EXPLORING TIME-SPACE CONSTRAINTS AND HEALTH STATUS IN TWO NEIGHBOURHOODS IN HAMILTON, ONTARIO, CANADA

EXPLORING TIME-SPACE CONSTRAINTS AND HEALTH STATUS IN TWO NEIGHBOURHOODS IN HAMILTON, ONTARIO, CANADA

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ABSTRACT

The population health approach is the main organizing framework for this thesis as it examines health from a holistic lens recognizing the importance physical, social, economic and environmental influences. Both time-geography and health-geography approaches have been utilized in the research to gain a better understanding of how time, space, and health are interconnected for neighbourhood perceptions and health status. This qualitative parallel case study examines behaviour at the neighbourhood level in an attempt to understand how individuals approach everyday life circumstances and perform activities in their own physical environment while experiencing spatial and temporal constraints and opportunities. This study serves to create an understanding of time, space and health at the local level by examining two local communities within Hamilton, Ontario. The industrial neighbourhood (n=20), and the mountain neighbourhood (n=20) were selected as study areas due to their contrasting physical, social, economic, and environmental characteristics. Results indicate differences in self-rated health status, time-use patterns, and uses of space in the two communities. The mountain neighbourhood reported higher levels of self-reported health, complex schedules, and greater spatial mobility within and outside of the local environment. The industrial neighbourhood reported lower self-rated health, were also highly mobile within and outside their local environment and maintained complex time-use patterns. Results from this study add to the growing body of literature on time, space, and health, but also offer methodological contributions in the way of linking time and health-geography methodology within a qualitative study. Findings may also be used to inform policy and lead to a better understanding of temporal-spatial dimensions of health.

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CHAPTER 1
INTRODUCTION

1.1 Background and Research Problem

The population health perspective will serve as the main framework for investigating the wide range of health-related behaviours that take place in two communities in Hamilton, Ontario. The population health perspective takes a holistic approach that recognizes the complex role of social, economic and environmental factors that interact to affect health (Kindig & Stoddart, 2003). Theories of time-use and space, first developed by Torsten Hagerstrand will be employed to understand the temporal-spatial dimensions of health-related behaviour. Hagerstrand (1970) believed that time and space constraints impact the types of activities that individuals can undertake. Time-geographical approaches examine behaviour at the micro-level in an attempt to understand how individuals approach everyday life circumstances and perform activities in their own physical environment (Ellegard, 1999). For the most part, very few Canadian studies have made an attempt to bring time-space approaches to the study of health. This study serves to create an understanding of time, space and health at the local level by examining two local communities within Hamilton, Ontario. The purpose of this research is to examine the use of time and space for health-related purposes to understand how everyday life activities can impact health behaviour in local communities.

1.2 Context of Research

The focus of this study takes place within the larger context of a population health study. Two consecutive quantitative surveys have been completed in four predefined distinctive neighbourhoods in Hamilton, Ontario. These surveys measured perceptions of neighbourhood, lifestyle, and self-reported health status (Eyles et al., 1999; Luginaah et al, 2001; Wilson et al, 2004). Building upon this work, this thesis examines two contrasting neighbourhoods more in-depth using qualitative methods. For instance, the mountain neighbourhood is an area of affluence with high income and education levels, as well as and low economic diversity and high social diversity with few recent immigrants. On the other hand, the other neighbourhood, located in north east industrial area of Hamilton, is an area of low affluence with few recent immigrants, low education and income levels, along with high unemployment and low social diversity (Luginaah et al., 2001). These two distinct neighbourhoods in Hamilton will be the areas of focus for the research project proposed.

1.3 Objectives

The research addresses the following question: in what ways do time and space constraints affect neighbourhood health status, and how do these constraints affect individual perceptions of health? The research explores how time-use patterns and uses of space produce health damaging or health enhancing behaviours in local environments. This exploratory qualitative study investigates three main areas: First, it examines individual daily time-use patterns in two neighbourhoods in Hamilton. Next, the nature of

the physical environment in these neighbourhoods is explored in an effort to understand how space is used within these two contrasting communities. The final aspect of the project considers the impact of time and space constraints on perceptions of health. Qualitative methods were used to explore the relationship between time, space, and health. Fieldwork was integral part to study of each of the neighbourhoods in an effort to understand the nature of the physical environment. For example, knowing the location of fast-food locations, medical facilities, and parks painted a clearer picture of each neighbourhood, and lead to a better understanding of how physical space in a neighbourhood can impact health.

A random sample of previous respondents from surveys one and two were asked to participate in in-depth interviews to reveal information about time, space and health not covered in pervious quantitative surveys. A total of 20 interviews took place in each neighbourhood. The 40 semi-structured interviews focused on daily routines, lifestyle habits and general experiences of individuals in each of the two neighbourhoods. Respondents were asked a series of questions about time-use patterns, neighbourhood characteristics, and health perceptions.

1.4 Contributions

The contributions of this research are twofold: first, the research will make a theoretical contribution to the academic world and establish an interest in spatial-temporal studies of health. This provides a knowledge base in the Canadian context. The current information available on time-use patterns and space has been largely focused on European and American contexts. The large body of literature that examines time-use and spatial allocation of activities links time and space; however, lacks the dimensions of health. The second contribution of this research will be in the realm of government and subsequent policy development. Previous research has identified urban spaces as an important factor in the health of communities and quality of life (Jackson, 2003). The findings of this research may be relevant to decision-makers within public health, urban planning, and transportation sectors of local government.

1.5 Chapter Outline

Within *Chapter 2*, the population health framework is reviewed with specific reference to the changing models of health from a curative model to a more holistic preventative model. Also, covered in this chapter is the shift from medical geography to health geography. The key concepts of space, place, and time are discussed in detail with specific reference to the time-geography approach that focuses on analysis of constraints, opportunities and choices. An exploration of relevant literature on time and space provides examples of how these concepts can be linked in studies of health.

In *Chapter 3*, the value of qualitative research is explored, as well a brief discussion on the *Deconstructing the Determinants of Health at the Local Level in Hamilton project* of which this study is a smaller component. The case study approach is outlined with specific attention given to data collection strategies, and issues of reliability and credibility in qualitative research.

Chapter 4 reveals the main results of the research. A summary of emerging themes is presented in this chapter through the use of direct quotations taken from the interview data, as well as data from the time-use matrix activity and neighbourhood mapping exercise.

Finally, *chapter 5* provides a discussion of the results and conclusions. Here, identified themes are interpreted by comparing findings from this study with other similar literature in the area of time, space, and health. In the concluding portion of this chapter limits of the research are discussed, followed by a review of contributions, policy implications, and future directions for research.

CHAPTER 2
REVIEW OF LITERATURE

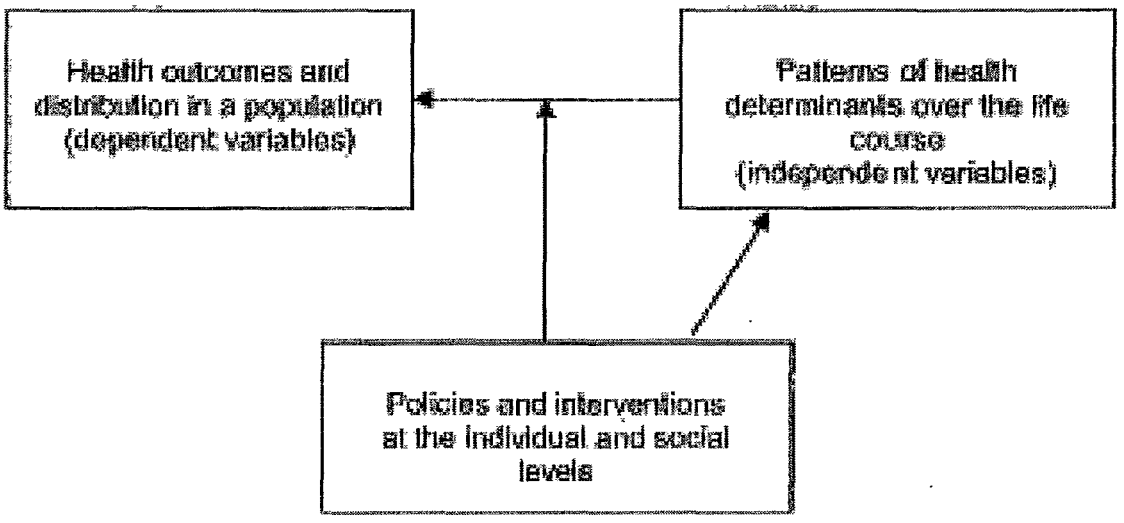
2.0 Introduction

The population health framework is a useful perspective that can provide information about environment and health relationships, and is the guiding framework for this thesis. This chapter begins with a discussion of this perspective, moves on to understanding the determinants of health, as well as models of health, such as the biomedical model, socio-ecological model of health, and the World Health Organization's holistic definition of health. The shift from medical geography to health geography is also covered in this chapter, followed by a brief discussion about complexities in collecting environment and health data. Literature surrounding the key concepts of place, space, and time is reviewed. This portion of this thesis analyzes the concept of place with specific reference to sense of place, place attachment, and place disruption. The neighbourhood is examined as a component of space and the social creation of space is explored. In the discussion of time, various concepts are examined, such as sense of time, time-use, and psychology of time. An examination of the time-geography approach is also discussed in detail, along with the spatial-temporal constraints in highly mobilized societies. The final portion of this chapter illustrates the impacts of time and space on health-related behaviours.

2.1 Contributions of the Population Health Framework in Understanding Determinants of Health

This research utilizes a population health perspective to explore time, space, and health. The population health perspective takes into account the broad definitions of health. It can be loosely defined as "the health outcomes of a group of individuals, including the distribution of such outcomes within the group" (Kindig & Stoddart, 2003, p.380). Basically, the population health perspective aims at understanding the determinants of health within populations (Kindig & Stoddart, 2003). (*See Figure 1.1*).

Figure 2.1: A Schematic Definition of the Field of Population Health



(Source: Kindig & Stoddart, 2003).

Population health perspective views the physical environment, social environment, and socio-demographic characteristics as the primary determinants of health (Galea et al. 2005). In their research on health in cities, Galea et al. (2005) reveals that aspects of the physical urban environment can impact the health of the community. For instance, "the human built environment includes housing, which can influence both physical and mental health, including asthma and other respiratory conditions, injuries, psychological distress, and child development" (Galea et al., 2005, p.1025). The population health perspective can provide the basic tools for understanding the role of the physical, social, and economic environment in producing health status among individuals (Frank, 1995). Research in the area of physical environment is important to the study of health of populations; however, the social determinants of health, such as social networks, social cohesion and racial diversity, can serve as either protective or damaging factors to health (Galea et al., 2005). For example, Ram (2005) suggests that poverty serves to increase mortality, and other factors within the social environment, such as income inequality, appear to have a stronger effect on mortality rates. For instance, at the population level, societies in which wealth is distributed equally will experience a higher level of health status. Japanese society has been cited as an example of equitable distribution of wealth, low mortality, high life expectancies, and low costs of health care delivery (Frank, 1995; Poland et al, 1998).

Also central in the population health framework is the role of personal routines that impact health outcomes across social hierarchies (Dunn & Hayes, 2000). Research that utilizes the population health framework often aims to understand the social geographies of everyday life and the cumulative effects of everyday experiences on health

status (Dunn & Hayes, 2000). For example, housing research by Dunn and Hayes (2000) reveals that high stress, lack of control, and personal meanings of housing all relate to the levels of self-reported health and mental health status.

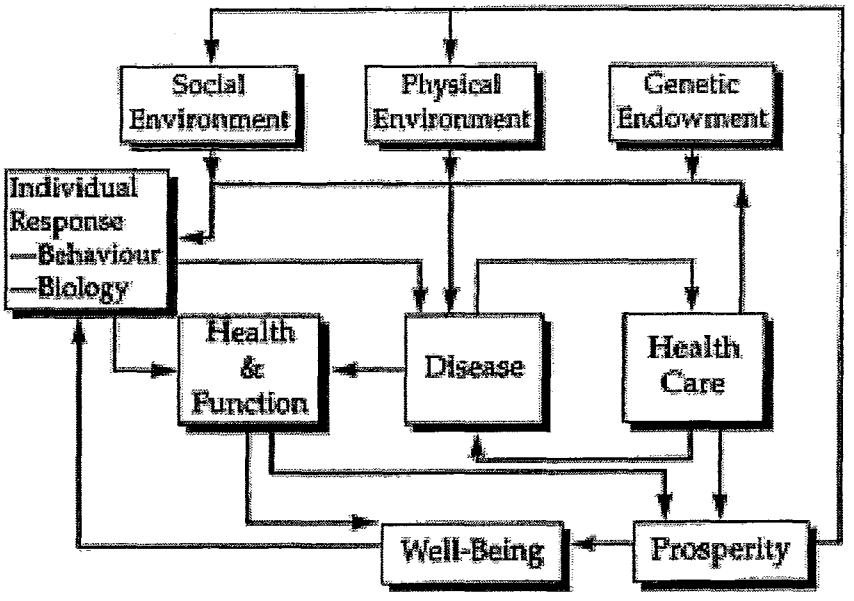
2.2 The Population Health Framework in Canada

The concept of population health is internationally recognized, however, the perspective was especially developed in Canada (Hayes, 1994; Frank, 1995). The Canadian Institute for Advanced Research (CIAR) put forth a framework for conceptualizing why some people are healthier than others, and provide a better understanding of the population and individual level determinants of health (Frank, 1995). In the past, Canada was seen as the leader in health promotion and population health; however, recent inadequate research and policy developments in these areas have pushed Canada behind other countries such as Sweden and the United Kingdom (Raphael & Bryant, 2005). Perhaps the lag in developments can be attributed to Canada's economic constraints in health delivery and policy, along with high rates of social change (Frank, 1995). For example, in conducting population health research in Canada, issues of environment and health should be effectively considered. Research by CIAR has been somewhat criticized due to the absence of major social science and social theory themes in research (Hayes, 1994). In order to fully understand the relationship between health and environments, CIAR must recognize that the social environment, physical environment and biological endowment interact to produce health. Realization of this interaction was not adequately described in their analysis of determinants of health (Hayes, 1994; Raphael & Bryant, 2005). For instance, the health of Canadians was substantially better than our neighbours to the south in 1991; however, the lack of policy that addresses the social determinants of health has resulted in decreased health status (Raphael, 2003). The Romanow Commission report is an example that illustrates Canada's lag in understanding social determinants of health. The report fails to indicate any efforts or suggestions for coordinating government action to address the role of social determinants on the health status of Canadians (Raphael, 2003). It is the goal of this research to explore some of the social and physical determinants of health of the sample population within Hamilton.

2.3 Determinants of Health

Measuring health in the population health framework can be achieved by examining health status indicators that reveal information about socio-economic conditions, physical environments, health practices, coping skills, and medical utilization. The population health approach views health as a product of interrelated factors that are experienced over a life course and these interrelated factors are examined to reveal variations in health status among groups of individuals. This information can then be used to understand determinants of health and create and implement policies to improve health and well-being of populations (Kindig & Stoddart, 2003; Poland et al, 1998). *Figure 2.2* illustrates the complex interaction of various determinants of health. Notice the complex interactions between various factors such as social and physical environment.

Figure 2.2: Model of the Determinants of Health

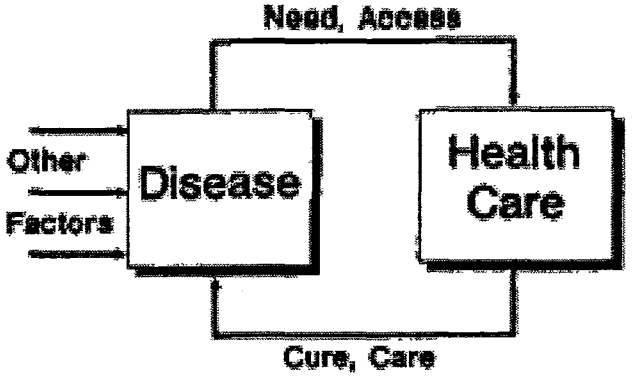


(Poland et al, 1998).

2.4 Models of Health

For the study of time, space, and health, a holistic view of health is needed to understand the complex factors that can affect health. This view of health emerged as researchers were moving away from biomedical definitions of health that offer a simplistic view of health as the absence of disease, disability, or death (Evans and Stoddart, 1990; Kearns, 1993). Thus, the biomedical model is a curative model "in which the central element is the lesion which arises within an otherwise healthy body, precipitating a set of symptoms" (Kearns, 1993, p.141-142). (*See figure 2.3*).

Figure 2.3: Biomedical Model of Health



(Source: Evans and Stoddart, 1990).

In this model, ill-health is a result of a specific cause, followed by symptoms, and then possible cures (White, 1981). Biomedical researchers and practitioners would focus on understanding the symptoms in an effort to detect the cause and cure the disease. (*See Figure 2.4*)

Figure 2.4: The Biomedical Model of Ill-Health

(Source: White, 1981).

However, over the past decades, there has been a reorientation towards health and this has resulted in shifts leading to understanding health outside the biomedical perspective (Kearns, 1993).

The World Health Organization's (WHO) definition of health is perhaps one of the most widely used in the fields of environmental health, medical geography, and health geography. According to the World Heath Organization, "health is defined as a state of complete physical, mental, and social well-being and not merely the absence of disease and infirmity" (Kearns, 1993, p. 142). This definition provides a holistic look at health, but explicitly mentions little in regards to the environment's role on individual health. According to Gatrell (2002), health can be seen as available personal and societal resources that are helpful in achieving full health potential rather than complete state of physical, mental, and social well-being, as the WHO definition does not accurately capture health. Health is difficult to understand, thus many studies focus on the absence of health, leading to the collection of disease and illness data (Gatrell, 2002).

Recently, a socio-ecological model of health takes precedent over the biomedical disease model in some forms of research (Eyles, 1997). According to Kearns (1993) the socio-ecological model embraces the intricate relationship between a population and various aspects of their environment, and also focuses on the how these interactions produce health. Thus, in the socio-ecological model the environment is seen as a place that is an important factor that actively affects the health of populations that interact within that environment (Kearns & Moon, 2002).This interactive, non-linear, and systems oriented view of health is a far contrast from the curative, linear biomedical model of health (Kearns, 1993).

