could be interpreted that lower ratings of health status are linked to low income situations or that

poor health may be linked more to the inability to access living-wage employment.

- Males were more likely to have higher *trust and safety* levels than women and this also impacted their levels of self-rated health. Men also had higher overall levels of *reciprocity*. The women in this study had higher mean values in the areas of *community engagement* and *collective action* than those of males. These findings are further supported by the results in the New South Wales Survey which also ascertained that males had higher rates of *trust and safety* (Onyx & Bullen, 2000).

ii) SC as a collective and as an individual resource:

As discussed in the literature review, there are differences in the ways that social capital is viewed, experienced and measured. Coleman (1988) postulated that SC existed at the individual level, whereas Putnam (2001) suggested that SC operated at a level above the individual and perceived it to be a collective community resource. This study suggests that SC operates at both the individual and community levels. The Niagara SC Survey analyzed and reported collective data based on the entire Niagara Region community, but it was collected from individual interviews representing individual perspectives of health and social capital as resources in their own lives. Like SC, health has no direct monetary value, yet components of both can directly impact the strength and sustainability of people and communities and their financial well being.

Since individual levels of SC have been linked to individual levels of stress, variances in perceived social isolation and the experience of control (Adams et al., 2004; Greaves & Farbus, 2006; Havens, et al., 2004), it is then imperative that SC continue to

be measured with input at the individual level. The findings in this research study further support the notion that there are differences in the way that individuals relate their experiences of *trust and safety*, *reciprocity*, *collective action* and *civic engagement*. Based on the findings of this research, it is notable that variances in levels of SC exist among individuals and that not everyone believes that voting is important, trusts their neighbours at the same level or would lend a stranger a hand. These individual perceptions can work collectively to impact the overall assets at a wider community level.

Since strong community SC cannot exist without strong individual SC, it then can be perceived to be a balance between both levels of influence. Developing strong vibrant communities can be enhanced by creating environments where strong *trust*, *reciprocity*, *civic engagement* and *collective action* are experienced by, and practiced by, individuals and collectives of people living in community with one another. Living in an area where volunteering is a cultural norm not only benefits the individual, but the community as a whole. Awareness of community resources and networks that are available in times of need positively impacts both the individual and the community. SC then is not something that is only strong or weak in an individual, but is an essential part of the giving and taking of the public collective.

Collective assets, built by individuals who are in connection with others can be shared by the whole. This strengthens both other individuals that are contributing complementary assets, and the overall community capacity. Building vibrant communities is reciprocal and cannot operate at the individual level alone, nor at the community level alone. These assets are not driven by tangible resources provided by

external contributors but, instead, are characteristics that can only exist within the contexts of interpersonal relationships.

As suggested by Williamson and Carr (2009) health can also be considered as a resource, an asset or a form of capital that can be invested in by individuals and societal institutions to increase positive health returns. Similar to SC, health is embodied in both the individual experience and at the community level. Both health and social capital can be regarded as a stock of resources that people can draw on to increase their participation in society (Williamson & Carr, 2009), but individuals and communities must contribute to the pool of assets in order to maintain the availability of that stock. When individuals and groups are healthy and active in their communities, they are more likely to participate in their communities, thereby enriching the intangible resources within the community for both themselves and for others.

iii) Recommendations for future research

Several findings of this study indicate potential areas for future research inquiry. The results from this study revealed unexpected results relating to the high levels of trust among those that rated their health as *poor*. Further exploration could be conducted to examine if those higher trust levels among those who may have to more frequently seek health care are, in fact, indicative of the relationships of trust that are developed between those with physical limitations or poorer health and their care providers because they may have to rely more on others for assistance or have more intense opportunities to relate and build trusting connections.

Additionally, there may be discrepancies in self-rated *civic engagement* due to recall bias or self-perceptions of engagement which may be of interest for future examination to

determine if self-rated engagement is linked with actual engagement or if there are discrepancies with measurement bias which should be accounted for in future studies. Results from this study support additional analysis of CCHS (Statistics Canada Health Profile, 2011) and Elections Ontario reporting (Statistics Canada, 2009) which shows differences in self-rated voting practices and actual voter turnout.

Further testing of the questions related to *collective action* should be considered in order to develop reliable measures of current *collective action* within a North American context. It may be important to assess relevant sociological or political trends, changes or challenges that may influence the perceptions and ratings of this measure in this population, particularly related to *trust* or *civic action* and *engagement*. Some of the questions used from the original survey should be omitted or redeveloped to better capture current trends that are based in present-day cultural norms. For instance, questions about inviting people into your home to use the phone may have changed because of the use of cell phones or safety concerns.

Limitations were also identified in the data collection process as this survey was limited to those with a listed telephone number and a household landline. Conducting a similar project in the future may have to attend to an increasing number of people opting to use cellular phones rather than household phones. Future projects of this nature may have to address this challenge to collect a stratified random sample the population. Non-response bias may also account for some of the variances. There remains a potential to explore any differences in perceptions based on those that declined the invitation to participate and may include individuals that reside in institutional settings, persons that are hearing impaired or individuals that have limited English proficiency to understand

the questions. Future considerations should be given to capture the responses from individuals such as these to reflect those perceptions.

Multiple ANOVA testing was performed in the analysis of this data. Using MANOVA testing may provide an extension to the repeated analysis of variance. MANOVA testing is suggested to be used with two or more dependent variables while ANOVA analyzes only a single dependent variable at a time. By using multiple ANOVA testing, there is an increased likelihood of Type 1 error rates. Further analysis of the data can use MANOVA analysis to control for inflated Type 1 error rates or by use of Bonferroni's adjustment to decrease this probability.

Additional analysis is recommended to weight the participants' responses in relation to the percentage of the population as reported by Statistics Canada. This sample had more females that participated, more participants that were married or living common-law, and a higher number of participants with a completed post-secondary education (College, Trade School, Baccalaureate Degree, Master's Degree or Doctorate Degree) than those numbers as reported by Statistics Canada Community Profiles for Niagara. By adjusting the mean levels of each grouping to those levels as reported by Statistics Canada using weighting of responses, the results may then be more generalizable to the population.

In conclusion, it is hoped the results of this study can be used to better understand components of social capital in a regional community context. This study can increase understanding of how social capital can better be measured in and of itself and how it correlates with health status and selected determinants of health variables among population groups in Niagara and beyond. Having baseline measures provided by this

study can potentially lead to interventions for improvement and further study. The NSW study suggests conducting a SC survey every two years in order to describe and trend data over time to get a picture of SC and its components in populations. It is recommended that this NSCS be conducted again in the future to establish trends in Niagara related to SC, health and quality of life over time. *Trust, safety, civic participation* and *collective action* are all components of building strong, vibrant and healthy communities and citizens. Continuing to focus on strengthening education, income and employment in a region may have a positive impact on building stronger social capital and health. Gaining a better understanding of the health of our population is also paramount to broadening perspectives about how to support those in good health that have good social connections to remain healthy and connected and to extend these supports to those with poor health or poor social connections.