2.5 Environmental Health and the Shift from Medical Geography to the Geography of Health

Environmental health researchers believe that the environment has the potential to modify every aspect of health and disease (Gochfeld & Goldstein, 1999). A working definition proposes that the environmental health perspective focuses on the multi-directional features of health and well-being of human populations in specific physical, social and societal environments (Eyles, 1997). The field of environmental health was born given the influence that the environment can exude on your health (Eyles, 1997).

The development of a distinct field allows for a society to gain the tools necessary to make knowledgeable choices in regards to their health and environment (Olden & Schonwalder, 2003).

Medical geography is the larger grouping under which some environmental health research is set (Eyles, 1997). This discipline is a blend of natural and social sciences and is closely linked to epidemiology due to the strong biomedical focus of this subject area. Since earlier days of medical geography, two distinctive areas have emerged: geography of disease and illness and geography of health care (Litva and Eyles, 1995). Medical geography has often been criticized for being atheoretical in nature, although Livta and Eyles (1995) argue that even traditional medical geography was informed by theory. Since theories can help to understand social phenomena, they have been a vital part of medical geography despite contradictory views of the absence of theory in medical geography. According to Dyck (1999), the medical geography agenda has been broadening to address issues of place, space, health, and health care. This reorientation has brought about a different focus, as researchers reinvent their field as health geography.

The shift from medical geography to health geography emerged as researchers were called to conduct theory-informed research that is sensitive towards understanding the links between people, places, and health (Dyck, 1999). Health geography research encompasses a collection of influences ranging from sociology, epidemiology, ecology, and even statistics (Gatrell, 2005). Research tends to set emphasis on places and health. In the past, places have been viewed as a "passive 'container' in which things are simply recorded" (Kearns and Moon, 2002, p.609); however, places do indeed matter in issues of health and should be viewed as operational 'living' constructs. Thus, research in this area is part of a larger contemporary health philosophy, one of health rather than medicine that focus on the relationship between place and health (Kearns, 1993). The new geography of health aims to understand experiences, health status, and even health services; however, medical geography and geographers of health need to work together on the common goal of understanding health regardless of the debates (Rosenberg, 1998).

2.6 Bringing Together Environment and Health Data in Health Geography

Given the known impacts of environmental factors on human health, various researchers and policymakers have shown a concern for determining the environment's role in enhancing or damaging health, yet research in this area is lacking since estimating the environment and health link is a difficult task (Elliott et al., 2001). In understanding how illness and disease affect populations, researchers must carefully examine the environment as a key component of the health equation, because the complex human-environment interaction in the study of the determinants of health of populations is imperative (Ali et al., 2002; Evans and Kantrowitz, 2002; Eyles, 1999). For example, Scotland's efforts to create a public health data resource that focuses on social and environmental determinants of health has resulted in a better understanding of the overall health of populations (Hanlona et al., 2005). Health and environmental data were brought together in various stages that allowed for the creation of comprehensive community profiles that examined the health of local communities with a socio-ecological focus on

health (Hanlona et al, 2005). The goal of the project was to advance health by increasing the quality of data about the health of communities (Hanlona et al., 2005). In this example, health and environmental data are brought together in the study of population health, but data were collected mainly utilizing quantitative methods.

Health and environmental relationships are often intricate in nature, thus selecting appropriate study methods to address environmental health issues is essential (Ali et al., 2002). There are various methods and tools that are valuable for exploring the link between environment and health data. An understanding of health and environment can be achieved by adopting qualitative methods. The investigations of people, environment, and health from this perspective can help to elucidate personal experiences and contexts of what it means to healthy, ill, or disabled. These accounts would reveal various social, physical and even political influences on health (Dyck, 1999). In this study of time, space, and health, gathering various forms of data that brings together the three variables can be achieved quantitatively through survey techniques, and qualitatively through in-depth interviews. As stated by Elliott (1999), studies within the sub-discipline of geographies of health would focus on understandings of health that stresses the importance of socio-environmental factors effect on health. For the purpose of this research, it was achieved by drawing on the qualitative tradition that is commonly used in health geography (Dyck, 1999).

2.7 Key Concepts: Place, Space, and Time

2.7.1 Understanding Place

It is commonly believed that "if you don't know where you are, you don't know who you are" (Berry in Stegner, 1992, p.1). This quote articulates the importance and value of place. Sense of place is a much used expression in modern societies, but awareness of the importance of place dates back many years. The concepts of place originated from the Latin term *genius loci*. This term made reference to the guardian divinity of place in historical times (Jackson, 1994). However modern cultures embrace the concept of sense of place and use it to describe "the atmosphere to a place, the quality of its environment" (Jackson, 1994, p. 157). Individual experiences of sense of place are personal and can very in intensity (Jackson, 1994). For example, for many, the home environment is cited as a place that can evoke positive feelings, but not every person will view their home as an ideal place (Tuan, 1974). In this example, those who view their home as a positive place will have an affective bond between themselves and their home and experience topophilia (Tuan, 1974). Topophilia, referred to as a love of place, is central in understanding how people form an affective bond with certain places within their environment. According to Tuan (1974), people are attracted to places because certain environments support their lives and permit them to function. Thus, any environment that helps sustain a person's lifestyle has the potential to be seen as a satisfying place.

Senses of place are often created and developed through time as a result of habit or custom (Jackson, 1994). For instance, weekly visits to a downtown market to purchase food may contribute to your sense of place because you have formed a habit of visiting that place on a weekly basis, and purchasing food at the downtown market is part of your

lifestyle. Here, spending time in a particular place as a result of a routine leads to sense of place. However, it is not only habits and lifestyles that contribute to personal sense of place. Sense of place comes from a response to preexisting features of the landscape, and these responses are affected by many factors (Jackson, 1994). Most notably, attitudes, and perceptions play a major role in determining personal attractions to particular places. Perceptions allow individuals to register certain phenomena while blocking out others, and attitudes towards place are impacted by personal beliefs and cultural stances (Tuan, 1974). Individual responses to a neighbourhood park, for example, will vary depending on attitudes and perceptions. Consequently some people may not have a positive experience of that place while others may have strong attachment to that area.

There are three aspects that are useful in understanding place attachments at the local or neighbourhood level. First, individuals tend to have a strong commitment to their neighbours and neighbourhood environment (Altman & Low, 1992; Kaplan & Kim, 2004). Thus, individuals who live in the same homes and neighbourhoods for an entire lifetime will have a familiarity to that place that serves as protection. As a result of having such a strong attachment to place, people may be reluctant to leave their old homes in favour of a new home (Tuan, 1974). The strong attachment to place, in this case the home, reinforces the idea of community commitment presented by Altman and Low (1992).

The second aspect suggests that strong attachments towards place occur as a result of familiarity and stability of place (Altman & Low, 1992). For example, living in a familiar place provides security, builds self esteem, and creates a sense of belonging for individuals and communities (Altman & Low, 1992). Since place attachments are holistic, they tend to be experienced as an extension of self (Altman & Low, 1992). "The power of space is great...it is the basis of the desire of any group of human beings to have a place of their own, a place which gives them reality, presence, and power of living, which feeds them, body and soul" (Tillich in Jackson, 1994, p. 162). The stability of places helps people define themselves and understand who they are. Thus, strong attachments to places are very important in understanding individuals (Altman & Low, 1992).

Finally, place attachments are not static, as they tend to change and develop over time (Altman & Low, 1992; Massey, 1994). In the past, there was a strong attachment to compact European-like cities; however, many more people are attracted to the life in suburbia (Jackson, 1994). This shift in ideals and personal attraction to certain places has drastically changed the nature of development in many North American cities over the past decades from densely populated inner cores to prosperous development in the urban fringe (Jackson, 1994). This change in attachment can be explained by looking at changes in the individual. Past societies valued community bonds, togetherness, and solidarity, but a shift in thinking has families residing in places that promote privacy and independence from urban life (Jackson, 1994). It is important to note that changes in ideals may also lead to changes in places, but sometimes these changes are seen as a disruption to the environment (Altman & Low, 1992).

Attachments to place occur slowly, but can be disrupted quickly (Altman & Low, 1992). Any disruption to place, regardless of scale, is seen as a direct threat to individuals and the community (Altman & Low, 1992). In the case of place disruption, the bonds and

attachments to place are altered as a result of an event (Altman & Low, 1992). In the book *Sense of Place* edited by Feld and Basso (1996), several cases of place disruption are cited. For example, the events of the Holocaust and ethnic cleansing are cases of severe forms of place disruption. In these cases, a quick changes environment and ways of thinking lead to the massive disruption of many communities (Feld & Basso, 1996).

Other forms of place disruption include voluntary and involuntary relocation and burglary. For example, planned moves, as a result of job loss, new marriage, or status change, can temporarily disturb a person's environment and cause anxiety, but the stress will be alleviated once settlement has occurred (Altman & Low, 1992). Involuntary moves due to an earthquake or flood, can cause a big shock to the community and result in very stressful conditions, as was the case in the Buffalo Creek Flood in 1972 (Altman & Low, 1992).

In the case of burglary, an individual may experience feelings of anger, disbelief, and shock, as the home is seen as a private sanctuary for many individuals. Burglary can violate personal identity because the home, a perceived safe and secure environment, has been penetrated by a stranger (Altman & Low, 1992). However, burglary can also disturb community bonds for the reason that "fear of crime can exert negative influences on communities by decreasing collective cohesion and solidarity..." (Miceli & Roccoto, 2004, p.777). As described in the cases of relocation and burglary, place disruption can impact personal mental state and the way in which environments are perceived (Altman & Low, 1992). Attachments or disruptions to place are relevant in the development of this thesis as many respondents believed that their neighbourhood space was an extension of themselves. Thus understanding how one can build attachments or even lose attachments to space is necessary.

2.7.2 Space and Place in the Neighbourhood Context

In examining space, the neighbourhood is often used as a unit of analysis; however, no single definition or interpretation of a neighbourhood exists (Kearns & Parkinson, 2001). A neighbourhood could be loosely defined as "a bundle of spatially based attributes associated with clusters of residences, sometimes in conjunction with other land-uses" (Galaster, 2001, p. 2112). Tuan (1974) believes that neighbourhoods are sub-districts that have well-defined boundaries and serve to separate the neighbourhood from mainstream urban life. According to Kearns and Parkinson (2001), there are three different scales of a neighbourhood: the 'home area', 'locality', and 'urban region or district'. The 'home area' is about a ten to fifteen minute walk from one's home and this zone is believed to have the strongest psycho-social purposes of the neighbourhood. For example, this area provides relaxation, belonging, and familiarity for local residents (Kearns & Parkinson, 2001). Similarly, this area corresponds to the 'block face' in work by Galaster (2001). Additonal information about space in the local context will be provided in the discussion chapter of this thesis.

Second, is the 'locality' in which residential activities take place, along with creating an arena for displaying social status and position (Kearns and Parkinson, 2001). The two zones in Galaster's (2001) model are different; the 'defended neighbourhood' and 'community liability' are areas that are defined by corporate identity, politics, and

economic forces. However, the final areas in both models are similar. For example, the 'urban district or region', put forth by Kearns and Parkinson (2001), is an area of social and economic opportunities. In work by Galaster (2001), the highest geographic scale of the city is the 'expanded community of liability', referring to the entire region of a city.

Despite the various scales of neighbourhoods, each neighbourhood contains various unifying features that are spatially based. For instance, each neighbourhood will consist of social characteristics (class, demographics, interaction, sentimental value), physical characteristics (infrastructure, environment, proximity), and political characteristics (governance, taxes, services). However, all of these characteristics may not be present or they will all be present in varying degrees (Galaster, 2001). While each neighbourhood may share similar characteristics, every neighbourhood is unique. In a study by Ellaway et al. (2001), the differences in health status is examined in four contrasting neighbourhoods in Glasgow, Scotland. The research team noted that each neighbourhood had differences in health status, suggesting that each neighbourhood displayed a unique set of characteristics that may influence the health status of members of the community (Ellaway et al., 2001).

The importance of physical space in a neighbourhood has been noted; however, the people that occupy that space are equally as significant. How do humans use the space that they call home? "We come and go but the land is always here, the people who love and understand it are the people who really own it- for a little while (Cather in Feld & Basso, 1996, cover). This quote illustrates the impact of humans on space or can also been seen as the impact of space on humans. People are owners of space; thus they have the power to shape space into their own creations. The physical layout of cities, appearance, and architecture for example, are a means to express the society that inhabits that space (Tuan, 1974).

Generally speaking, there are four major producers of a neighbourhood who have the power to shape neighbourhoods: households, businesses, property owners, and local government (Galaster, 2001). These groups are able to convey social information through their use of space within a neighbourhood (Kearns and Parkinson, 2001). For example, sub-divisions are created by a developer (creation of the physical space). However, once people move into the community, the neighbourhood is given new attributes because space has been shaped by the current consumer (creation of social space) (Galaster, 2001). Spaces even have the power to discriminate. For example, exclusion can occur in neighbourhoods causing in-group loyalty and strong-out group antagonism (Kearns & Parkinson, 2001). In ghettos of Chicago, gentrification by wealthy professionals was taking place and caused the displacement of poor minorities who developed hostility towards the new group in the community (Smith, 1999). Thus, the neighbourhood space is functional in several ways. A neighbourhood is central in creating social ties between neighbours, but neighbourhoods also serve as economic areas and spaces of discrimination (Galaster, 2001; Kearns & Parkinson, 2001). Recognizing the importance of social and economic factors on the form and social organization neighbourhoods is important for this project given the contrasting nature of each of the two study areas.

2.7.3 The Relevance of Time

As stated in Barbara Adam's (1990) book *Time and Social Theory*, time is a fundamental fact of life. Time may be seen as a resource that is used by everyone and this resource is evenly spread out among the population regardless of class, ethnicity, or income (Ellegard, 1999). In reference to the theory of structuration, Giddens alleged that life and time pass in transformations. Countless references to the theory of time are made by Giddens in the concepts of routinization, time-space distanciation, and commodified time (Adam, 1990). Kant's notion of time is described as an a priori concept that allows rational agents to comprehend and structure sense of experience (McCormick, 2006). The above-mentioned theories of time have influenced the manner in which time is examined and have made a significant contribution to the understanding of time and space. Despite the varying views on time and space, there is a general consensus that time is an important aspect of social theory (Adam, 1990).

Time can also be examined from a psychological lens. Much research has been done on the psychology of time and time-use. Individual perceptions of time will vary because internal time keeping is not absolute (Sikorski, 2004). Experiences of time will also be impacted by emotions. For example, under conditions of anxiety, nervousness, and fear, time appears to slow, but during joyful experiences time appears to 'fly by' (Sikorski, 2004). This corresponds to research by Durgan and Sternberg (2002) that suggests that perceived time of an event may not directly correspond to its actual timing. Many people have a positive time preference. For instance, people prefer to have immediate gains and delay losses in time (Friedman, 2001). This idea reinforces the concept of immediate gratification presented in the latter part of this paper in reference to time saving and increased mobility. This desire to experience instant gratification may have an impact on time-use choices and travel behaviour. Viewing time from a psychological lens is important, but a sociological analysis of time reveals the socially constructed aspect of time and time-use.

On a basic level, time is necessary and unavoidable; we all live and die and moments cannot be lived again once they have passed through time (Adam, 1990). According to theorists with a functionalist perspective, time is socially constructed and "it reflects, regulates, and orders social life. It is a 'social fact" (Adam, 1990, p.42). Research by Lynch (1972), states that daily routines are a pre-established rhythm inside our own bodies that is based on social timing. In western cultures, nearly every aspect of the day is timed from the moment one wakes to the end of the day (Adam, 1990). For the most part, western societies understand time by clocks or calendars, but also by norms, values, and social controls (Adams, 1990). For example, norms of society may cause our bodies to be structured on a certain schedule of waking up at 6 am for work. Eviatar Zerubavel writes, "much of our social life is temporally structured in accordance with 'mechanical time', which is quite independent of the rhythm of man's organic pulses and needs" (Jackson, 1994, p.160). This statement suggests that we are ignoring the biological forces of time and nature in favour of mechanical periodicity which is dictated by clocks and calendars (Jackson, 1994). Time is a key commodity in many societies, and thus every ounce of time should be used to its fullest (Adam, 1990).

Lynch (1972) believed that people manipulated time to suit individual situations. This management of time is referred to as the 'packaging of time', in which time-use is carefully planned (Lynch, 1972). The desire to fit many activities into one day is a phenomenon that has been studied for decades. Time-budget studies are interested in how time is spent on a daily basis (Adam, 1990). For instance, many studies examine travel behaviour of households and individuals to determine personal mobility and time-use patterns (Recker et al., 2001; Wachs & Kumagai, 1973; Zhang, 2005). The value of calendar and clock time is still prominent in western culture, but we are evolving time to fit a complicated personal schedule of complex time-use patterns (Jackson, 1994; Recker et al., 2001). This tight scheduling of time results in high levels of multi-tasking to complete daily activities. In a culture where time is seen as money, the less time we have the more precious it becomes, since time happens to a scarce resource (Adam, 1990). Literature on time patterning and the social importance of time can shed some light on individual time use patterns, scheduling, and conceptualizations of time of respondents within this study.

Manipulating time for individual purposes often results in a 'time-space compression', in which life's speed is accelerated and spatial barriers are overcome (Massey, 1994). The 'time-space compression' has changed the form and function of many environments (Massey, 1994). Temporal expressions can be seen in nearly every landscape because time is viewed as a vital aspect of life (Adam, 1990). For example, the need for mobility has resulted in major-scale transportation systems such as highways and railways (Massey, 1994). Also, having grid street networks are viewed as a time-saving tool for faster travel, yet the monotonous grid markings on the landscape are often viewed as less than desirable (Jackson, 1994). Consequently, placing such a high priority on time has various effects on the population and environment, as well as the uses of time and space.