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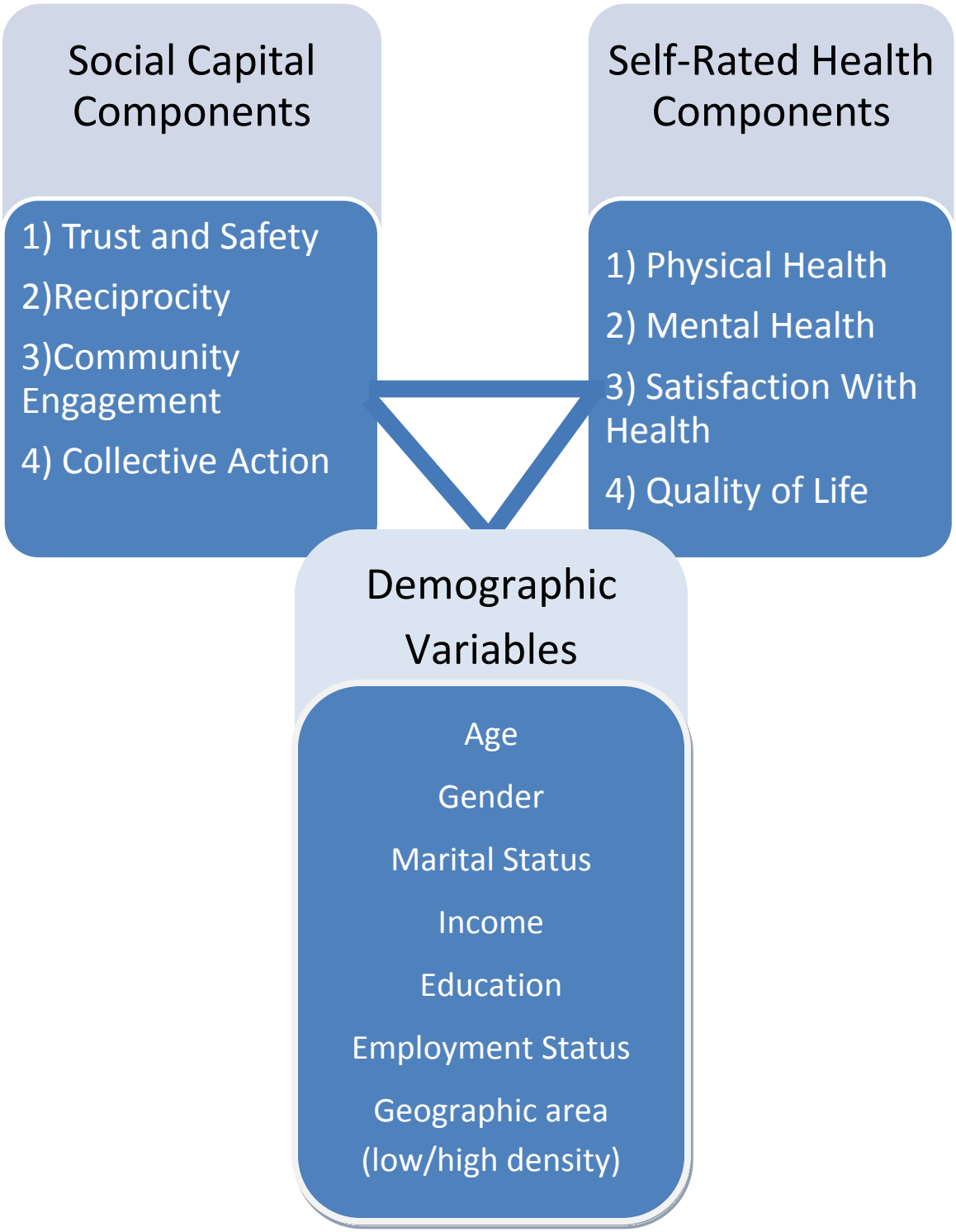
Appendix A: Niagara Social Capital Survey Conceptual Analysis Pathway



Appendix B: Niagara Social Capital Survey Consent

Telephone Survey Script:

INTERVIEWER ID #: _____

SURVEY CODE#_____

DATE OF INTERVIEW: _____TIME OF INTERVIEW: _____

INTERVIEW SCRIPT: Hello, I'm _____(introduce who you are) and I am a Researcher / Research Assistant from Brock University. We are currently conducting a survey about social networks, health and components of health in the Niagara Region. Some of the questions pertain to your activities and behaviours and some pertain to _____ The survey questions have 3 sections. The first section is about your levels of Social Capital which includes questions about trust, civic engagement, local action and reciprocity. The second section focuses on how you perceive your health and the third section is about your personal views of some of the things that affect those living in the Niagara Region. This data will then be examined to explore the links between health and social networks across the Region.

This study has been approved by Brock University Research Ethics Board in the Faculty of Applied Health Science and the Principal Investigator is Karen Cudmore, a Master's Student under the supervision of Dr. Kilty from the Department of Nursing at Brock University and has been approved by Brock Ethics Board (#_____). The survey will take approximately 20 minutes to complete. Your individual information is confidential, and only summaries will be reported. Your participation is completely voluntary and you can stop participation at any time during the survey or you can refuse to answer a question. You can withdraw consent at any time by contacting the nursing department at Brock University at 905-688-5550 ext 5695 or by email at kcudmore@brocku.ca. Should you wish to withdraw from participation all information that you have provided to us will be excluded from this study. All completed surveys will be assigned a unique code and all phone numbers and individual identifiers will be removed from the analysis portion of this study.

May I continue? _____

Are you over the age of 20? Y N

Can I start by asking what town / city you live in? _____

INTERVIEWER INSTRUCTIONS:

1. Make sure that the survey code # is at the top of each page of the completed survey.
2. Make sure that all questions are asked and repeated if necessary for understanding.
3. Make sure that all responses to the questions are marked on the form.
4. Move the conversation along, be a good listener
5. If they **refuse** to answer a question put **R. I**f they don't know put **DK.** If the question does not apply, put **NA.** If they give a different answer write their short response.

Appendix C: Niagara Social Capital Survey

The first set of questions pertains to your networks and neighbourhoods. Please answer the following questions on a scale from 1 to 5 with one being not at all and 5 being definitely or very much:

Niagara Social Capital Survey

1	Does your local community feel like home?					
	No, not at all					*yes, very much*
	1	2	3	4	5	6
2	Does the Niagara Region feel like home					
	No, not at all					*Yes, definitely*
	1	2	3	4	5	6
3	Do you feel safe walking down your **street** after dark?					
	No, not much					*yes, very much*
	1	2	3	4	5	6
4	Do you feel safe in your community after dark?					
	No not at all					*yes, very much*
	1	2	3	4	5	6
5	Do you feel safe going to an event outside of your town but within the **region** after dark?					
	No, not at all					*yes, very much*
	1	2	3	4	5	6
6	Does your community have a reputation for being a safe place?					
	No, not at all					*yes, very much*
	1	2	3	4	5	6
7	Does the Niagara Region have a reputation for being a safe place?					
	No, not at all					*yes, very much*
	1	2	3	4	5	6
8	If someone's car broke down outside your house, do you invite them into your home to use the phone?					
	No, not at all					*yes, definitely*
	1	2	3	4	5	6
9	Can you get help from friends when you need it?					
	No, not at all					*yes, definitely*
	1	2	3	4	5	6
10	If you were caring for a child and needed to go out for a while, would you ask a neighbour for help?					
	No, not at all					*yes, definitely*
	1	2	3	4	5	6
11	Have you visited a neighbour in the past week?					
	No, not at all					*Yes, nearly always*
	1	2	3	4	5	6
12	When you go shopping in your (community/town/village) are you likely to run into friends and acquaintances?					
	No, not much					*Yes, nearly always*
	1	2	3	4	5	6

13	When you go shopping in the Region are you likely to run into friends and acquaintances?					
	No, not much					*Yes, nearly always*
	1	2	3	4	5	6
14	In the past 6 months, have you done a favour for a sick neighbour?					
	No, not at all					*yes, very much*
	1	2	3	4	5	6
15	Do you help out any groups in your community as a volunteer?					
	No, not at all					*yes, several*
	1	2	3	4	5	6
16	Do you help out any groups in other parts of the Niagara Region (excluding the answer above)					
	No, not at all					*yes, several*
	1	2	3	4	5	6
17	In the past 3 years, have you ever joined a community action in your community to deal with an emergency?					
	No, not at all					*yes, several*
	1	2	3	4	5	6
18	In the past 3 years, have you joined any community actions in other parts of the Niagara Region to deal with an emergency?					
	No, not at all					*yes, several*
	1	2	3	4	5	6
19	In the past 3 years, have you taken part in a community project in your community?					
	No, not at all					*yes, several*
	1	2	3	4	5	6
20	In the past 3 years, have you ever taken part in a community project or working group in the Niagara Region?					
	No, not at all					*yes, several*
	1	2	3	4	5	6
21	Have you ever been part of a project to organize a new service in the region (e.g., youth club, scout hall, child care, recreation)?					
	No, not at all					*yes, several*
	1	2	3	4	5	*6*
22	Over the last 6 months, have you attended any events in the region? (e.g. Church bazaar, school concerts, craft show, etc.)?					
	No, not at all					*yes, several*
	1	2	3	4	5	6

	In the last 6 months, have you:	YES	NO
23	Gone to the local library?		
24	Visited a historical site in the area?		
25	Gone to the movies?		
26	Gone to performing arts performances in the Region		
27	Attended any political events / rallies		
28	Been active in or coached any team sports		

29	Are you an active member of any organizations or clubs in Niagara (sport, craft, social, etc.)?					
	No, not at all					*yes, several*
	1	2	3	4	5	6