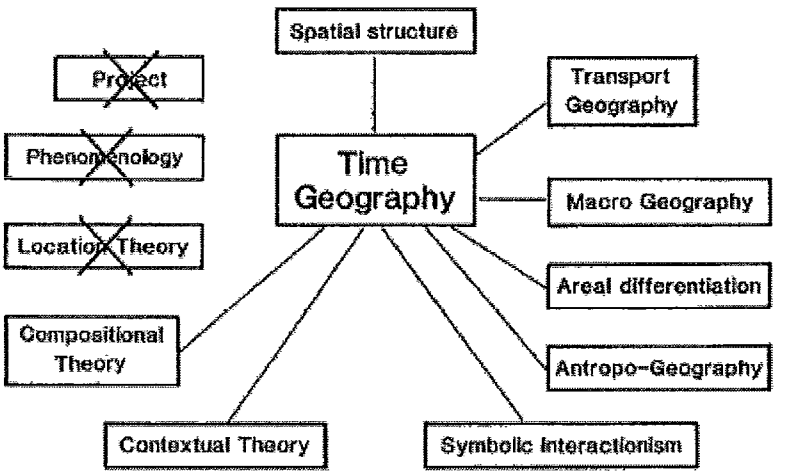
In the creation of a 'time-space compressed' society, there is a high degree of social differentiation between groups. Those of higher status are communicating, traveling, and constricting time, while lower status groups are experiencing the effects of the 'time-space compression' in a different fashion (Massey, 1994). For instance, research by Wachs and Kumagai (1973), measured employment accessibility and found that access to transit, ethnicity, and finances were factors that affected the levels of opportunities in urban areas especially for disadvantaged populations. Also, research by Recker et al. (2001) suggests that individual time savings were turned into something of intrinsic value, making money, for example. These two examples serve to illustrate the disparity and inequality that may be a negative externality to time saving practices in a 'time-space compression' society since only the wealthy and powerful experience the direct benefits. The 'time-space compression' concept is relevant within this study as there is a high level of social differentiation between the two study areas.

2.8 Exploring Time-Geography

Torsten Hagerstrand (1970) believed time was a central concept in understanding human activity. The Time-Geography approach focuses on the individual and "investigates how they are involved in social relations and perform activities in the

physical real-world environment" (Ellegard, 1999, p.167). Work by Hagerstrand (1970) focuses on the individual as a unit of study, rather than the collective, to reveal individual personal navigation in the spatial-temporal environment. This approach examines how individuals use resources in order to engage in activities (Ellegard, 1999).The Time-Geography approach "attempts to consolidate the spatial and temporal perspective of different disciplines on a more solid basis than has thus taken place" (Lenntorp, 1999, p.155). The Time-Geography approach consists of various subject areas. (*See Figure 2.5*) According to the diagram by Lenntorp (1999), some of the fields that no longer exist or are irrelevant are crossed out in the diagram.

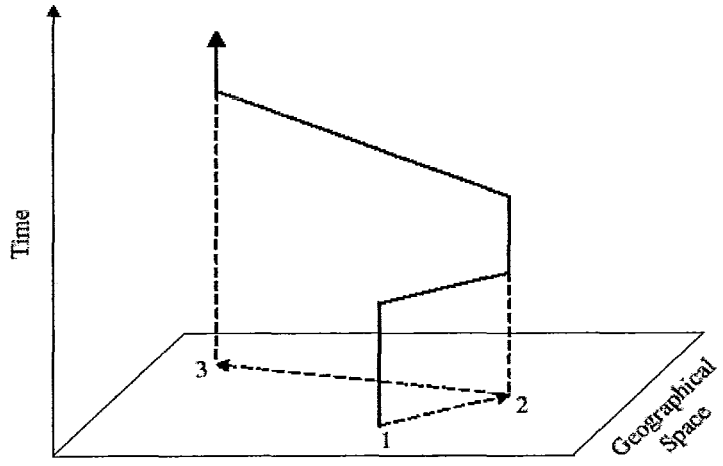
Figure 2.5: The Time-Geography Approach



(Source: Lenntorp, 1999).

Early migration research by Hagerstrand revealed that it was impossible to understand mobility and migration without taking into account the individual's setting in space and time (Lenntorp, 1999). One of the most notable concepts developed by Hagerstrand (1970) is the 'time-space path' that reveals individual mobility patterns in the spatial-temporal environment. In this model, time is represented on the vertical axis and the geographical area that surrounds an individual is the horizontal axis. The path conveys specific information about individual mobility throughout the activity space (Miller, 2005). Activity spaces are the limited areas of the environment used by individuals. (Miller, 2005). (*See Figure 2.6*)

Figure 2.6: Time-Space Path Model



(Source: Miller, 2005).

Much of Hagerstrand's work focuses on time and space, but does not adequately reveal information about the social space in which these activities are occurring (Lenntorp, 1999). This is a weakness in Hagerstrand's work on time and space. While Hagerstrand focuses on the various constraints on human mobility (discussed latter in chapter), he does not fully explore the reality of these constraints on individuals (Lenntorp, 1999). According to Lenntorp (1999), "Time-Geography should be seen as a foundation for theory-building...which could form a valuable basis for rephrasing old theories and the formulation of new ones" (p.157). Thus there is room for newly developed theories to incorporate a better understanding of human spatiotemporal constraints.

2.8.1 Constraints, Opportunities and Choice in Time and Space Theory

Hagerstrand believed that personal mobility and time-use are limited by three major constraints. First, the 'capability' constraint serves to limit individual mobility as a result of physical or biological factors (Hagerstrand, 1970). For example, people are required to allocate time to travel, as people cannot travel from one part of town to another instantaneously (Corbett, 2007). In a paper by Wasch and Kumagai (1973), physical accessibility was linked to quality of life in urban areas. While studying various socio-economic status groups in Los Angeles, the researchers found that physical structure of the city negatively impacted travel opportunities of various social groups (Wasch & Kumagai, 2001).

Next, the 'coupling' constraint implies that individuals need to be in one particular place at one time and they may need to interact with others (Hagerstrand, 1970). In this case, space-time paths may need to link up as part of an individual's personal time management schedule in order to achieve a particular task. For example, accessibility of

households is constrained by young children because they represent 'immoveable pegs' in an individual's mobility pattern (Recker et al., 2001). Interaction with children, picking up a child at school for example, may be seen as a constraint because the two mobile agents need to meet up at the same time in order for the task to be achieved (Recker et al., 2001).

Finally, the 'authority' constraint may be experienced by an individual if they were planning on visiting a restricted or protected area. Entry to these areas may be controlled by certain people or institutions that set limits on access (Hagerstrand, 1970). Entry into an area that is restricted, such as a private club, would be a major constraint for those who are not members. On a similar note, a protected military base could not be easily accessed by the average citizen (Corbett, 2007).

Since Hagerstrand's contributions to the understanding of spatial-temporal constraints, various researchers have studied constraints on human behaviour (Hess et al., 2005; Recker et al., 2001; VanEck et al., 2005; Vilhelmson, 1999; Young, 1999). Research by Vilhelmson (1999) investigates the factors that affect how people allocate time for flexible travel activities. In this study, gender and access to a vehicle did not impact how time was allocated, but impacted the activity space (distance covered) of individuals. In the same study, the number of children, hours worked, personal attitudes, income, and the number of cars per household served to constrain travel behaviour in the sample population. For example, women traveled less than men, and the more children in the household meant less traveling (Vilhelmson, 1999).

In a study by Recker et al, (2001), various constraints on human behaviour were examined. For example, a major constraint noted in the study is the time-budget or routing constraint. This limitation has a major impact on travel and mobility because a certain amount of time to travel to any given location is needed. Also noted in the study is the effects of grouping and ordering of travel activities. This may pose a problem if activities are scattered around town. Scheduling may also limit mobility due to the starting and ending of activities. Auto-availability is also a major constraint in travel behaviour because activity spaces in a mobile society can stretch across the city, making it difficult to engage in activities without access to a car. Coupling constraints are also mentioned in the study and are important to transportation policy development, as understanding the individual accessibility and constraints faced by households revealed transportation patterns that were relevant in ride-sharing and trip taking behaviours (Recker et al., 2001).

Rational economic behavior and constraints are explored in research by Hess et al. (2005). In this study, individuals receive utility from organizing their consumption of goods and services and allocating their time wisely between activities so that they experience time savings. However, there are various constrictions that get in the way of achieving optimal time savings during travel behaviour. For example, each activity requires a certain distance to be traveled and it takes time to get to certain locations and activities. Another constraint is the total time available to achieve a particular task. The allocation of time and time management are very important because there is a value attached to time-savings (Hess et al., 2005).

Despite the various constraints on the individual, the city is often seen as a place of opportunity. High levels of urbanization often result in an increase in mobility and shorter travel times for individuals due to complex street networks (VanEck, et al., 2005). "As a result of cultural, demographic, and technological developments current society can be characterized by increasing opportunities for choice in different behavioural domains such as housing, the labour market, leisure and transport markets (VanEck et al., 2005, p.123). These developments have resulted in increases in mobility and choice in travel patterns (VanEck et al., 2005). Individuals now have the power to select the types of activities they wish to perform, as many activities planned in a time-budget are flexible or optional in nature (Ellegard, 1999).

It is reasonable to assume that people will select how they will spend their time during a given day by evaluating the gains and losses of certain activities/options. According to the prospect theory, developed by Daniel Kahnemann and Amos Tversky, individuals evaluate losses and gains based on the specific subject value of the outcome and risk aversion ways of thinking (Highhouse & Yuce, 1996). Economic agents can instinctively frame an outcome in their mind and how these perceived outcomes serve to affect their utility. These ideas can be applied to travel behaviour in this study. For instance, people are rational agents in society that allocate their time to maximize their utility in the area of travel and mobility (Hess et al., 2005), and these factors will be investigated in this study.

2.9 Time, Space and Health

This section investigates the link between time, space, and health by examining several research projects within this area. Many of these studies examine a particular social group or a specific spatial location to reveal the temporal-spatial constraints on health. Also, some research incorporates aspects of the time-geography approach in the study of health-related behaviours.

Browning et al. (2003) examine the use of space for health purposes by using data from a Metropolitan Community Information Centre-Metro-Survey and Census data to explore self-rated health in Chicago neighbourhoods. This research suggests that lower income ethnic groups have poorer health because they live in areas of concentrated poverty; however, time is also an important aspect in this study as the health status of Chicago residents improved significantly in the decade of the 1990s, perhaps as a result of raised socioeconomic statuses during that timeframe. (Browning et al., 2003). Findings from a study by Whitley and Prince (2005) also studied time, space, and health at the local level London England's Gospel Oak community. These two studies have a common thread in that they examine social groups in a specific spatial location and reveal important information about time, space, and health in distinct cases. In the UK study, the focus was on fear of crime and the effects of mental health of women, elderly, and mentally ill. These specific groups experience "time-space inequalities" because they have restrictions on how they utilize their own environment as a result of fear of crime, and these inequalities have a negative impact on mental health status. For example, certain places within the community were seen as unsafe or unusable during certain times of the day leading to restricted access. Fear of crime, for some, would cause stress,

restrict mobility within the community, as well as lower health promoting community involvement and community service use (Whitley and Prince, 2005).

In both studies, the structure of the community was a major factor in time, space and, health findings. In the US study, the neighbourhood structure of Chicago communities lacked the presence of middle and upper class residents that may help share the goal of better health with their neighbours. This level of concentrated poverty is hypothesized to lead to a subculture of "poor dietary habits, lack of exercise, the rapid resort to violence in situations of conflict, alcohol and substance abuse, and so on" (Browning et al., 2003, p.1231). The spatial and social organization of Chicago neighbourhoods is lacking social and economic resources that would be beneficial to the health status of the community. For example, infrastructure (housing, recreational opportunities) and mobility capacities (transportation, social networking) are inadequate in many of these neighbourhoods, leading to poor health (Browning et al., 2003). However, in the UK study, recent urban regeneration to community resulted in decreased "time-space inequalities" with the introduction of community surveillance and safety measures, safer urban designs, and free transport passes to vulnerable populations. These efforts have successfully decreased the spatial and temporal constraints, as well as mental health episodes of vulnerable populations in London (Whitley and Prince, 2005).

Personal lifestyles and routines are also important in understanding time, space and health. Personal routines, time-use patterns, and uses of space can be inhibited by a medical condition or chronic illness. Research by Takahashi et al. (2001) examines the daily routines and social networks of individuals with HIV/AIDS in California by utilizing a time-geography approach to comprehend how social practices and daily routines can create obstacles to care and support in living with HIV/AIDS. Medication side effects, access to medication, and personal schedules all had an impact on personal mobility. For example, windows of opportunity to access medical services and social support were small, depending on the level of obligation and lifestyle of the individual. This may lead to disruption in the daily lives of HIV/AIDS patients (Takahashi et al., 2001). Also, in a study by Crooks (2007), women living with fibromyalgia syndrome (FMS) experienced changes in their routine and overall health status that affected their uses of time and space. As a result of accommodating the symptoms of FMS, many women would suffer from disturbed sleep, removal from the paid workforce, and a disconnection from leisurely or recreational activities. As these women continued to disengage from social activities, their daily geographies became altered with many women shifting their lifestyles from active to passive (Crooks, 2007).

Research by Young (1999) examines health-related behaviours of women who care for their families. The purpose of this research is to "analyze the impacts of spatially configured social relations...at the micro-level" (p.798). Research by Young addresses some of the weaknesses in Hagerstand's (1970) work by examining social subjectivity of time and space. According to Young (1999), new research that takes on a feminist perspective can aid in the understanding of time and space in the context of complex social relations that contribute to health. According to the research, women who worked and cared for their families often neglected personal health problems due to time-space constraints of their social roles (Young, 1999). Research by Brandon (In press) also

reveals time and space constraints of mother caring for disabled children. In this Australian based study, working mothers caring for disabled children engaged in time trade-off in which mothers sacrificed time from leisure activities to care for their child. While this research focuses on economic theory rather than the health implications of this time trade-off, it is important because it highlights the gender divide in caring for a disabled child. It also highlights the gendered uses of time and space purposes for parents caring for a disabled child. For example, results indicate that fathers experienced less of a disadvantage in terms of trading work time for child caring time; therefore fathers had more free time for themselves when compared to mothers (Brandon, In press).

Similar to the above findings, Young (1999) illustrates how household routines, caring for children, and accessing health were that were concentrated upon the female members of a household. Young (1999) reveals that gender also impacted mobility of households, as females found it difficult to access routine health care because imposed social roles made it difficult to access public transportation. Access to a vehicle was seen as an important factor for seeking health care. Fear of unsafe places was also viewed as a barrier in health-seeking behaviour of women in the study. In short, women in this study were constrained by "the availability of economic and social resources and the actual limitation of their health status and paid and unpaid work" (Young, 1999, p.807). The above-mentioned examples illustrates the importance of spatial and temporal dimensions of health for individuals who have a medical condition that leads to disruptions in personal time-use and uses of space.

Flexibility in scheduling is imperative for health enhancing activities. Results from Takahashi et al. (2001) indicate that HIV/AIDS patients experienced spatial and temporal constraints as a result of their medical condition; however, there were aspects of opportunity and flexibility in routine. Also, women with FMS in the full-time paid workforce often downgraded their hours to accommodate their medical condition (Crooks, 2007). In a study about women's health care in Australia, women cited flexible appointments with doctors as vital part of maintaining good health. Women who were able to speak with doctors without feeling rushed had positive view about their overall health experience in the clinical setting (Warin et al., 2005). Women who cared for disabled children benefited from flexible work schedule and this may result in women having less stress over scheduling activities, and ultimately more daily free time (Brandon, In press). These flexibilities in time offer people more room negotiate the planning of their daily activities and their uses of space. As illustrated, time, space, and health studies often examine various social groups or special populations to reveal constraints, routines, or patterns that are unique to these particular groups. Within this study, there are various smaller groups within the two neighbourhoods. For example, women, seniors, and those who are employed may have different flexibilities in time that may affect their health. Thus, considering the literature in this particular area is important in the development of this thesis. As well as focusing on specific groups of interest, the literature examined makes a clear connection between the three fundamental concepts of time, space, and health.

2.10 Chapter Summary

The population health perspective serves as the main framework for this thesis and is discussed in detail. The models of health provide some background into how health definitions have changed and the benefits of utilizing a holistic view of health for this research project. Understanding the shift from medical geography to health geography is also important due to the importance of place on health. This chapter has reviewed the concepts of place, space, and time. The relevance of these concepts has been discussed in detail. The final portion of the chapter introduced the time-geography approach and provided an analysis of constraints, opportunities and choices which are relevant to research questions surrounding differences in opportunities and constraints in the two neighbourhoods. Various studies have been examined to determine the role of space and time on health-related behaviour. An exploration of these studies revealed impacts of space and time on health.

CHAPTER 3
METHODOLOGY AND STUDY DESIGN

3.0 Introduction

This chapter begins with a discussion of the uses and importance of qualitative research within the social sciences, and the inherent valuing of using qualitative research methods to uncover rich descriptions that are often missed in quantitative approaches (Creswell, 1994). This thesis is a component of a larger study *Deconstructing the Determinants of Health at the Local Level in Hamilton*, and the details of this project are summarized within this chapter. Study design is reviewed, and further information regarding the case study approach, sample selection, and the various forms of data collection are fully explored. Finally, the chapter concludes with a discussion about the procedures in the data analysis phase, as well as some of the methodological difficulties in conducting qualitative research. This chapter also reviews of some the means of rectifying issues such as credibility and reliability in qualitative research.

3.1 The Value of Qualitative Research

Qualitative approaches differ from quantitative methods by providing a deeper understanding of the studied social phenomena (Silverman, 2000). Qualitative research practices have been challenged and criticized for being non-scientific in nature, and even perceived by some as an invalid approach; however, qualitative research can often provide further depth and understanding of social issues, and as a result has been more widely accepted in the academic community (Berg, 2001; Creswell 1998).

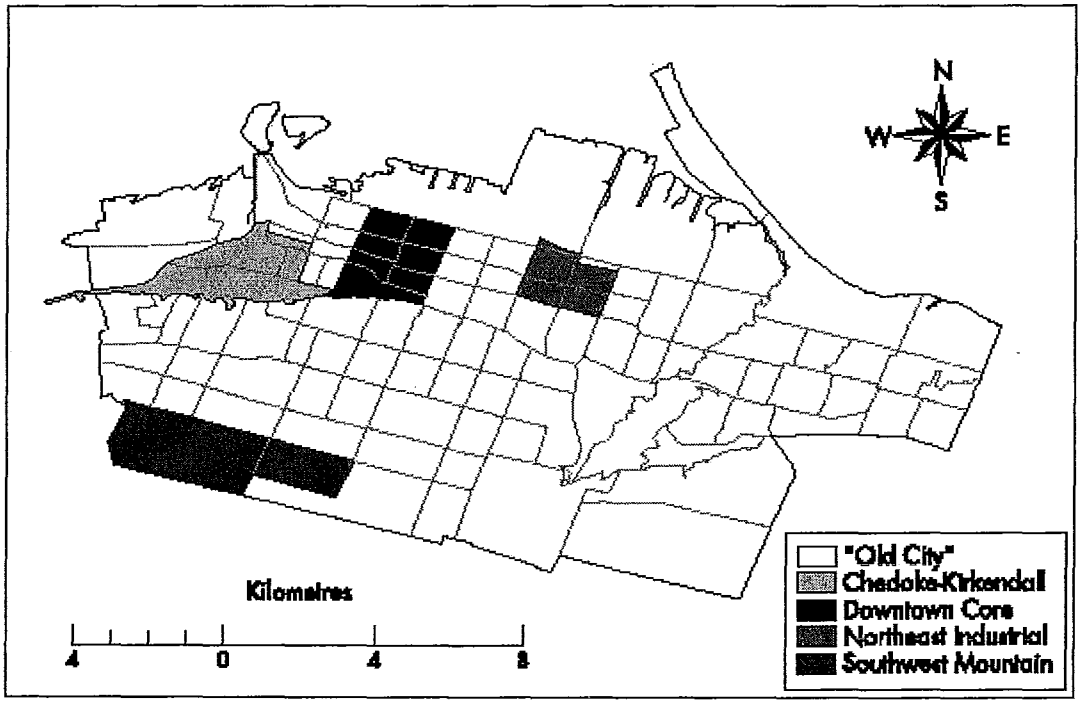
Qualitative researchers conduct their studies in various social settings and are "most interested in how humans arrange themselves and their settings and how inhabitants of these settings make sense of their surroundings through symbols, rituals, social structures, social roles, and so forth" (Berg, 2001, p.6-7). For this research, conducting semi-structured interviews, set within the local environment, uncovered the experiences and feelings of study participants. Also, analyzing hand-drawn maps, daily time-use diaries, and field study notes provided some insight into how interaction and social space are organized, as well as how space is used within the local environment. Thus, utilizing qualitative methodology serves "to uncover the nature of the social world through an understanding of how people act and give meaning to their own lives" (Eyles, 1988, p.2).

3.2 Study Origin and Background

This study of time, space, and health is part of a larger research project entitled *Deconstructing the Determinants of Health at the Local Level in Hamilton* which examines social and physical neighbourhood characteristics, as well as neighbourhood perceptions and health outcomes in four neighbourhoods within the City of Hamilton (Wilson et al., 2004). A total of 1,500 participants were surveyed in this study to reveal information about neighbourhoods, lifestyle, health outcomes, and demographic

information (Wilson et al., 2004). Also, in creating the four study neighbourhoods in Hamilton, socioeconomic determinants of health, additional risk factors, along with statistical techniques, spatial analysis and geographic information systems were all utilized (Jerrett, et al., 1998; Luginaah et al., 2001).The four identified neighbourhoods in the City of Hamilton are Downtown, Mountain, Industrial, Kirkendall/Aberdeen/Chedoke (Luginaah et al., 2001), and these are neighbourhood are found on the map below (*See Figure 3.1*).

Figure 3.1: Study Neighbourhoods in Hamilton, Ontario



(Source: Wilson et al., 2004)

To explore time, space, and health in more depth, only two of the previously mentioned neighbourhoods were chosen for further study. The mountain and industrial neighbourhoods were selected as a result of the contrasting nature of each of the study areas. For instance, the northeast industrial neighbourhood, located near Hamilton's industrial core, consists of a population with low income, low diversity, lower levels of education, few recent immigrants, and a small visible minority population, as well as high unemployment (Wilson et al., 2004). While the southwest mountain, a fast growing suburban community, contains high income and education levels, low diversity, fewer recent immigrants, low unemployment, and a larger population of visible minorities (Wilson et al., 2004). The purpose in selecting two contrasting neighbourhoods was to compare and contrast neighbourhood characteristics, time and space uses, and health status in each study area. It is hypothesized that the two contrasting neighbourhoods differ

in terms of health status, neighbourhood perceptions and time-use patterns. The table below depicts the characteristics of each of the four predefined neighbourhoods, two of which were explored more in-depth in this qualitative study. (*See Table 3.2*).

Table 3.2: Neighbourhood Characteristics

Table 1 Characteristics of survey neighbourhoods in Hamilton, Ontario

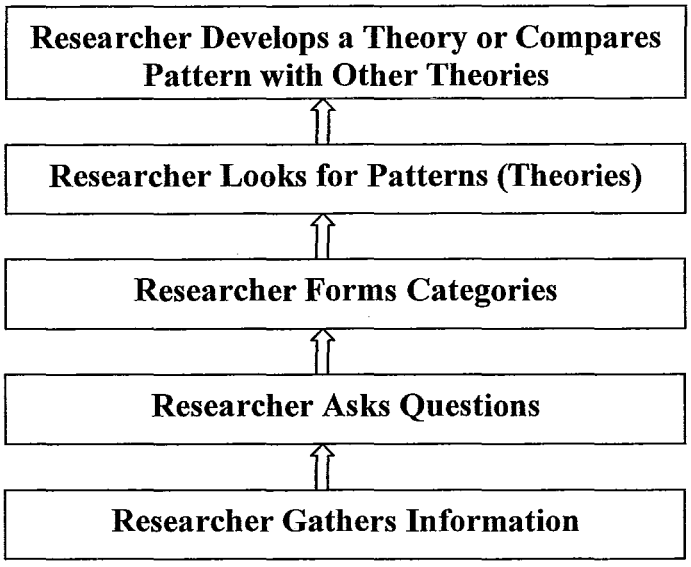
Neighbourhood (1996 census population)	Characteristics
Downtown Core (24523) Low income High diversity	High proportion of recent immigrants and a non-English or French speaking population, high levels of mobility, low levels of education and income, high unemployment, and a high proportion of visible minorities
Northeast Industrial (12135) Low income Low diversity	Lies adjacent to the city's industrial area, contains a low recent immigrant population, low levels of education and income, fairly high unemployment, and a small visible minority population
Chedoke-Kirkendall (10405) High income High diversity	Moderately high proportion of recent immigrants, a mainly English or French speaking population, high levels of education and income, low unemployment, a moderate visible minority population presence, and high income inequality
Southwest Mountain (15917) High income Low diversity	Located within a rapidly expanding suburban location, fewer recent immigrants, high education and income levels, low unemployment, and a large visible minority population most of whom are able to speak either English or French

(Source: Wilson et al., 2004).

3.3 Theory, Induction, Deduction and Qualitative Research

Given the inductive nature of many qualitative research projects, studies do not necessarily begin with a testable theory, but rather theories may emerge during data collection and analysis (Creswell, 1994). The theories that are uncovered during the later stages of the qualitative research process may be compared with other pre-existing theories (Creswell, 1994). Theories about time, space, and health emerged out of the collected data from the two study groups. A visual model of the connections between the studied factors was created based on the experiences, feelings, and situations of the 40 respondents interviewed (*See Figure 5.1 in Chapter 5*). These findings were then examined and related to existing theories. Thus, qualitative theories offer explanations about reality, provide descriptions, and also classify events (Berg, 2001). The figure illustrates the role of theory in inductive qualitative research projects. In the diagram, first the research gathers information to answer questions. In this particular model theories emerge from patterns in the qualitative data. For the most part, this process was followed for this project. (*See Figure 3.3*).

Figure 3.3: Theory Development and Placement in a Qualitative Study



(Source: Creswell, 1994).

Inductive research creates generalizations and conclusions from "information presented in case studies using refinement, abstraction, typification, and categorization" (Eyles, 1988, p.4). Furthermore, inductive analysis allows for exploration of the data without imposing pre-existing knowledge or expectations because the researcher enters into the project with little information, theories, or assumptions about the sample population (Patton, 1990). According to Eyles (1988), theories developed from inductive research often emerge out of relationships between observed social phenomena, in which thick description is paramount and resulting theories are not only general in nature, but also contextual. For this research, theories and generalizations about the sample have been uncovered in early studies within the *Deconstructing the Determinants of Health at the Local Level in Hamilton* projects; however, prior assumptions and generalizations about specific research objectives were not created in an effort to remain true to inductive qualitative research practice. For instance, early research projects uncovered differences in neighbourhood characteristics, health status, and socio-economic status in the two neighbourhoods. While some of these facts were known in advance about the sample, this information served only to create the sample within the defined mountain and industrial neighbourhoods. Other specific information such as education levels, income, and neighbourhood perceptions was revealed during interview sessions and was not collected from prior survey data. Thus, in studying time, space, and health at the local level, both inductive and deductive approaches were employed.

3.4 Parallel or Multi-Site Case Study Set Within the Local Environment

In qualitative research, selection of a particular method or approach should match the overall research strategy (Silverman, 2000). For the purpose of this research, two distinctive cases emerged: mountain and industrial neighbourhoods. Here, each neighbourhood was collectively considered as one case; thus, the selection of a parallel or multi-site case study was appropriate. Selecting specific cases for further study gives the researcher insight into particular areas of interest (Patton, 1990). Each neighbourhood was compared and contrasted, evaluated, and emerging themes were categorized. According to Yin (2003), case studies are appropriate for examining explanatory 'how' or 'why' questions within a contemporary focus bound in time. Questions about 'how' time and space interact to produce health at the local level were examined by adopting a case study approach.

A major strength of case study design is the use of diverse forms of evidence that are pieced together to create a clear picture of each unique case (Yin 2003). As part of this parallel case or multi-case study design, a variety of evidence was gathered in an effort to understand each case. For example, interview scripts, time matrices (time diaries), participant drawn maps, and field notes were forms of evidence that were collectively utilized to capture the perceptions, activities, patterns and feelings of study participants in the two neighbourhoods. Each of these forms of evidence will be further examined later in this chapter.

Studying cases at the local level may be problematic because providing a definition of neighbourhoods is difficult. There is a lack of consensus within the academic community about what constitutes a neighbourhood (Luginaah et al., 2001). However, research suggests the physical and social environments within neighbourhoods can have some impact upon health and well-being of the residents that live within these environments (Luginaah et al., 2001). Characteristics in neighbourhood definitions can include the area, common ties, and social interaction, as well as cohesion and social bonds (Luginaah et al., 2001). According to a review by Macintyre (2002), researchers should study aspects of the physical and social environment, as some of these aspects of the local environment can either promote or inhibit the health of residents. Thus, this study of health at the local level examines the social and physical characteristics of each neighbourhood or case.

3.5 Sample

Silverman (2000) states achieving 'representativeness' in qualitative studies is an issue of concern among researchers; however, a researcher should be able to justify their methodology and how study design relates to their theoretical priorities set out at the start of the project. In this study a sample was gathered from a list of previous respondents who indicated that they would be interested in participating in future neighbourhood and health studies. Given that this research is part of the larger *Deconstructing the Determinants of Health at the Local Level in Hamilton* study, the sample was purposefully selected as well as theoretically, meaning information rich cases were chosen (Creswell, 1994; Baxter and Eyles, 1997) to provide relevant information useful for the overall theoretical purpose of this thesis (Silverman, 2000). Selecting information

rich cases provided the greatest amount of thick description, while providing useful information about the research questions (Baxter and Eyles, 1997). Sampled participants have already been studied in previous research on neighbourhoods and health so they represent the most likely information rich cases in the two neighbourhoods. Of those participants from earlier studies who agreed to participate, 80 people in both neighbourhoods were randomly selected to receive a mailed introductory letter to participate in a study about time, space, and health. This letter provided study details, contact information for the investigators, and indicated that the investigator will be calling about the study in the near future. A strategy of over sampling by 100 percent meant that only 40 participants were needed for the study, but more letters were sent out to compensate for those who do not wish to participate or those who cannot be contacted. A follow-up phone call to all potential participants resulted in 40 participants who were able and willing to be interviewed about time, space and health issues. To ensure that respondents did not feel pressured to participate, an ethically sound telephone script was created, approved by the McMaster Research Ethics Board, and administered during each telephone call with the potential participants. The constructed sample consisted of 20 males and 20 female respondents between the ages of 18-85. Each neighbourhood consisted of a sample of ten males and ten females. In this research, sample numbers should be taken into account, as only one respondent makes up a significant portion of the sample. Similar to many qualitative studies, small sample sizes are acceptable providing there is enough thick description to accurately describe each case (Creswell, 1994). Since each neighbourhood represents one case, interviewing various respondents of different ages, backgrounds and life histories in each neighbourhood provided enough data on each case. Accurately describing each case was a priority in this study so a senior member of the research team reviewed results to ensure truthful descriptions.

3.6 Data Collection

Four methods of data collection were utilized in this study. First, respondents were asked to record their daily time-use patterns on a time-use matrix (time-diary). The matrix was designed to collect data about a typical day during the week, and provide a rich account of the events within a 24 hour period, as well as asking questions about the location, timing, duration, and perceived effects on health (*See Appendix A*). This methodology is common in time-geography studies, but is nearly absent in health-geography studies. In time-geography it is "necessary to understand the character of activities engaged by the individual, the flow of activities through time and how these activities are shaped by external forces" (Harvey, 2004, p.1). It is hypothesized that understanding these activities may shed some light on health issues. A time-diary can capture the complex routines, patterns, and travel behaviour of populations of interest (Harvey, 2004; Leech, 2002). In this study, the time-diary was also used to capture perceptions of health which would not commonly be asked in a study about time-use patterns.

Next, respondents were asked to participate in a neighbourhood definition and perception exercise that required respondents to outline the boundaries of their neighbourhood on a local map. (*See Appendix B*). Given that places are known to have

some effect on health (McIntyre, 2002), getting a better conceptualization of a neighbourhood that is based on the respondent's perceptions boundaries seemed appropriate in this study. Also, according to Coulton et al. (2001), census based neighbourhood boundary definitions or researcher based definitions differ from respondent defined neighbourhood boundaries, and these discrepancies may be a source of bias in some studies. Participant drawn neighbourhood boundaries are useful in that they capture resident's perceptions of their own neighbourhood (Coulton et al., 2001). Luginaah et al. (2001) mention quantitative studies of neighbourhood boundaries can be quite precise; however, qualitative research may help inform the process of neighbourhood boundary definitions by allowing local residents to create meaningful boundaries.

As an additional method in this study, fieldwork offered knowledge and insight into the study of neighbourhoods and health. For the first visit into the field, two respondents (one from each neighbourhood) were asked to provide a tour of their community and point out some of the areas that defined their neighbourhood. Pictures and notes were taken of the noteworthy characteristics (shopping centres, schools, major streets) of each neighbourhood from the respondent's perspective. Thus in using this technique, fieldwork can provide extra information that is not available in other resources (Corey, 1968). Going into the field to conduct observations allowed for first hand experience with the landscape and other aspects of the physical and social environment and this data acted as supplementary information in this study. Fieldwork was also a necessary part of this research project as it provided detailed information about housing types, common areas, and specific services available to residents within each neighbourhood. The second field study visit into the neighbourhoods took place after analysis of the interview data, maps, and matrices. Additional information was needed once the common areas of each neighbourhood had been identified. The purpose of the second independent visit was to collect information about specific locations, shared areas, land-uses, and boundaries. The first field experience with the respondents offered a look at the two neighbourhoods from a participant's point of view; however, the second visit provided a more detail account of the structure of each neighbourhood. According to Corey (1968) researchers should strike a balance between the use of fieldwork, theoretical information and other sources. In this case, the interview data were used for recreating individual experiences of residents, and fieldwork offered more insight into neighbourhood boundaries and the structure of the social and physical environment. Field study photos were also useful in capturing the nature of the built environment in the two study areas.

The final and main component of the study was individual in-depth interviews. *(See Appendix C).* The length of individual interviews varied, but interviews were approximately 30-45 minutes in length. All interviews, with the exception of two respondents requested telephone interviews, took place either in the respondent's home or at a mutually agreed location, such as a coffee shop. During the interview process, all ethics protocols were implemented. For instance, all respondents were provided with the consent letter and given a verbal explanation of the study prior to the start of the interview and made aware of their right to withdraw from the study or skip questions. Furthermore,

corresponding to research by Eyles (1988), questions were designed to promote meaningful responses that would uncover experiences of respondents in the two selected neighbourhoods. The data collection process allowed for saturation, in which a state was reached where no new themes were emerging (Creswell, 1998). Thus no more interviews in excess of the original sample of 40 were needed. All interviews were digitally recorded with the participant's permission and were later transcribed verbatim for further thematic analysis. To ensure the privacy and confidentially of all participants, pseudonyms were assigned.

3.7 Data Analysis

Time matrices were hand-coded, classified and grouped by activities, locations, interactions with others, and health perceptions. The time matrix provided a detailed account of the types of activities and specific locations where activities were taking place. Results from the time matrices were analyzed for emerging themes within the two neighbourhoods and between the two genders, such as uses of time and space. Using the time matrix as part of the qualitative research project provided the type of data need to accurately describe time and space patterns that may serve to have an effect on health.

Maps from the neighbourhood perception activity were analyzed based on the size, shape, and shared areas with the rest of the sample. In order to accurately examine the themes and common shared areas in each neighbourhood, individual map drawings were transferred to one map for each gender. For example, mountain males and industrial males were separated from mountain and industrial females to allow for a comparison between genders within neighbourhoods. (*See Appendix* B). These maps were the starting point to understanding how respondents define their neighbourhoods. Additional data about neighbourhood perceptions was collected during the interview sessions. It would be a meaningless activity to ask about neighbourhood perceptions in the in-depth interviews without having some perspective on how the respondent defines their neighbourhood.

Once the maps were grouped together, common areas were identified in both neighbourhoods. A common area can be defined as a shared part of nearly all respondents neighbourhood. More generally speaking, they can be identified as the areas in common in each neighbourhood. For the mountain neighbourhood, areas such as Upper James and Upper Paradise, as well as Stone Church were identified as common areas. In the industrial neighbourhood, streets such as Ottawa and Kenilworth were shared. As part of the second visit into the field, a specific analysis took place to gain a better understanding of what was located in these common areas. From fieldwork, it was clear that these areas often provided goods or services (e.g. shopping complexes, medical services, parks); as well have strong transportation links to the rest of the city.