30	If you volunteer, about how many hours each week do you spend volunteering?	

31	How much time in the last year would you have spent volunteering?
32	Who do you mostly volunteer for? (church, school, food bank, big brothers, etc.)
33	Have you ever picked up other people's trash / garbage in a public place? *No, never* 1 2 3 4 5 6 *constantly*
34	If you need information to make a life decision, do you know where to find that information? *No, not at all* 1 2 3 4 5 6 *yes, definitely*
35	Do you go outside your community to other parts of the Niagara Region to visit your family? *No, not much* 1 2 3 4 5 6 *almost always*
36	Do you go outside of the Niagara Region to visit your family? *No, not much* 1 2 3 4 5 6 *almost always*
37	If you disagree with what everyone else agreed to, would you feel free to speak out? *No, not at all* 1 2 3 4 5 6 *yes, definitely*
38	If you have a dispute with your neighbours, are you willing to seek mediation (or the help of someone outside of the conflict to help you reach an agreement)? *No, not at all* 1 2 3 4 5 6 *yes, definitely*
39	In the last year have you donated money to a charity or non-profit group? Y N
40	If yes, estimate how much you gave in the last year $
41	Do you think it is important to vote? Y N

	Did you vote in the last	Y	N	n/a
42	Regional Election			
43	Town Council Election			
44	Provincial Election			
45	Federal Election			

46	In Niagara, do you agree that most people can be trusted? *Very low* 1 2 3 4 5 6 *Yes, definitely*
47	Please rate your sense of belonging to your community *Very low* 1 2 3 4 5 6 *Very high*
48	Please rate your sense of belonging to the Niagara Region *Very low* 1 2 3 4 5 6 *Very high*

Please rate your trust level of the following (1=low, 6=high, 99=no opinion)

49	Regionally elected officials	1	2	3	4	5	6	99
50	Your Town/City Council	1	2	3	4	5	6	99
51	Police Services	1	2	3	4	5	6	99
52	Your Neighbours	1	2	3	4	5	6	99
53	The Local School Board	1	2	3	4	5	6	99
54	Thos Hospital	1	2	3	4	5	6	99
55	Nurses in the Region	1	2	3	4	5	6	99
56	Your Doctor	1	2	3	4	5	6	99

57 How do you rate the overall sense of trust in your neighbourhood / community

Very low *Very high*

1 2 3 4 5 6

58 How do you rate the overall sense of trust among others across the Niagara Region?

Very low *Very high*

1 2 3 4 5 6

59 What is your employment status right now? (if not employed go to question 65)

1-Full Time 2-Part Time 3-Student 4-Unemployed 5-Retired

Other: specify _____

The following 5 questions are for those in paid employment. If you are not in paid employment, go to question 62