Data analysis for the in-depth interviews first took place through hand-coding of transcribed interview scripts. The first rounds of coding provided some insight into some of the emerging themes within the data. The first rounds of coding were reviewed and revised by members of the research team to enhance credibility, and strengthen the coding process before moving on to coding in NVIVO, a computer software program for qualitative data analysis. This was used as an organizational tool for establishing themes, grouping of ideas, and overall data management. Throughout the entire data analysis

process, the research team reviewed results for accuracy and this ensured the reliability of the final results. (*See Appendix E for coding scheme*).

3.8 Study Limitations

There are various limitations in utilizing qualitative research methodology. First qualitative research struggles to provide "rigorous, reliable, and verifiably large aggregates of data and the statistical testing of empirical hypotheses" (Berg, 2001, p.10). Since this study adopts a parallel case study approach, the goal would be to provide a comparative analysis of the two neighbourhoods, as well as build on theories and provide some generalization. Thus, statistical frequencies are not important (Yin, 2003). What is important is the use of thick description to adequately describe each case (Creswell, 1994; Silverman, 2000).

Another limitation was identified in the reporting of results. In this study, a small sample size of 40 residents, with only 20 subjects in each case resulted in small numbers in each sample. This was problematic for reporting since only one respondent made up a significant portion of the sample. This being the case, reporting of actual numbers was favoured over percentages to keep the results more realistic and true to the sample. Contextualized thematic analysis also aided in presenting accurate results because participants words were connected to themes and these themes could be counted (Baxter and Eyles, 1999).

Consistency between the different forms of data may often be questioned due to conflicting accounts found in the different forms of evidence. Oftentimes, the detailed accounts by each respondent corresponded to data collected in the interviews, such as employment patterns and the frequency of venturing outside of the neighbourhoods to complete tasks. In other instances, individual time-matrices painted a different picture. For instance, interview data suggested that the main reason for venturing outside of their neighbourhood was purchasing activities, yet very few respondents reported undertaking such tasks in their daily time matrix. It is important to note that time matrices were limited in that they only examined one typical day, not several. Time diaries have been proven to be useful tools in research as they provided detailed accounts of activities and patterns (Harvey 2004; Leech et al., 2002), but only collecting data on a 24 hour time period was a limitation in this study.

In qualitative research, problems can arise around issues of reliability and validity. Criticism surrounding the researcher's ability to accurately describe and categorize social phenomena can be seen as a major limitation in qualitative research (Silverman, 2000). Conducting reliable research would involve maintaining high levels of consistency in data interpretation and analysis, as well as documenting the steps taken during the research process (Silverman, 2000). As mentioned above, careful attention was paid to the coding process by allowing for data codes to be verified by another person of the research team on several occasions. This process ensured that the qualitative accounts presented in verbatim scripts were properly coded, categorized, and later grouped into emerging themes. Also, a research journal documented methods, notes, and other important details of the research process.

Validity of the research findings can be understood as "what constitutes a credible claim to the truth" (Silverman, 2000, p.91). According to Patton (1990), validity in qualitative research stems from the researcher's abilities, skills, competency, and rigour. Providing truthful accounts was priority for this research project. All scripts were carefully examined and truthful representations were provided that accurately expressed the feelings, attitudes, and contexts of the interviews. To certify the validity of the research, disconfirming accounts were not disregarded from results (Eyles, 1988), but rather carefully examined as part of the larger narrative.

3.9 Chapter Summary

This chapter has provided an overview of qualitative methods and the importance of employing such methods within the social sciences. Given that this research project is a smaller component of *Deconstructing the Determinants of Health at the Local Level in Hamilton,* a brief summary of the project was provided. This chapter then examined information regarding the case study approach, as well as sample selection, and data collection strategies. The concluding portion of this chapter reviewed information regarding data analysis and issues of reliability and credibility in qualitative research.

CHAPTER 4
RESULTS

4.0 Introduction

This chapter describes the findings from the 40 interviews conducted in summer 2006, and outlines of the emerging themes within the data. The chapter begins with a description of respondent's uses of time and space within and beyond their neighbourhoods, as well as exploring neighbourhood boundaries and perceptions of their local environment. Next, factors affecting time-use patterns are revealed by examining mobility, transportation, and accessibility issues. Within the two local neighbourhoods, various opportunities and constraints operated at many levels, from the local scale to the individual scale. Finally, the chapter concludes by bringing together the concepts of time and space and how these affect health at the local level.

4.1 Description of Time, Space, and Activities in Neighbourhoods

As expected, activities, time-use patterns and individual uses of space varied among the sample participants. Variations by gender and by neighbourhood were observed and these differences are explored. During interview sessions, respondents were asked to engage in an activity that required that researcher and participant to work together to produce a time-use matrix of daily activities (time diary). At the start of every interview respondents were asked to think back to a typical day during the week. For most participants, a typical day was the day before the interview. The exercise required the respondents to fill in the events and activities of a typical day. Data taken from these matrices was analyzed and complied into basic daily activity themes.

Examination of daily time-use matrices led the respondents being grouped into two categories those with fixed or flexible time-use patterns. Respondents with fixed personal schedules would find it difficult to negotiate the timing, scheduling, and location of daily events (Miller, 2004). For example, someone working from the hours of nine until five in the evening would have a fixed personal time schedule because they are required to be at a fixed location with very little flexibility in determining the timing of their employment activities. On the other hand, respondents grouped into the flexible time-use schedule would easily be able to reschedule or relocate daily tasks, and daily schedules would allow for more personal freedom (Miller, 2004). A higher number of males in both neighbourhoods reported a fixed time schedule (n=14); however, less industrial males (n=6) had a fixed time schedule during the typical day reported in the time matrix activity. Females, on the other hand, had more flexible time in their schedules and were able to negotiate the timing and duration of their daily tasks and activities, resulting in mountain and industrial females having a flexible time-budget (n=14). It is also important to note that age also affected whether or not time budgets were fixed or flexible; however, this was only apparent in the mountain neighbourhood. Seniors in the mountain neighbourhood made up an overwhelming high number of people with flexible time-budgets (n=7), compared to only a few in the industrial area (n=3). Determining

whether a time budget is fixed or flexible would ultimately depend on the task as well as the day. For instance, someone who works in an office from Monday through Friday may have a fixed time schedule doing the week, but may have a flexible time schedule on weekend. It is important to make note of this for this particular study since assumptions about time schedules emerged from data collected in the time matrix activity that only examined a typical day during the week, not weekend.

Unsurprisingly, sleep was one of the largest time categories in the time-use matrix exercise. Most respondents (n=37) slept between 5-7 hours during the late evening and early morning hours. Three male respondents and one female respondent slept outside of these hours. Being in shift work resulted in irregular sleeping patterns for the three males listed above.

Employment activities were reported in many time matrices and often took up the majority of time in a day. A high number of males in both neighbourhoods (n=15) reported employment activities in their daily time schedules, while only a small number of females (n=7) reported attending paid work as an activity on a typical day. In the mountain neighbourhood, over half of respondents (n=11) traveled outside of their self-defined neighbourhood to attend work, while few residents (n=7) in the industrial area traveled outside to complete employment activities. In some cases, a longer journey to work meant that more time was being consumed on employment-related activities.

As well as sleep and employment, activities such as cleaning the house, preparing meals, doing laundry etc were common among both neighbourhoods and genders. When reporting domestic activities, respondents in both neighbourhoods were equally engaged in these activities (n=15 in each neighbourhood). There were slightly more females (n=16) than males (n=14) undertaking these tasks as part of their daily time-use patterns suggesting that there is a gender divide in how time is spent and how tasks are allocated among genders.

Another theme in time-matrix data was social participation. Getting involved in the community or simply visiting with friends and family was important for many respondents. There were similarities between the two neighbourhoods in regards to social participation with the mountain neighbourhood (n=19) and industrial neighbourhood (n=17) reporting high levels of social involvement.

Not only did the time matrix activity allow for insight into personal time-use schedules, but it also provided valuable information about uses of space in each neighbourhood. All respondents, with the exception of one ill elderly woman in the industrial neighbourhood, traveled outside of the home and these activities were recorded on the time matrix. Several respondents ventured outside of their defined neighbourhood to complete daily tasks. All mountain males (n=10) traveled outside of the boundaries of their neighbourhood to complete tasks such as shopping, attending work, or visiting friends, while not all females (n=7) left their neighbourhood to complete their daily tasks. On the other hand, males (n=8) and females (n=8) in the industrial area found it necessary to leave their defined neighbourhood to complete the tasks they had scheduled for the day. While purchasing activities and services were some of the main reasons cited by respondents for traveling outside their neighbourhood according to interview data, only one female respondent in the industrial neighbourhood engaged in such activities on her

typical day. In contrast, more respondents in the mountain neighbourhood (n=6) were purchasing or consuming services outside of their self-defined neighbourhoods. Overall, the time-use matrices provided some insight into how and where respondents were spending their time. Now moving on to results from the interview data to provide a more detailed and advanced account of time and space use in the two neighbourhoods.

4.2 Neighbourhood Perceptions and Characteristics

4.2.1 Perceptions of Neighbourhood Size, Boundaries and Location

Understanding how respondents perceive their neighbourhood is an important aspect of geographical studies (Coulton et al., 2001). During the interview sessions, respondents were asked to outline their neighbourhood on a map and provide a justification for their drawing. Like the interview scripts, these maps were analyzed for themes and patterns. The maps were compared and contrasted by gender and also by neighbourhood. Understanding how respondents define their neighbourhood is important, as what activities occur inside or outside neighbourhood boundaries may be influential for health. (*See Appendix B*).

In the industrial neighbourhood, boundaries tended to follow street grid patterns. In the mountain neighbourhoods they in part followed grid street patterns, but also tended to be more circular in shape and stray from the grid network pattern of roads. For instance, some industrial maps followed major streets such as Ottawa, King, and Kenilworth. While some mountain neighbourhood boundaries were drawn around local parks or communities such as St. Elizabeth Village. Overall, mountain neighbourhood maps were larger in size and covered more area. When examining the areas of overlap, the mountain maps had larger areas of overlap among residents, and the industrial neighbourhoods had smaller areas of the neighbourhood that were shared by nearly all the respondents. All industrial respondents drew their neighbourhood boundaries beneath the escarpment, and no mountain residents drew their neighbourhood boundaries below the escarpment. This suggests geographical features, such as an escarpment, can serve as a neighbourhood boundary or dividers of space, resulting in Hamilton being a two tier city. Mountain and industrial respondents did share one thing in common when drawing their maps, as both groups used transportation networks, main streets, and natural features when deciding where to draw their neighbourhood boundaries. For example, in the mountain neighbourhood, many boundaries included parks and highways. William Connell Park, Elmar Park, Rymal and Stone Church Roads, and various shopping complexes such as South Hamilton Square and Rymal Square Complex were included in maps. As for the industrial neighbourhood, places such as Ottawa Street Fabric District, Centre Mall, Gage Park and Cannon Street were included.

The maps were also examined by gender, and males and females in each neighbourhood were compared and contrasted. In the mountain area, over half of the female respondents drew boundaries south of Rymal Road, west past Upper Paradise, Limeridge, and Upper Sherman. As for the males, over half of respondents shared the common boundary within Stone Church, Twenty Road, west past Upper Paradise, and just east of Upper Wentworth. Common areas for females included Rymal Road between Garth and Upper Wellington, and this area was shared by all female respondents. Also,

the areas of Garth, West 5th, Upper James, and Upper Wellington were shared by over half of the female sample.

For the mountain males, no boundaries stretched north past Stone Church, with the exception of one respondent. Major shared areas included West 5th and Rymal Road between Upper Paradise and Upper James. Mountain males had more concentration and overlap of neighbourhoods south of Rymal Road, and this is different than the female boundaries that were concentrated North of Rymal Road. For both female and male respondents, shared areas included boundaries within parks, highways, and locations of goods and services.

In the industrial neighbourhood, designs were nearly all grid patterned for both males and females and tended to follow the main streets. Features such as Gage Park, and Centre Mall were included in many maps. For the females, all respondents were contained within the Kenilworth, Wentworth, escarpment base, and south of Burlington Street boundary. The areas of Barton Street between Kenilworth and Ottawa, and areas of Ottawa and Kenilworth were an area shared by over half of the female respondents.

All male respondent maps were drawn within the boundaries of Walter, Burlington Street, west of Sherman, and north of the escarpment edge. Parts of Ottawa and Gage streets were shared by many male respondents. For both the male and the female respondents, many boundaries included major streets, services, parks, malls and shopping complexes. It was interesting to note that only a few industrial respondents included Ivor Wynne Stadium in their local neighbourhood boundaries.

These findings from the mapping boundaries exercise relate to work by Lynch (1960) about the structure of a city that includes paths, edges, districts, nodes, and landmarks. In the study areas, major streets such as Upper James or Ottawa would be considered paths because the movement and travel capabilities of these streets as transportation networks. Edges of the city would include the Escarpment since it acts as a natural dividing line within the City of Hamilton, and perhaps the industrial and mountain neighbourhoods would be considered districts because of their size and composition. According to Lynch (1960) nodes are places of focus within a city. Within both areas, busy intersections such as King and Kenilworth, or Upper James and Rymal would be considered nodes because they are a popular part of the city that attracts many people. Finally, landmarks in the industrial area would be Delta High School, Centre Mall or Gage Park. The mountain neighbourhood has various landmarks such as, St. Elizabeth Village, Rymal Square shopping complex, and Public Works Hamilton. (*See Appendix B for maps*).

Comprehending how respondents draw their neighbourhoods can lead to a better understanding of how and where time is spent within neighbourhoods. These boundaries are important because they are based on individual perceptions of local boundaries. The respondents themselves were able to define where they believed their neighbourhood starts and stops, altering which activities they see as local or neighbourhood ones. The information collected in the maps exercise can be linked to data collected in the time matrix activity, as well as interview data. For instance, respondents were asked questions about 'their neighbourhood', and they were reminded that the neighbourhood in question

was the one drawn on the map so that data collected can be understood within the context of the respondent's defined boundaries.

4.2.2 Field Study Tours with Selected Respondents

Field study with Kelly, who lives in the industrial neighbourhood and selected as an information rich case, revealed some very interesting information about the industrial community. Kelly identified Centre Mall and all the local shops as places that make life easier in this neighbourhood. She also spoke about the nearby industrial factories, such as Stelco and Dofasco, as a major source of pollution and one of the most undesirable aspects of her community. She also believes that fast food establishments, such as KFC, Harvey's and Pizza Hut located on Barton Street adjacent to Centre Mall, are too readily available to members of her neighbourhood, and she thinks these establishment are an unhealthy aspects of her community. From field study observations, there appeared to be a high concentration of fast food outlets on Barton Street between Ottawa and Kenilworth. The high volume of traffic was noted as a problem during the field study visit with Kelly, but she mentioned that traffic safety has been greatly improved by the addition of a new traffic light on Barton Street that allows for mall pedestrian traffic to safely cross over Barton Street. On the topic of traffic, Kelly noted that there are too many cars on the road, and this trend was a problem not only in her neighbourhood, but throughout the City of Hamilton. She spoke about the problems of rising auto-dependency as an issue for health; too many cars on the road leads to more pollution and increases the risks of accidents, she noted. When asked about favourable aspects of her community, Kelly noted that Kenilworth Library is one of her favourite spots, as it provides local residents with a place to enrich their mind. On Kelly's tour of her neighbourhood, she noted that the industrial area is a very pedestrian friendly place. She explained that bus routes are accessible, sidewalks and traffic lights make it safer to be walking on busy roads, and it doesn't take long to walk from one end of the neighbourhood to another. These aspects of her community were noted as important because Kelly relies on public transit as her main transportation method, along with walking. Kelly also spoke about social interaction in her community, and noted that her block and surrounding neighbourhood contains a mix of people. She did mention that she socializes with her daughter that lives nearby and would have the occasional conversations with some, but not all neighbours. Overall, the field study experience with Kelly drew attention to both the positive and negative aspects of her local environment.

Jim from the mountain neighbourhood, also selected as an information rich case, is a retired school teacher who agreed to participate in a walk of his community and pointed out some noteworthy aspects of his neighbourhood. While Jim mentioned that most of his time was spent in his home, he would engage in weekly walks with a friend, go shopping, and interact with members of his neighbourhood. When asked what are some of the desirable aspects of this community, Jim pointed out the nearby school, the YMCA, and the local police station and library as positive aspects of the neighbourhood. Jim also noted the main reason for moving into his selected neighbourhood was the nearby school, as well as the light traffic typical of suburban developments. While Jim had made note of the quiet and light traffic on his street he was concerned about the busy

intersection on Rymal Road, and mentioned that the community put together a petition to have a traffic light moved to reduce traffic speeds. While conducting fieldwork, Jim was asked about the accessibility of his neighbourhood, and he commented that everything is accessible as a result of the Lincoln Alexander Parkway (LINC), as well as having Limeridge Mall and Ancaster being within close proximity of his house. Later Jim was asked to point out some of the undesirable aspects of his neighbourhood and he began to walk over to the park closest to his home where he mentioned that youth often hang around the park after dark and there have been problems with broken glass in the past. For Jim, the park was seen as a healthy place where people can engage in recreational activities, but also as an unhealthy place because of problems with youth at night. During the field study experience with Jim, mostly positive aspects of the local environment were pointed out. He directed attention to a neighbour's Trillium Award garden, and well manicured lawns and houses surrounding his block.

4.2.3 Defining Map Boundaries with Participants

Next, each participant was asked why their map outlining of their neighbourhood took the form it did. Most respondents defined their neighbourhood as the places and spaces that were most traveled (25/40). For some respondents, areas most traveled were directly linked to mobility. For example, within a respondent's boundaries would be the areas in which they attend work, go shopping or simply visit friends. The boundaries outlined in many maps were drawn to depict the mobile and useable spaces of their neighbourhood. The restrictions, or perhaps even personal choices, of respondent's daily time schedules resulted in participants being mobile only in certain areas of the city. Respondents who defined their neighbourhood as most traveled believed that their neighbourhood was an action space to engage in certain activities or perform certain tasks:

> "Well if I am going out shopping, babysitting, these would be the areas that I travel most." (Abbey, Mountain)

> "Why would I draw my neighbourhood this way? Cause I'm the centre of it. Well, my neighborhood certainly includes Gage Park. You know...we spend a lot of time over there. You know...festivals or even evenings or weekends. So that's probably the boundary of my neighbourhood." (Smith, Industrial)

> "I drew it because that's in that fashion that I drew it in from Sherman to Kenilworth is basically the areas I travel in. I go down to here to Gage, and Barton that's where I shop- the center mall is where I do most of my shopping... uh buy my paper up here you know its just where I work...where I do everything here." (Dan, Industrial)

> "That's where I spend most of my time. Oh...that's the thing I didn't mention before was walking.....I walk everyday. So that is where I walk I forgot because that is where we go for our walk." (Jim, Mountain)

For some respondents, areas that were most traveled simply meant the boundaries drawn on the map are the place nearest to one's home or the areas most visited:

> "I guess that's what I consider to be my neighborhood. Ah cause that's kind of the immediate block around where we live so I guess that's how...you know...the main intersections around where we live so that's how I define my area." (John, Industrial)

> "Cause it's right down by Rymal Road. We're south of Rymal Road. And just new development started over here, so there's not much over there. St. Elizabeth Village is...I guess it could be part of the neighborhood, but just because you can't get in there; you're not allowed there so I don't feel it's part of the neighborhood, you know...It's not like the kids go through there... there's not like parks or anything like that. And just because that's the little area that you live in, you know." (Owen, Mountain)

. Neighbourhood could also be defined by landmark. For example, some respondents (9/40) listed shopping centers, workplaces, or major highways as their neighbourhood's defining elements. This idea of defining a neighbourhood based on landmarks is interesting because landmarks are often shared elements of the community, meaning they can often be enjoyed by more than one member of the community. For instance, highways, schools or shopping malls are shared elements of the community. However, defining a neighbourhood based on spaces of action is based on personal time-use patterns:

> "Oh, well uh, why would I draw it uh, oh well to uhh, lets see uh, there's a school over here on this corner uh, on Cannon, and it attracts a lot of uh, a lot of kids are attracted to the park... Delta, Delta uh, is another school, uhh and again there's hanging out there's people hanging out there, and that sort of thing." (Dylan, Industrial)

> "I defined it by some of the streets and any other features... Chedoke hospital." (Abbey, Mountain)

Thus, activity and pattern-based definitions are built on easily changing personal time-use patterns, while defining a neighbourhood on landmarks is based on the idea of public places that are not easily changed by the individual.

4.2.4 Physical Environment

Many factors affected neighbourhood character in both areas including both physical and social elements of the environment. In the industrial neighbourhood, aspects of the physical environment were discussed in detail, as there was an industrial problem that resulted in a thick black covering of soot in the industrial neighbourhood during the

interview sessions in the summer of 2006. The covering of cars, tables, and windows was mentioned in many industrial interviews and was noted a bothersome issue for many residents:

> "Well it's under Dofasco so you get a lot of dirt down here. And we just apparently go blasted from another company that left a film of black grease, like a soot, we got it mild, but the east end got it really bad. I didn't notice it until yesterday, my hands were really black." (Lindsay, Industrial)

> "The environment sucks down here. Besides that well you got Stelco and Dofasco down here just go rub your finger down my car and you'll see the black soot that comes off on your finger...yeah I've seen it on peoples picnic tables...oh yeah its terrible." (Dan, Industrial)

> "In the air, I notice there is a lot of particulate fallout in the neighborhood. I grew up at Kenilworth and Barton and it's always been, you know, dirty in this neighborhood." (Smith, Industrial)

When asked to discuss neighbourhood character, concerns about pollution were prominent in the industrial neighbourhood and were not mentioned by any of the mountain respondents during this portion of the interview. However, it is important to note that not all industrial residents were concerned about environmental conditions in their neighbourhood. Some residents in the industrial neighbourhood displayed a sense of pride and ownership when speaking about their local area. These accounts of pride and ownership were contrasted with themes of pollution and environmental decay in the industrial neighbourhood. For instance, some industrial respondents spoke about nearby parks as a positive environmental aspect of their community, while others discussed pleasing neighbourhood landscapes:

> "It's all the same, people are trying to make their houses look good, and their yards look good." (Dora, Industrial)

> "Well Gage Park is nice. It is definitely a feature for living in this neighborhood. Having Gage Park close by because of the green space." (Smith, Industrial)

While concerns of pollution emerged in the industrial area, some mountain respondents (6/20) reported on the cleanliness and aesthetic appeal of their neighbourhood:

> "Well as I said we built this neighbourhood from scratch so I love the fact that we all love to garden we all love our trees. You know like my backyard is packed with vegetables tons of flowers sunflowers which are my favourite thing in the

> neighbourhood. Everybody is very into much gardening and taking care of their home." (Sonya, Mountain)
>
> "The pond at the end of the street, in the winter we skate on it and in the summer, if you want, you can fish in there and people canoe in there. So that's great too, you know." (Mikkel, Mountain)

Some concerns regarding pollution emerged among mountain residents later in the interviews so it is also important to note that mountain residents did indeed recognize the issue of pollution in Hamilton, but felt that they lived far away from most of the environmental concerns:

> "But there's no, you know, there are no factories or anything like that with smoke or chimney stacks or things like that so all that's pretty good." (Preston, Mountain)

The quote above illustrates one respondent's view of the spatial distance from harmful pollution. This perception of being 'far away' from the pollution of industrial Hamilton was mentioned by a few mountain participants.

4.2.5 Social Environment

There were strong interconnections between the physical and social environment in many interviews. When discussing some of the physical features of the neighbourhoods, the social environment was touched upon. For example, when asked to elaborate on the physical conditions of their neighbourhoods, respondents began discussing the physical environment, but were continually placing emphasis on the social aspects of their community:

> "The houses are probably in the 80 year old range. The neighbourhood is what I would call a generational transition, where the older people are being older and dying off, they have younger couples or people moving in but it's not transitional in that its not changing from a depressed economy to a vibrant one its not going through any gentrification or anything like that, but it is going through a generational change where older people are moving out and younger people are moving in." (Jamal, Industrial)
>
> "Okay, well a lot of the homes are condominium or townhouses. Um and mostly families in these areas. The environment...it's a nice environment. It's clean, it's quiet, for the most part. Um...it's close to shopping and the gas station and you know...things like that." (Samantha, Mountain)
>
> "The only negative thing that drive me insane, I think, is that we all have more than one car and some people have 4 or 5 cars and when you put cars on both

sides of the street and we moved here it was kind of nil so this is kind of a blind spot right here and sometimes they drive like as if this was the highway and it's not and it is a dead end and we do have little ones on this road and that concerns me you know." (Sonya, Mountain)

When asking about respondent's self-defined neighbourhood, many of the physical characteristics of a neighbourhood that would be expected to be major themes were not as important as the social characteristics. For example, in a discussion about neighbourhood characteristics, a common theme of having good neighbours emerged (19/40). A good neighbour was loosely defined in the sample as someone who provided assistance when needed, had a friendly welcoming personality, and did not interfere with the individual's way of life. The social characteristics of a neighbourhood were important to both mountain and industrial residents as indicated by the *Table 4.1* below:

Table 4.1: Social Verses Physical Characteristics of the Local Environment

SOCIAL CHARACTERISTICS	COUNT	PHYSICAL CHARACTERISTICS	COUNT
Good neighbours	19	Clean	7
Safety and crime *	12	Older neighbourhood *	6
Diverse	6	Newer neighbourhood *	5
Socioeconomic status	6	Pollution	5
Family oriented	5	Nature	5
Bad neighbours	4	Changing *	1
Community	1	Low traffic	1
TOTAL	53	TOTAL	30
**** may be related to physical characteristics as well as social***			

The theme of the social environment of neighbourhoods was prominent in both mountain and industrial areas. Neighbourhoods were seen as social places, as interaction with others was a commonly noted theme with 23 respondents out of 40 citing social participation as main component in how they defined their neighbourhood:

"Everybody on the street has an effect on my life. Ah a lot of people who work for me, live around here. And uh....my friends live around here." (Nicole, Industrial)

"I think these are the closest people to me. I do not have...you know...much interaction with them. I feel they are to consider being within my immediate neighborhood. We are neighbors. We are neighbors near and neighbors far. That

is to my mind how it really is. Anybody...anybody who is not living in this house...I see them as my neighbor. We are all part of the world. So they are my immediate neighbors." (Smith, Industrial)

"About three and half miles I can walk around if my back is alright and you meet people walking and they are very friendly. And I am not one to go to peoples homes. Like I wouldn't go and visit you unless you invite me. But I would like people to come and visit me. But I am sure that if I needed help, I could get help. When I fall over in the back. I pray to God that someone sees me and my neighbours can help... but I love it here. I feel safe and safe as you can be." (Sophie, Mountain)

"I like my neighbourhood. The neighbour's are people who I socialize with beyond those points I don't know that area and I don't go in that area. This the area all the kid's their friends from school are from." (Joy, Mountain)

Themes of friendships emerged in the data, as well as themes of support, and good neighbourly conduct. These themes were prominent in both neighbourhoods. Respondents spoke about receiving assistance from a neighbourhood and having strong social ties with people in the community:

"We've been here for so many years, basically we've grown together, now we're seeing second generation get married and taking off right." (Sonya, Mountain)

"I have good neighbors...can't complain. People here are very quiet, very friendly. And happy too, to live here. It's a good neighborhood." (Tyler, Industrial)

"Well, what I do know is that we are all subjected, I would say in the most part, to the same conditions, right? We have characteristics of the neighborhood you know...the things we have around us here, which we have no control over. Now let us take as an example, the neighbors here and here, they are way to close as neighbors, right. I find they are very helpful and considerate in anything, and you can rely upon them for assistance. This gentleman over here, Chris, he would cut my grass, he mows my lawn. He would come over sometime and would mow the lawn. The neighbor over here... also he is very dependable and assistant and it is between us. And those across the road, you could always get a "hello" and "how are you" and things you would find that around here. When it comes to along Barton Street, everything there, in the most part, that I would need...it is just walking distance. Around Ottawa and come along this area...everything there that I would need is just walking distance, for the most part. And um...where I'm not living, I don't interact with the people there, so I don't know a great deal about them. I don't know anything about them." (Logan, Industrial)

> "The people that we've met are very friendly. We've only lived there 2 years. So the neighbors are very good, very agreeable. We don't have any...we don't hear of any people disagreeing, no neighborhood fights, any of that sort of thing going on. Um quite a few years ago, I guess you have a mix, but there's quite a few...again you've got everything. You've got everything from couples, young couples with no kids, people with young children, people with teens and then on our immediate street we've got senior citizens too, so we've got kind of a whole mix. Um...ethnically....not a huge mix, probably quite a few Italian people in the neighborhood. Um...probably our particular end of the street would be what you'd call middle to upper middle class, but then around the other side its probably middle, pretty much a middle class I guess." (Donna, Mountain)

The social aspect of neighbourhood life appeared to be just as, or more important than the physical environment. Having supportive friends, family, and neighbourhoods was important in both neighbourhoods.

4.3 Factors Affecting Time-use Patterns and Uses of Space in the Local Environment

4.3.1 Mobility

The above descriptions of each neighbourhood are helpful in understanding the local environment in each neighbourhood from the participant's point of view. These descriptions of the composition of the physical and social conditions, as well as daily time-use accounts from the matrix activities in the mountain and industrial area are useful in studies of time-geography. Mobility, transportation, and accessibility are key factors in shaping individual time-use patterns. For example, nearly all respondents traveled outside of their self-defined neighbourhoods weekly to accomplish tasks such as going to work, shopping, visiting family or friends, and engaging in leisure activities. Most respondents (n=37) mentioned, on average, they traveled outside of their neighbourhood anywhere from 1-10 times per week. This theme of traveling outside the neighbourhood for everyday tasks was common in both study areas. It is important to note that responses are based on traveling outside of the respondent's self-defined neighbourhood. For some, these neighbourhoods were quite small making travel beyond the boundary likely, while for other larger self-defined neighbourhoods, travel outside boundary would result in traveling further from home:

> "Well I work outside the area, so I would say at least probably about 5 times [traveled outside of this area]." (Tamaqua, Industrial)

> "Well I go to the show every week. I go to centre mall, grocery shopping, and stuff like that. I don't do many chores in this neighbourhood, really". (Amanda, Industrial)

> "Just getting the kids back and forth, and to work. Also in this particular neighborhood, from here to here, there's no corner store, there's no grocery store,

there's no bank, you know there's nothing that I can walk to a bank machine. I can walk to a drug store, you know walk to a corner store, just slightly out of view. But as far as getting groceries, if it's just one or two things, I could walk but to get your weeks groceries, it's just impossible." (Donna, Mountain)

I get my haircut outside of my area. I visit the dentist or the doctor, both outside that area. (Jim, Mountain).

4.3.2 Transportation

Automobile ownership and use was a prominent part of life in both neighbourhoods. The number of cars owned or operated on a regular basis gives a good indication of the automobile reliance in both neighbourhoods, with the mountain area being dominant in owning and operating the most amounts of vehicles. As depicted in the table, more industrial residents (n=6) reported having no vehicle, compared to residents in the mountain neighbourhood (n=3):

Table 4.2: Number of Vehicles per Household

NUMBER OF VEHICLES	INDUSTRIAL n=20 (%)	MOUNTAIN n=20 (%)	TOTAL n=40 (%)
1	7 (35)	2 (10)	9 (23)
2	6 (30)	14 (70)	20 (50)
3-4	1 (5)	1 (5)	2 (5)
No vehicle	6 (30)	3 (15)	9 (23)

Average weekly vehicle use was high in both neighbourhoods. The majority of the sample indicated that they used their vehicle for at least one hour per week, with some respondents (n=10) relying on their vehicle for over 10 hours per week:

Table 4.3: Average Weekly Vehicle Use

AVERAGE WEEKLY VEHICLE USE (HOURS)	INDUSTRIAL n=20 (%)	MOUNTAIN n=20 (%)	TOTAL n=40 (%)
0	6 (30)	5 (25)	11 (28)
1-5	4 (20)	6 (30)	10 (25)
6-10	4 (20)	5 (25)	9 (23)
11-15	1 (5)	0 (0)	1 (5)
16-20	1 (5)	1 (5)	2 (5)
20-30	3 (15)	3 (15)	6 (15)
30+	1 (5)	0 (0)	1 (5)

Four residents in the industrial area, selected public transportation as their main method of travel, and no mountain respondents chose the bus as their main method, as illustrated by Table 4.4:

Table 4.4: Main Method of Transportation

MAIN METHOD OF TRANSPORTATION	INDUSTRIAL n=20 (%)	MOUNTAIN n=20 (%)	TOTAL n=40 (%)
Automobile	10 (50)	11 (55)	21 (53)
Public transit	4 (20)	0 (0)	4 (10)
Taxi cabs	3 (15)	1 (5)	4 (10)
Driven by others	2 (10)	1 (5)	3 (8)
Walking	2 (10)	0 (0)	2 (5)

Also, when asking about the main method of travel to work, the automobile was once again cited as the dominant method (n=22). Residents in the mountain neighbourhood (n=14) were more reliant on vehicular transportation to get to work when compared to industrial residents (n=8). A very small number of residents in the industrial neighbourhood (n=2) selected other means of getting to work such as public transit or walking, while only one mountain respondent chose to carpool with co-workers:

> "I operate a vehicle daily to get to work since it's in Burlington, and I don't always go alone" (Mikkel, Mountain)

In discussion about transportation methods, about half of respondents revealed that they selected vehicular transportation (including taxi cabs) as their main method due to their convenience and flexibility, allowing respondents to operate on their own personal schedule. Since many respondents drove their vehicles alone, there was no coupling constraint (added constraints in meeting with others) (Hagerstrand, 1970). Timetables are created and executed by the respondent with their own needs in mind:

> "Convenience! Well, if I want to go to Rumaks Bar at 12 o'clock, it's very convenient to get in the car and drive straight down Cannon street, and I'm right at the door step and it certainly beats waiting around for buses." (Dylan, Industrial)

> "[The car is] convenient and faster. Well say if I go out in the driveway, get in it, start it and go where I want to go" (Callum, Mountain)

Time was then a major issue when justifying using vehicular transportation, bringing significant time savings. Respondents seemed to believe that the saving of time

was beneficial to their lifestyle. The use of the vehicle created somewhat of a time-saving dependency habit reinforcing car use:

> "I guess its time right? Because driving is obviously quicker. I want to get from point A to B in the fastest time unless I have extra time." (Tamaqua, Industrial)

> "You know it's convenience that you get in, you go out and you get to point b in a matter of whatever time versus walking or a bus." (Sonya, Mountain)

> "Because that's how I have to get to work. We probably should make the kids take the bus. It's easier sometimes just to hop in the [car], you know even my daughter Emily.... comes from McMaster. Well it takes her an hour to get here but I can drive it in 15 minutes." (Donna, Mountain)

When car-driving respondents were discussing their vehicular driving habits, there appeared to be a sense of dependency upon their car. Some respondents even became slightly nervous or self-protective asked to justify why they selected an automobile as their main method of transportation. In these specific discussions, the car appeared to be more of an essential need rather than a time-saving device. Access to automobile transportation seemed almost essential to mountain residence. This sense of reliance was not nearly as strong in the industrial neighbourhood:

> "I'm pinned against the wall, my car is my life, and it's what I depend on. You know I started driving when I think I was nineteen and I haven't stopped driving since and I took I think a taxi once and I almost died when they told me the price in between downtown Hamilton and up the mountain I'm you know it's just convenience and I can't consider anything else because it's part of a habit you know" (Sonya, Mountain)

> "To me, I need my car...to go to work, you know what I mean? That's pretty much what it's about. If you jump around, you can't just take the bus, you know. If you're going to Niagara Falls, you're going to drive there, you know. And by the time you get up to get to the Falls by seven, you know...it ain't going to happen. So, for me...I need a car. The wife also works. Also needs a vehicle, and I need a vehicle for the kids too. So that's her vehicle and mine's just a work vehicle, so that's why I need two vehicles anyway." (Owen, Mountain)

> "I mean our area is pretty easy access to the LINC, to get across to Limeridge Mall or we can go along Stonechurch to get to the Meadowlands for the movies or Home Depot or stuff. It's a pretty good spot, in terms of business. The LINC is a big deal, allowing us to do what we want to do, if you ever have a time. I think last week, the LINC was closed for a bit...there was an accident. Well it just totally changes what goes on up here." (Preston, Mountain).