60	Do you work in the Niagara Region?	Y	N
61	Do you work in the same community that you live in?	Y	N

62 On average, how many kilometres is it one way to your work?_____

63 At work, do you take the initiative to do what needs to be done even if no one asks you to?

No, not at all *almost always*

1 2 3 4 5 6

64 In the past week at work, have you helped a co-worker even though it was not in your job description?

No, not at all *almost always*

1 2 3 4 5 6

Health Status

65 How would you rate your physical health in general now?

Poor *Excellent*

1 2 3 4 5

66 One year ago, how would you rate your physical health?

Poor *Excellent*

1 2 3 4 5

67 How would you rate your mental health in general now?

Poor *Excellent*

1 2 3 4 5

68 One year ago, how would you rate your mental health?

Poor *Excellent*

1 2 3 4 5

69	How would you rate your satisfaction with your overall health? *Poor* 1 2 3 4 5 *Excellent*		
70	How would you rate your overall quality of life on a scale from 1 to 5 *Poor* 1 2 3 4 5 *Excellent*		
71	Can you wash your face on your own?	Y	N
72	Can you walk up a flight of stairs?	Y	N
73	Can you carry your own groceries in?	Y	N
74	In the past year, have you experienced a physical illness that lasted longer than 6 month that kept you from participating in activities?	Y	N
	In the past year, did you experience a mental health illness that lasted longer than 6 month that kept you from participating in activities?	Y	N
75	Would you consider yourself:		
	A non-smoker who never smoker	1	
	Ex-smoker who has totally quit	2	
	Non-smoker who smokes sometimes	3	
	Light smoker (less than 10 per day)[1]	4	
	Moderate smoker (10-19 per day)[1]	5	
	Heavy smoker (more than 20 per day)[1]	6	
76	Do you do any vigorous-intensity sports, fitness or recreational (leisure) activities that cause large increases in breathing or heart rate like [running or football] for at least 10 minutes continuously?[2]	Y	N
77	In a typical week, on how many days do you do vigorous-intensity sports, fitness or recreational (leisure) activities? [2]	# of days	_____
78	Do you do any moderate-intensity sports, fitness or recreational (leisure) activities that cause a small increase in breathing or heart rate such as brisk walking, [cycling, swimming, volleyball] for at least 10 minutes continuously? [2]	Y	N
79	On average how many caffeinated drinks do you have each day (coffee / tea / caffeinated drink/energy drinks)		
80	On a typical day, how many servings of fruit and vegetables do you eat?		
81	On average, how many meals per week do you eat that were not prepared at a home? By meal, I mean breakfast, lunch and dinner		

DEMOGRAPHICS

82	What is your gender	Male	Female
83	What is your age in months and years?	m	y
84	What city do you current reside in?		
85	What are the first 3 characters of your postal code?		
86	How many years have you lived in this area?		
	What is your height in feet and inches and weight in pounds? 87 height_____ 88 weight_____		
89	What is your marital status?	married / common-law	1
		divorced	2
		separated	3
		widowed	4
		single	5
90	Do you consider yourself to be:	Caucasian	1
		black	2
		aboriginal	3
		Asian	4
		other (specify)	5
91	What language do you prefer to speak at home?	English	1
		French	2
		other	3
92	Do you live in a:	Private House	1
		Public Housing	2
		Condo/Apartment	3
		other (specify)	4
93	Including yourself, how many people live in your house?		
94	Who do you live with?	Alone	1
		Just Partner	2
		Just children	3
		Partner and Children	4
		Friends	5
		Other (specify)	6
95	What is your **household** income range?	less than 25k	1
		25-34k	2
		35-44k	3
		45-54k	4
		55-64k	5
		65-74k	6
		75-84k	7
		Over 85k	8

96	What is your highest level of completed education?	Less than high school	1
		High School / Equivalent	2
		College Certificate or Diploma	3
		University – less than BA	4
		BA Complete	5
		Graduate School (Master's)	6
		Doctorate Level	7
		Other (specify_____)	8

Our Community

The following questions ask about your perceptions and thoughts about the Niagara Region and how certain aspects of our communities affect our lives

97	Do you think that Niagara Region is adequately promoting Arts Culture and Heritage in Niagara?						
	In dire need of correction	Of concern, needs attention	Neutral	Progress is being made	Headed in the right direction	Niagara is a leader	Unknown
	1	2	3	4	5	6	99
98	Do you think that there are good opportunities to volunteer in the Niagara Region?						
	In dire need of correction	Of concern, needs attention	Neutral	Progress is being made	Headed in the right direction	Niagara is a leader	Unknown
	1	2	3	4	5	6	99
99	Do you think that we have adequate access to post-secondary education in Niagara?						
	In dire need of correction	Of concern, needs attention	Neutral	Progress is being made	Headed in the right direction	Niagara is a leader	Unknown
	1	2	3	4	5	6	99
100	How well do you think that the schools in Niagara are doing to prepare young people for adulthood?						
	In dire need of correction	Of concern, needs attention	Neutral	Progress is being made	Headed in the right direction	Niagara is a leader	Unknown
	1	2	3	4	5	6	99
101	Rate your opinion of access to living-wage jobs in the Region of Niagara						
	In dire need of correction	Of concern, needs attention	Neutral	Progress is being made	Headed in the right direction	Niagara is a leader	Unknown
	1	2	3	4	5	6	99
102	How well do you think that Niagara Region is doing to encourage new businesses in Niagara?						
	In dire need of correction	Of concern, needs attention	Neutral	Progress is being made	Headed in the right direction	Niagara is a leader	Unknown
	1	2	3	4	5	6	99