There was a theme of 'no other way to get around'. In some cases, respondents clearly explained that there was no other reasonable option:

> "How else do you expect me to get to my job?" (Leo, Mountain)

> "Yeah, I can't really walk well...so I drive [my car] everywhere. I have asthma and I have arthritis." (Nicole, Industrial)

> "Walking? Well I usually don't. It's not just me. I walk, I like to walk, but when I'm going out and about, usually I have things to bring, and I think my arms are two inches longer than when I first started, because I bring back heavy things. I'm tired of carrying and lugging and you know whatever. So that's why we have a vehicle." (Marcella, Industrial)

When asked if respondents would consider other methods of transportation, nearly half of respondents in both neighbourhoods indicated that would not consider any methods other than the automobile:

> "Um, no I don't think so. I'm certainly not up to biking, not on the roads. Driving a car, I know how dangerous it is, cars can't stop as fast as bikes can." (Dylan, Industrial)

> "Well with the three kids I can't imagine me taking the bus or waiting for the bus like our Mom's used to do and that you know so convenience." (Joy, Mountain)

Some respondents in the industrial area (n=11) were more open-minded about selecting different methods of transportation, provided it fitted their lifestyle:

> "I take the bus in the winter time; I take the bus quite often rather than drive. Because it's icy and the parking, can't find a place to park in the winter or you're snowed in, and the plow comes up and plows you in...you can't find a place to park" (Lindsay, Industrial)

> "Well if the vans not working or my husband is working, then it's walking or the bus." (Dora, Industrial)

> "If they ever improve the bus lines or I wouldn't even mind seeing a rail system. They were talking about a few years back putting in a rail system, an overhead Monorail system. I wouldn't mind seeing something like that." (Dan, Industrial)

When comparing the two neighbourhoods, residents in the mountain area (n=15) were less likely to consider transportation methods other than the automobile:

> "I haven't been on a bus in 20 or 30 years" (Elena, Mountain)

> "Ah...I did take a bus one day but that was it....never going to do it again." (James, Mountain)

> "We used to have a bike, but you can't saunter around on it now. No, it's too dangerous now. No, there's no need for it." (Gavin, Mountain)

Vehicular transportation was the main transportation method for many respondents, but public transportation was also an option for some participants. It appears that most industrial residents view the public transit system in Hamilton as an opportunity for accomplishing daily tasks, while the opposite is true to mountain residents:

> "It's easier to get the bus, because the Barton bus runs so frequently, it's one of the few that does. Actually you're surrounded by buses. I also take the Mohawk bus as well, but it's not as convenient as the Barton." (Kelly, Industrial)

> "Part of the problem, I think too is the busing. My daughter that works for Meadowlands; she could get a ride to work but she can not get a bus back because there's no busing there after 6 o'clock in the evening and she works until 9. So I think they're working on that, but that's a real drawback. Like it's a real problem for us to even go away, because if she's getting off at 9pm, she either has to ask them at work or get a taxi. It's frustrating you know. She does primarily use the bus to get down here, but when you're doing a little like, from where we live, its easier for my daughter to walk to work then it is to catch a bus because she would have to either transfer or walk part of the way anyways." (Donna, Mountain)

> "Convenience is important to me. Well with the three kids I can't imagine me taking the bus or waiting for the bus like our Mom's used to do and that you know so convenience." (Joy, Mountain)

Thus, the industrial neighbourhood viewed access to public transportation as important; however, the respondents in the mountain area did not touch on any themes of easy access to public transportation as an opportunity in their neighbourhood:

> "It's easier to get on the bus, its right on the corner." (Elizabeth, Industrial)

> "The public transit is pretty good" (Kelly, Industrial)

With regards to public transit, five out of seven negative public transit attitudes were mentioned by mountain residents. One of the main reasons for not using the public transit system in Hamilton may be the time constraint issues:

> "I did take a bus one day but that was it. Never going to do it again. It was too time consuming." (James, Mountain)

> "And I shouldn't say it, but I don't like, what do you call it, public transportation." (Abbey, Mountain).

4.3.3 Accessibility

When asked during interviews if any tasks were difficult to accomplish because of problems with access to places or establishments, respondents in the industrial area spoke of difficulties with access in regards to public transportation, but no mountain residents commented on transportation affecting access. This issue was mostly concentrated in the industrial area:

> "Sometimes it's difficult because the bus routes don't run all the right way. And the times they run are a problem in this area, especially the ones north and south, you get one an hour approximately. Yeah and if you don't hook into the right time, you'll be late your appointments. An hour early or an hour late." (Lindsay, Industrial)

> "Well I take the bus except for Sundays, because they don't run as regularly, especially the sanatorium bus...that's the only reasons." (Kelly, Industrial)

It appears that the mountain and industrial neighbourhoods have a high reliance on vehicular transportation; however, the industrial neighbourhood appears to be more mindful of other methods of transportation. Interview data provided an array of themes of mobility, transportation, and accessibility in each of the neighbourhoods. These themes also emerged in discussion about opportunities and constraints within the local environment.

4.4 Opportunities and Constraints Affecting Daily Time-use Patterns

In each of the neighbourhoods, various opportunities and constraints emerged. The following sections highlight, compare, and contrast some of the major challenges and opportunities in each neighbourhoods. Opportunities can be described as a set of choices, options, or circumstances that affect travel behaviour (Ellegard, 1999; VanEck et al.,

2005). On the other hand, constraints can be seen as limits on individual time-use patterns and mobility (Hagerstrand, 1970).

4.5 Opportunities

4.5.1 Neighbourhood as an Opportunity

It was often the case that neighbourhood location made it easier for respondents to accomplish tasks or activities within their self-defined neighbourhood; however, it must be recognized that the spatial distribution of services across the City of Hamilton also affects accomplishing tasks. In both neighbourhoods, shopping was noted as an easy task to complete, but was more often noted in the industrial area (n=14) than the mountain area (n=10):

> "It's easier to shop, because the mall is right here." (Kelly, Industrial)
>
> "There's shopping- that's pretty close, right up Rymal. It's easy to go to Fortinos, that kind of thing. Other than that, that's pretty well it for my area." (Owen, Mountain)

More generally speaking, respondents in both areas strongly believed that everything they needed was within their neighbourhood, thus the local environment can be seen as an opportunity for some respondents (n=17):

> "There's just about everything down here that you can ask for." (Lindsay, Industrial).
>
> "We're close to Burlington Street. Gets you on the highway, gets you anywhere." (Sam, Industrial)
>
> "So...this neighborhood's pretty central to anything...anywhere you want to do." (Smith, Industrial)
>
> "I find it easy because of our location, yes definitely. Just about um...we're close to shopping centers, malls, sports fields, so it's not that bad." (Leo, Mountain)

Recreation and being close to nature was important to respondents in both the industrial and mountain neighbourhoods. Gage park was mentioned a place where industrial residents would go to engage in recreational activities. Tasks like gardening or socializing outdoors was an important theme in both communities:

> "Recreation is good in this area, Gage Park. That's good for this neighborhood." (Smith, Industrial)

> "The park, it's close, so you can get there. If you have friends in my neighborhood, gardening or just talking to your neighbor. When my neighbours garden they are out interacting in our community." (Milo, Mountain)

4.5.2 Time-Management as an Opportunity

When asking respondents about some of the reasons why they were able to accomplish all of their scheduled tasks in one day, time was cited as a major opportunity, which seems at odds with both academic and anecdotal material concerning time compression (Giddens, 1991; Massey, 1994). In a discussion about constraints, time was not a common theme, but was seen as a main reason for accomplishing tasks. Time can be seen an opportunity rather than a constraint among industrial and mountain neighbourhoods. It is important to mention that while time was seen as an opportunity for accomplishing tasks, some respondents suggested that they often try to fit in too much into their schedule, thus time management was key for being able to manage all daily tasks:

> "If allotted the right amount of time for it. Well, I have a calendar and I figure all the time that it takes to do things, and I write all the times down; what I'm available for and what time; and I have one in my purse as well. So it's the scheduling that makes it easy." (Nicole, Industrial)

> "Just giving yourself enough time. I think most people underestimate how long things will take them. Even at my work I always hate having to rush...and I don't care what you're doing. It doesn't matter what job you're doing, you're pulling a [deadline]. I mean the odd time, if you have to do it but if it's a continuous thing that you're always rushed at whatever you're doing to try and finish, it'll catch up with you in the end. Like my father died when he was 54 years old, so I'm not going to kill myself when I work. I work, but I don't work like a maniac cause it's not worth it. So I always make sure that I give ample time. The odd time it's not enough, but usually I have enough time...it doesn't matter what it is." (Preston, Mountain)

Having order and keeping to a schedule helped in accomplishing tasks. Thus planning ahead is seen as an opportunity for residents in both neighbourhoods. Future time management appeared to be part of many respondents' lives. Many respondents, in both neighbourhoods, indicated that they followed a schedule or planned activities or tasks in advance:

> "Knowing...being given the schedule. I look on the fridge when I see what soccer games are on...what week...the only ones that I don't get to write, is it wasn't put some place where I was supposed to know or...Sometimes I don't remember

birthday parties. There are invitations on top of the phone but ah I don't notice them" (Gabriel, Mountain)

"Maybe good planning, timing. Well like I was saying, planning. I organize myself...I kind of like know in my mind exactly all the steps I need to do and stick to it." (Callum, Mountain)

"Because they [activities] are planned ahead of time. If I had something to do or somewhere to do." (Sienna, Industrial)

4.5.3 Determination, Assistance, and Technology as an Opportunity

Determination to complete a task was cited by just under a quarter of the sample, as a reason for completing daily activities on schedule. While determination was cited by mostly mountain residents (n=5), it was also an emerging theme in the industrial area (n=4) interviews:

"Usually if I start at something, I keep at it until it's done. If it's something I'm not fussy about doing then I'll finish faster." (Dylan, Industrial)

"Yah I think so it may take me a little bit longer, but I won't give in. I try not to give into it though. So it's sheer determination and knowing there are a lot more people worse off than I am." (Sophie, Mountain)

"Stubbornness! Have to see it through...has to be done...and I set things out. We do have a little bit of a timetable, not much, but a little bit. We'll do this today and do that tomorrow." (Gavin, Mountain)

When probing about their beliefs in technology being helpful or not helpful in completing tasks, a few respondents (n=2) suggested that technology has nothing to do with completing task:

"I just got the internet. I don't think it [completing tasks] has anything to do with the internet or accessibility or anything." (Amanda, Industrial)

While some thought technology was not supportive in completing tasks, a few other participants (n=3) believed technology was an opportunity for getting tasks done:

"Ya I think we've come to that point that we have so many things available to us to be able to accomplish so many things. We have the phone, fax machine, the internet, the cell phone; I can like tick off so many things. I can't see a reason why

not being able to [complete a task] unless it's a health issue. So I'm one of those that when I say I'm going to do something, it's done. I'd have to be dead not to do it." (Sonya, Mountain)

4.5.4 Coupling as an Opportunity

Coupling, meeting up with others to complete a task (Hagerstrand, 1970), can be seen as an opportunity for some of the respondents in the sample. Themes of helping out others and receiving assistance meant that coupling acted as more of an opportunity than a constraint:

> "Some of my tasks require me to meet up with others, because we have kids that drive, and my wife drives so we all participate and help out." (Leo, Mountain)
> "Probably, just below virtually all. Because all my tasks are making sure my kids are where they have to be and designated times. My wife drives, but I enjoy doing the things that they do and most of them are sporting activities, so I enjoy taking them to the sporting events." (Gabriel, Mountain)

Having assistance in completing tasks was mentioned by some industrial (n=5) and mountain participants (n=3). Relying upon family member friends, or neighbours was a cited as a reason for being able to complete daily tasks:

> "Probably assistance from my daughter and....everything gets done" (Elizabeth, Industrial)

> "Ah, geez I don't know. Well, just in my home, with my family helping me with different tasks." (Samantha, Mountain)

On the other hand, some respondents believed coupling acted as a constraint on their daily life. Waiting for others, coordinating times, and accommodating more than one schedule was noted as difficult for some participants, often making it tricky to complete certain tasks:

> "If I need to do something like to go to the dentist or things for myself then I have to wait til my husband gets home so I need to wait for him but otherwise uh like daily stuff like groceries or you know things other than dentists and that kind of thing I do myself I don't need to wait for anybody." (Joy, Mountain)

> "Well, because I have to meet up with a babysitter before work and then I got to coordinate for after work and then, maybe that would be about it for me and my daughter stuff going on for after school." (Sam, Industrial)

> "Yeah, sometimes I don't have to meet up with anybody, and sometimes I have to meet customers or friends or whatever here and there to pick up things or order things. Um....lets say...maybe because I'm a little impatient at waiting for others right. I like to have everything ready before I start [tasks], cause once I start I like to know exactly where I'm going, what I have to do, and if I have to wait [for others], it just throws me off." (Callum, Mountain)

Many respondents liked to convey the idea that they were independent, and this was an emerging theme during interviews (n=21). For this study, independence could be defined as being able to accomplish daily tasks with little or no help from others. Many respondents indicated that they hardly ever or never engaged in activities that would require them to meet up with others. More industrial residents (n=13) suggested that they rarely or never needed to meet up with others to complete a task; however, less mountain residents (n=8) believed this to be true:

> "Hardly any [tasks] I'd say I just go about doing my own thing" (Kelly, Industrial)

> "I would say hardly any [tasks]. Well my husband goes to the babysitter, at work I relieve someone else, that would be the only time I have to do anything. I work independently amongst other people." (Tamaqua, Industrial)

> "Ah...none of my tasks because mostly the things that I do I can handle myself. And I don't have any of the tasks where I'm going to pick up people, or I don't go to movies. So I think I can do them [tasks] all alone." (Jim, Mountain)

> "I'm usually one of them people that do everything on my own. I do things better on my own." (Sonya, Mountain)

On the topic of coupling, some respondents mentioned that they did not want to be restricted in tasks as a result of having to wait for others. Also a few respondents liked the idea of not having to rely on others or become dependent for assistance.

While some participants suggested that they do not engage in coupling activities, other respondents mentioned that some or most of their weekly tasks require them to meet up with others (n=18). In this category more mountain residents (n=12) believed that some or most of their activities involved coupling; however, far less industrial respondents (n=6) believed this to be true:

> "I'd say most of my tasks. I'm usually taking someone to and from a job. The rest of the time, I'm taking the neighbors shopping, and a 76 year-old around the corner. I take her at least 5 times a week, because if I don't take her out, nobody

else does and she would not have lived as long as she has, if I had not taken her out." (Nicole, Industrial)

"Well most of them [tasks], I would think. Yeah, because even in the work situation, I'm working with others and I'm going and performing a service for people. So most of the time when I'm driving someplace, I'm driving somebody. A lot of times, somebody's home with me too, like I don't have a lot of time just home by myself. It seems there's always somebody in the house. I home school my son too so it's not like they all go off to school and I'm home alone much." (Donna, Mountain)

The following summary table illustrates weekly task that require participants to link up with others to complete a task. As noted on the table, most respondents do no require anyone else to be present to complete a task:

Table 4.5: Coupling Behaviour

WEEKLY TASKS THAT REQUIRE MEETING OTHERS	INDUSTRIAL n=20 (%)	MOUNTAIN n=20 (%)	TOTAL n=40 (%)
Virtually all	1 (5)	0 (0)	1 (3)
Most	2 (10)	6 (30)	8 (20)
Some	4 (20)	6 (30)	10 (25)
Hardly any	11 (55)	5 (25)	16 (40)
None	2 (10)	3 (15)	5 (13)

4.6 Constraints

4.6.1 Accomplishing Tasks

In both neighbourhoods, well over half of the respondents believed that they were able to accomplish the tasks they set out to complete that day. When asked if they are able to complete their required tasks, many respondents quickly gave a very assertive answer with little explanation even when probed to discuss further. It was only later in the interviews that constraints were adequately described. Also, it may be reasonable to assume that respondents were able to accomplish their tasks because they limited themselves to tasks that they know they are able to easily achieve:

Participant: "Oh no, no, I always finish a task."
Researcher "You always finish your daily tasks, always?"
Participant: "Oh yes!" (Hannah, Industrial)

Researcher: "So are you able to accomplish all of your tasks during an allotted time?"
Participant: "Um…Yeah, yes". (Jim, Mountain)
"Yah I think so. It may take me a little bit longer, but I won't give in." (Sophie, Mountain)

More generally, while most respondents indicated that they were able to complete most of their daily tasks without complications or troubles, some participants revealed that they have problems completing their daily activities (n=11), more of these were from the mountain neighbourhood (n=7):

"Um…I think…I can't say yes to completing all tasks, because right now, I have some work to do and I have started and I have not got back to it for the longest while." (Gavin, Mountain)

"There are some tasks that don't get done." (Tamaqua, Industrial)

4.6.2 Medical Conditions or Pain as a Constraint

A major factor in not completing tasks was medical conditions or chronic pain. Some respondents mentioned that they would aim to complete daily tasks, but are unable to continue or finish their activity do to a medical condition (n=12). One industrial respondent mentions that her asthma and arthritis prevents her from engaging in certain tasks or activities:

"I have asthma and arthritis. If it's too humid, I can't do lots of things."
Well I can't breathe because of the air quality. And my, the arthritis is uh the air quality again." (Nicole, Industrial)

The same themes of pain and medical conditions limiting activity were also found in the mountain neighbourhood:

"If I am vacuuming and my back acts up because my spine and sometimes that is very, very sore. There is nothing I can do." (Sophie, Mountain)

In discussions about pain and medical conditions, a few respondents mentioned that the problem was so bad that it caused them to stop all activities all together and stay home:

"Being tired, right now I have a problem with my leg and I cannot get up. Doing all kinds of things [is difficult], and other days I'm home stricken" (Abbey, Mountain)

4.6.3 Priorities, Family, and Others as a Constraint

Having prior plans or other priorities that require a person to stop or pause an activity was cited as a reason for not completing tasks. More generally, respondents would give up on selected tasks if other more important tasks would get in the way of completing the first task. While priorities were mentioned by people in both neighbourhoods, most of the responses (n=7) came from mountain participants, and this theme was not as prominent in the industrial group (n=2):

> "Other things coming up that have to be done prior to what you're doing." (Mikkel, Mountain)

> "Probably the biggest reason would be having to be interrupted to do something else. Something that's not on my agenda, being put on my agenda by my wife or my children. Not being aware of an event that they have planned and have not told me about. I have to stop what I'm doing to do something. Usually my work [tasks] are done most of the time. It only usually happens at my social or free time, where something happens that I have to stop doing what I'm doing. Like for example, I wanted to do some measuring in my garden, and it's taken me 3 weeks, but yesterday afternoon, I finally got it done. But there were some days that I could have done it but I just chose not to." (Gabriel, Mountain)

Children or other family members acted as a major constraint in completing daily tasks. A theme of placing family members over pre-established tasks and activities was noted by both female and male respondents in both neighbourhoods (n=9):

> "If something happened to the family, like my Mother, or something happened to my husband then I may have to be forced to change the time to that particular task, but normally because we don't have children I usually meet up with all my tasks." (Sonya, Mountain)

> "Ah, just other priorities, just you know... like if my son needs attention, I'll play with him rather than clean the garage say." (James, Mountain)

> "There are distractions, such as my daughter or something like that." (Tamaqua, Industrial)

4.6.4 Time, Personal Factors, and Procrastination as a Constraint

As expected, not having enough time to complete a task acted as a constraint. More mountain residents found that not having enough time posed a problem for the completion of tasks. Fewer industrial respondents saw time as a problem. While the issue of time was seen as a constraint for some, it was not a highly noted theme in the entire sample (n=7):

> "Poor time management, probably. Well if I have a list of things that I want to get done maybe I won't be able to, or maybe I set unrealistic expectations for myself. Maybe I don't realize that I can't do all that in the time that I have given myself to do it." (Samantha, Mountain)

> "Okay let's see at work, it could just be that you don't have enough time to do something. At home, time always comes into it you know. If you're doing something with your kids and it ends up taking longer so you can't do the job...if it's going to take awhile, like cleaning the pool, you might just leave it until the next day, or something like that. Mostly I would say time or sometimes you just don't feel like doing it." (Preston, Mountain)

> "Probably time more than anything. Well for example, I like to go to water aerobics but I'm not necessarily able to get there when they have the program available for me, so you know, so if I end up working a little bit late then I miss it or have to pick up kids from work, so everything kind of overlaps at the same time, you know, so those types of things get in the way sometimes." (Donna, Mountain)

While only seven respondents mentioned time as a specifically noted constraint, themes of time-use, time-management, scheduling, not having time, or spare time were found scattered through out the interview data for the entire sample. Even if though respondents were not actively mentioning time as a constraint, themes of time were prominent within the data in various contexts suggesting that time is an important factor in the daily lives the study participants.