103	Rate how Niagara Region is doing to take care of our natural environment (beaches, water, parks)						
	In dire need of correction	Of concern, needs attention	Neutral	Progress is being made	Headed in the right direction	Niagara is a leader	Unknown
	1	2	3	4	5	6	99
104	How well do you think the residents of Niagara are doing at composting / recycling?						
	In dire need of correction	Of concern, needs attention	Neutral	Progress is being made	Headed in the right direction	Niagara is a leader	Unknown
	1	2	3	4	5	6	99
105	Rate community safety in Niagara						
	In dire need of correction	Of concern, needs attention	Neutral	Progress is being made	Headed in the right direction	Niagara is a leader	Unknown
	1	2	3	4	5	6	99
106	How well do you think that the emergency responders protect us in Niagara? (Fire, EMS, Police)						
	In dire need of correction	Of concern, needs attention	Neutral	Progress is being made	Headed in the right direction	Niagara is a leader	Unknown
	1	2	3	4	5	6	99
107	Please rate our overall road conditions in Niagara						
	In dire need of correction	Of concern, needs attention	Neutral	Progress is being made	Headed in the right direction	Niagara is a leader	Unknown
	1	2	3	4	5	6	99
108	Please rate our government's commitment to developing a Regional Public Transit system						
	In dire need of correction	Of concern, needs attention	Neutral	Progress is being made	Headed in the right direction	Niagara is a leader	Unknown
	1	2	3	4	5	6	99
109	Rate the opportunities for young people to develop skills in Niagara						
	In dire need of correction	Of concern, needs attention	Neutral	Progress is being made	Headed in the right direction	Niagara is a leader	Unknown
	1	2	3	4	5	6	99
110	Rate the services that Niagara Region provides to new immigrants						
	In dire need of correction	Of concern, needs attention	Neutral	Progress is being made	Headed in the right direction	Niagara is a leader	Unknown
	1	2	3	4	5	6	99
111	How well do you think Niagara supports the development of our children (i.e. Early years centre, day care access etc.)						
	In dire need of correction	Of concern, needs attention	Neutral	Progress is being made	Headed in the right direction	Niagara is a leader	Unknown
	1	2	3	4	5	6	99

112	Do you feel like you have access to appropriate health care in your community?						
	In dire need of correction	Of concern, needs attention	Neutral	Progress is being made	Headed in the right direction	Niagara is a leader	Unknown
	1	2	3	4	5	6	99
113	Do you feel like you have access to appropriate health care in the Niagara Region?						
	In dire need of correction	Of concern, needs attention	Neutral	Progress is being made	Headed in the right direction	Niagara is a leader	Unknown
	1	2	3	4	5	6	99
114	How well do you think that Niagara Region is doing to provide assistance to those living with chronic conditions						
	In dire need of correction	Of concern, needs attention	Neutral	Progress is being made	Headed in the right direction	Niagara is a leader	Unknown
	1	2	3	4	5	6	99
115	Do you think that Niagara provides enough affordable housing to those in low-income situations?						
	In dire need of correction	Of concern, needs attention	Neutral	Progress is being made	Headed in the right direction	Niagara is a leader	Unknown
	1	2	3	4	5	6	99
116	In your opinion, is there enough diversity in the available housing types in Niagara? (accessible apartments, condo's, detached homes)						
	In dire need of correction	Of concern, needs attention	Neutral	Progress is being made	Headed in the right direction	Niagara is a leader	Unknown
	1	2	3	4	5	6	99
117	Do you have any health challenges, conditions or disabilities that you would like to tell me about? If so, what are they?						

Thank you for your time and your involvement. The results of this study will be available at Brock University or can be requested from the researcher upon completion. Thank you again and have a wonderful day.

1: Qian, J., Cai, M., Gao, M., Tang, S., Xu, L., Critchley, A. (2009)
2: WHO Steps Instrument: Core and Expanded: World Health Organization

Appendix D – Confidentiality Agreement

This study is being undertaken by Karen Cudmore for completion of Master of Arts Degree in the Faculty of Applied Health Sciences at Brock University Health Sciences the Office of External Relations. The purpose of the project is to assess explore the relationships between social capital components and self-reported health status and determinants of health to foster a better understanding of how these components relate to each other.

Project Title: A Quantitative Co-relational Study of Social Capital, Self-reported Health Status and Social Determinants of Health in the Niagara Region

I, _____, the *Research Assistant/Transcriber*, agree to:

1. Keep all the research information shared with me confidential by not discussing or sharing the research information in any form or format (e.g., disks, tapes, transcripts) with anyone other than the *Researcher(s)*.
2. Keep all research information in any form or format (e.g., disks, tapes, transcripts) secure while it is in my possession.
3. Return all research information in any form or format (e.g., disks, tapes, transcripts) to the *Researcher(s)* when I have completed the research tasks.
4. After consulting with the *Researcher(s)*, erase or destroy all research information in any form or format regarding this research project that is not returnable to the R*esearcher(s)* (e.g., information stored on computer hard drive).

Research Assistant/Transcriber

_____ _____ _____
(print name) (signature) (date)

Researcher(s)

_____ _____ _____
(print name) (signature) (date)

This study has been reviewed and approved by the Research Ethics Board of the Applied Health Sciences Department of Brock University.
For questions regarding participant's rights and ethical conduct of research, contact the Chair of the Research Ethics Board at (905) 688-5550.

Appendix E – Letter of Permission

January 5, 2010

Dear Mr. Bullen:

I have recently read, with great interest, your paper "Measuring Social Capital in Five Communities" that was published in 2000. I am a Master's Student in the Applied Health Science Department at Brock University in Ontario, Canada. My research area of interest is Social Capital and its effects on Health Status among residents of the communities in Niagara. I am hoping that the measurement tool that was used in your study might be available for use as it is, to date, the closest tool that I have found which would accurately reflect the information that I am hoping to elicit during my study period.

Any direction or assistance would be greatly appreciated.

Warmest Regards from Canada
Karen Cudmore MA (c), BA

Subject: Re: Social Capital Measurement Tool

From: Paul Bullen <paul.bullen@mapl.com.au>

Date: Wed, 27 Jan 2010 08:40:54 +1100

To: Karen Cudmore <kcudmore@brocku.ca>

Karen,

You are most welcome to use the measurement tool in your study.
Attached is a PDF that will provide you with some of the information you may need.

Paul

Appendix F: Brock Research Ethics Approval Letter

Brock University
Research Ethics Board
Tel: 905-688-5550 ext. 3035
Email: reb@brocku.ca

Certificate of Ethics Clearance for Human Participant Research

DATE:	1/10/2011		
PRINCIPAL INVESTIGATOR:	KILTY, Heather-Lee - Nursing		
FILE:	10-125 - KILTY		
TYPE:	Masters Thesis/Project	STUDENT:	Karen Cudmore
		SUPERVISOR:	Heather-Lee Kilty

TITLE: A Quantitative Co-realtional Study of Social Capital Self Reported Health Status and Social Determinanants of Health

ETHICS CLEARANCE GRANTED

Type of Clearance: NEW Expiry Date: 1/31/2012

The Brock University Research Ethics Board has reviewed the above named research proposal and considers the procedures, as described by the applicant, to conform to the University's ethical standards and the Tri-Council Policy Statement. Clearance granted from **1/10/2011 to 1/31/2012**.

The Tri-Council Policy Statement requires that ongoing research be monitored by, at a minimum, an annual report. Should your project extend beyond the expiry date, you are required to submit a Renewal form before **1/31/2012**. Continued clearance is contingent on timely submission of reports.

To comply with the Tri-Council Policy Statement, you must also submit a final report upon completion of your project. All report forms can be found on the Research Ethics web page.

In addition, throughout your research, you must report promptly to the REB:

a) Changes increasing the risk to the participant(s) and/or affecting significantly the conduct of the study;
b) All adverse and/or unanticipated experiences or events that may have real or potential unfavourable implications for participants;
c) New information that may adversely affect the safety of the participants or the conduct of the study;
d) Any changes in your source of funding or new funding to a previously unfunded project.

We wish you success with your research.

Approved:

Michelle McGinn, Chair
Research Ethics Board (REB)

Note: Brock University is accountable for the research carried out in its own jurisdiction or under its auspices and may refuse certain research even though the REB has found it ethically acceptable.

If research participants are in the care of a health facility, at a school, or other institution or community organization, it is the responsibility of the Principal Investigator to ensure that the ethical guidelines and clearance of those facilities or institutions are obtained and filed with the REB prior to the initiation of research at that site.