Personal factors, such as laziness, were mentioned as a constraint by more industrial respondents (n=7) than mountain participants (n=1). In interviews, industrial respondents were open in discussing how laziness acted a constraint in completing tasks. Perhaps it was not laziness that stopped these individuals from completing a task, but rather a mind frame that allows for flexibility in daily task scheduling:

> "I don't have an allotted time [for tasks], I do it when I feel like it. I can do everything but I'm kind of lazy." (Hannah, Industrial)

> "Ha, ha, ha, well occasionally I'm a slacker when it comes to finishing certain things." (Cole, Industrial)

Similar to laziness, procrastination was a popular reason for not completing activities or tasks in both neighbourhoods (n=5):

> "The number one [reason would be] procrastination, but unfortunately, as in many people's lives, if I find a task to do I have to think about it for three days. I have to get my mind around it first and then tackle it. I mean it's ridiculous, I never used to be like that, I usually get it done, but no there's so much preliminary energy that goes into doing the task now, getting the task done. It's weird, I'm definitely different now that I'm older." (Marcella, Industrial)

4.6.5 Inaccessibility as a Constraint

Overall, accessibility to places or establishments was not a major constraint among the sample, as over half of the mountain and industrial respondents (n=21) believed they were able to access places or activities with ease. Overall, the sample appeared to have very little issues with mobility, perhaps as a result of high auto-dependency, easily accessible services, and personal schedules:

> "Nowadays everything's open so darn much, you know...seven days of the week, most things. For me personally, it's not difficult [to access activities] because I can drive, but obviously there are people out there that it becomes more of a difficult task. You know...whether they're a fixed income or someone has to drive them somewhere so they only go out once a week to do everything they do. You know if my wife...or if we need something quick, we just drive up to the barn for this or that. We don't really have any restrictions. But my brother lives just up the street and he has a son with Cerebral Palsy. He's in a wheelchair, so there are those sorts of issues. That's a bigger deal, getting everybody going. Whereas for us it's not that big a deal." (Preston, Mountain)

However, some respondents in the mountain and industrial area believed that access served as a constraint in completing tasks. Access to transportation was a problem for a few industrial residents (n=4) and one mountain resident. Lack of mobility came through as a major theme in these particular interviews:

> "Yeah, because of transportation. Like for example, Toronto. I don't go to Toronto too often and if I go I usually go with somebody who owns a vehicle and drives me there." (Tyler, Industrial)

> "I don't drive. I have to depend on my husband all the time and it's hard." (Gwen, Mountain)

Access to services, medical establishments, or shopping centers was noted as an issue of concern for a few individuals in the sample:

> "I think community centers are becoming less accessible to adults who don't have a band of time. I find that they should be there and when I go to my grandson's school or rec center, you find kids when it should be adults. I find they need to do some more research in terms of how to utilize [them]; however as far as school there should be more access for adults who want to go back to school. So school should be open 24/7 and recreational centers should be encouraged to be open for adults who are working, as they change shift work pattern on Sunday only. These things should come in step with them. Basically I mean religion, church...all the things we do because we have choices. Then if you have choices you need to have alternates for other people. If somebody works on a Saturday, then why not have the things on a Sunday. You have choices in religion; you should have choices in public institutions." (Milo, Mountain)

> "I don't trust stairs at all because if my knees give out, I'm going down. Okay, over at the mall there's the dollar store. I can only do that, maybe once a week because I'll go down the stairs and I'll have to come up the stairs. So I have to drive out of my area if I want all on one level." (Nicole, Industrial)

Also, having to wait for medical assistance was a bothersome issue for some participants. Accessing medical assistance was a problem for some because a lot of time can be wasted waiting to see medical professionals. In these interviews managing personal time schedules for health purposes was an issue of access, opening hours, and other medical constraints that affected how and when a person would seek medical attention. Concerns about financial constraints about medical issues did not emerge in the data:

> "Well my dentist is in Stoney Creek. When I work afternoon shift, sometimes I have an appointment and it takes me half a day to get there and back. And wait there and wait. To me, it's a lot of wasting time." (Tyler, Industrial)

> "In a day at the doctors you have to plan it out because you spend more waiting time at doctor's than actual examination time. So basically you have to structure that when you [only have] 2 hours." (Milo, Mountain)

In summary, all respondents were affected by the various opportunities and constraints within and beyond their local environment. Some of the major opportunities can be found within the local environment, while other opportunities are based on personal factors, such as determination. The same can be said for the challenges and constraints faced by the sample population. Here, the local environment provided challenges, accessibility for instance; however, other factors were at work in limiting the

daily lives of those interviewed. For example, pain, medical conditions, and procrastination all served as a constraint. Thus, both opportunities and constraints can be influenced by a variety of factors at the individual level and physically within the local environment. These ideas correspond to work from Hagerstrand (1970) that suggests constraints and opportunities can operate at different spatial scales.

4.7 Linking Neighbourhoods, Time, and Health

4.7.1 Healthy and Unhealthy Neighbourhood Perceptions

When asking participants if their neighbourhood contributed to their health, many respondents noted both healthy and unhealthy aspects of their local environment. In the mountain neighbourhood 'nature', for instance the presence of green space, was very important and many respondents believed being surrounded by nature was good for their health (n=14):

> "There's a lot of mature trees around, there's parklands um...you know lots of room for exercise and getting outdoors if you so choose to do." (Samantha, Mountain)

> "The park is good because a lot of people use that for exercise and tennis, and there's football games going on, and the wooded area is probably healthy too." (Donna, Mountain)

While the number of industrial respondents citing nature as a healthy aspect of their local environment was small, some respondents believed nature was a positive thing for their health (n=5):

> "[My neighbourhood is] fairly healthy. Well we do have to put up with the pollution from the factories, but we have a lot of trees which clean the air." (Nicole, Industrial)

Clean air was also an emerging theme in discussions about health issues in Hamilton:

> "Ah...yes I would say my neighbourhood is healthy. Okay, well it's on the mountain so it's not as polluted, I don't find it as smoggy on the really hot days." (Preston, Mountain)

Similar to Preston's account, Callum believed his neighbourhood was healthier than communities below the escarpment because of the spatial separation of undesirable aspects, such as noise, crowding, pollution and even congestion. Here the theme of the two-tier city emerged with this respondent believing that his spatially isolated mountain community was at an advantage in terms of health:

> Well since we're on the outskirts of the city and that...its nice and open you know...not like being downtown city, where the noise, the pollution, congestion or whatever (Callum, Mountain)

A contrasting account from John of the industrial area was provided as he defined his neighbourhood as a healthy place to live despite the various negative stigmas surrounding the industrial neighbourhood. He even points to the spatial allocation of parks and neighbourhood design as a benefit for health:

> Um...I would say this neighbourhood is healthy. I know there's a lot of stigmas about this part of the city but I don't necessarily believe it. Ah...it's not too dense. There's no towers, there's no power buildings. There's a big park around the corner, um...that's good. Those are all good things. (John, Industrial)

In the mountain neighbourhood (n=4), some respondents believed that social capital was an influential factor in good health; however, themes of social participation were not as highly noted in the industrial neighbourhood when discussing health (n=1):

> "Everybody in the neighborhood is very friendly, great neighbours, positive for health and I enjoy it here and that's it." (Leo, Mountain)

> "The social...just the well being of the people there, they always care. They're always asking how people are, and everyone participates in stuff. The kids are always on one street playing with other people. " (Gabriel, Mountain)

It is important to note that social capital was mentioned in other portions of the interviews in both groups; however, social capital was not a major theme in discussions about health. Although links to social capital and perceived health benefits are weak in this sample, various participants engaged in social participation several times per week. Meeting with friend or family, attending social events, or being social at work emerged in every respondent's interview, with some participants displaying higher levels of interaction other than others.

While many respondents believed they lived in a fairly healthy neighbourhood, some participants believed their neighbourhood was unhealthy. For the industrial neighbourhood, issues of pollution were a major concern (n=13). The presence of industry as a major source of pollution was a common theme in the industrial neighbourhoods:

> "I think it's unhealthy because of Dofasco. There's always dirt on the furniture outside. I moved to Hamilton 11 years ago from Stratford, and I was never sick physically, and I moved here and I got sick, I have polymyalgia-sciatica, but umm...you kinda wonder." (Amanda, Industrial)

> "Well, boy uh that's a tough one, the air is bad, but it's a relatively healthy neighbourhood. The amount of particulate matter in the air are incredibly heavy at times of the year and there are some heavy particulate matter that comes out of the chemicals of Canada which is a manufacture of carbon black that's heavily deposited on everything it's a sooty like deposit that is not healthy at all, other than that its generally ok." (Logan, Industrial)

> "You got Stelco belching and Dofasco and all these other places belching out the smoke. Doesn't make sense. Stelco makes [the neighbourhood] unhealthy" (Dan, Industrial)

As one can see from the above quotes, there was a strong sense that polluting industries were the major reason why the industrial neighbourhood was viewed as an unhealthy area for some participants.

Pollution was also an issue for mountain residents (n=6), but fewer respondents reported this problem in comparison to the industrial area For the mountain residents, themes of pollution were not as explicitly linked to industry, but rather other sources of pollution such as traffic or wind direction:

> "I wish I would live in a healthy neighborhood. Other than the fact that Upper James and Rymal's right here...there's a lot of cars and we're close to a busy intersection but other than that...it's nice...an older area with bigger trees. I guess, no matter what, living in Hamilton, there's pollution everywhere." (Owen, Mountain)

> "Well the pollution thing...well it depends on which way the wind blows, I guess. My dad was a Stelco guy. I worked at Stelco for 4 years as a summer student but you know I wish that we could control that. I wish that was controlled a little bit better. Often times when I think our pollution is really high... It's not our fault, it's usually from the States...the way the winds blowing, so we can't control that." (Preston, Mountain)

4.7.2 Self-Rated Health Status and Neighbourhood Differences

When asking respondents to report on their own comparative health status, the majority of people believed that their health was similar or slightly better than the health of others in their neighbourhood (n=21). Both industrial (n=11) and mountain neighbourhoods (n=10) revealed the similar themes:

> "I'm very lucky...very lucky. I have high blood pressure. I take pills for that. Ah...I'm mental, but that's alright, it's Irish (laughing). But no...I'm very fortunate, I feel, at my age. Anyhow, I mean, this poor guy, in front of you...he's

> five years older than me. He rides a buggy. He's got canes and everything. I feel I'm lucky. That's the way I see it." (Gavin, Mountain)
>
> "Okay...how old am I? I am 60. Okay, a 60 year old. I have a friend in his 70s and he is fairly healthy. Myself, I have arthritis. I play sports, so I get injured. Neck ache, back ache but by and large I think there are people here who are in construction and they're on compensation. They've had an industrial injury. So I think that you find here, there are retired people that initially moved in their fifties and now retired. They're in their seventies. We've had two deaths. My neighbor here is 83...husband died. They moved in on the same day. But by and large, I see more people walking. So I think it's a fairly healthy neighborhood, in terms of health...physical health. We don't see people in wheelchairs, or older people in homes...that we don't know." (Milo, Mountain)
>
> "I'm as healthy as anyone else in this neighborhood. The man that use to live here he had a heart attack the man up the street had one so we're all in the same boat here" (Dan, Industrial)

Even though some respondents did suffer pain or medical conditions, they believed they were in good health. Since others in the neighbourhood were perceived as 'worse off', this lead participants to judge their own health as a comparatively good even though their health may not be as good as they believe.

Self-rated poor health was concentrated in the industrial area with more respondents mentioning that their health was worse than their neighbours (n=6). A few mountain respondents (n=3) indicated that their health was not good. People who reported having poor health were often suffering from chronic disease or pain:

> "Well mine [health] is poor compared to the rest of them. They don't seem to have the major problems I have. They all seem active enough. They all seem to do a lot of walking because of the location. They don't seem to use the car; they all leave it parked in the driveway. " (Lindsay, Industrial)
>
> "My health is horrible. I have ulcerated colitis and I have arthritis and I have advanced osteoarthritis. Ulcerated colitis: It's your colon, it's full of ulcers. There's lots of pain and there are times where I'm in the bathroom 60 times a day. It affects a lot of my day" (Dora, Industrial)

The quote from Dora demonstrates how chronic conditions can limit behaviour and daily time-use patterns. If Dora was required to treat or accommodate her condition it may have an impact on her mobility outside of the home where bathrooms may not be as accessible when needed. Also, Lindsay mentioned her neighbours find it easy to walk within her community, but finds walking a difficult task.

After inviting respondents to discuss their comparative health, a question about overall health satisfaction was asked. Well over half of the sample indicated that they

were fully or somewhat satisfied with overall health status (n=29). An equal number of mountain and industrial respondents felt they were satisfied with their health. Some respondents believed that there is always room for improvement when it comes to health:

> "What I would say is that I ought to be satisfied because when I went to the doctors they took me to a test and asked me questions to check my memory and things like that. And the nurse as well as the doctor was saying this is very good, this is excellent. Because they seemed to be saying, compared with other people my age, they did not respond to that test as well as I had. So from that respective, I think I ought to be quite satisfied, but comparatively, I am somewhat satisfied because it could have been a lot worse. But there is room for improvement." (Logan, Industrial)

> "Somewhat satisfied. Well I feel you can always do better I can go to the gym more, and I have to push myself. I'm always trying to eat better and I find there is always room for improvement. (Joy, Mountain)

Dylan, from the industrial neighbourhood, provided a good illustration of the effects of time and space on health as he discussed his own health status. He believed the pollution levels within his local environment were directly affecting his health. Also, the spatial allocation of services in his community was problematic because he was unable to receive the medical attention needed and found it necessary to drive to Toronto for proper medical services and that journey would require the respondent to allocate a large portion of his time:

> "I think that my health could be better. If I was living somewhere that the air is cleaner I would feel better about my health. The problem with getting health services around this area and further from this area is a problem. When I moved here I went to four different dentists to start out and every one of them put a dollar figure on taking care of me before they even started, so I went back to Toronto regularly to go to the dentist. For the doctors there isn't many around here, but I went to the Rosedale area and that doctor is one of those doctors that doesn't like to get his hands dirty but you know. Go get your blood tested is the amount of his effort. Yeah I don't know I seem to have lost a lot of energy lately, but I don't know I'm taking iron now, but I think I should have more energy." (Dylan, Industrial)

Those who indicated that they were not satisfied were concentrated in the industrial neighbourhood (n=4). No mountain residents mentioned that they were not satisfied with their health:

> "Oh I'm not satisfied with my health at all. I just get frustrated, I just want to do more, my mind wants to do more but my body doesn't cooperate." (Lindsay, Industrial)

> "Uhh...Not satisfied with my health. Because to my own doing, it's not my own fault in many respects, I'm heavy, heavier than what I should be, and I don't necessarily believe that it's because of our health. In general, the population now loves to eat high calorie, low nutritious value foods. I don't think my weight is based on that, I think it's more based on my genes. I also could have worked harder, coulda, shoulda, woulda, maintaining a more proper weight, lending to better health. I have diabetes and it's something that I've struggled with in respect to how much I want to own up to it and do something right about it. My health is let's say less than somebody else of my age." (Marcella, Industrial)

There were a few industrial respondents (n=2) that mentioned they were very happy with their overall health status; however most of the people who were very satisfied with their health were concentrated in the mountain area (n=5):

> "I am very satisfied. Again, because of the lifestyle that I engage in the level of nutrition that I eat at and the physical activity that I engage in." (Jamal, Industrial)

> "Very satisfied. I eat well, I drink a lot of water, I exercise on a regular basis, I try to be mindful of eating healthy. I don't smoke; I don't know what else to say." (Samantha, Mountain)

In discussions with those who mentioned they were very satisfied with their health, themes of taking proper care of themselves emerged as a reason why they were very happy with their overall health status:

> "I'm very satisfied with my health for my age. I take care of myself. What does that mean? Well you know it's like taking your car for an oil change and things. I do the very same thing with my body. I make sure that everything is okay and I make sure that, mother, husband everybody gets the same things. I think if you have good health then everything else should be a piece of cake. That's how I see it." (Sonya, Mountain)

> "I feel healthy; I feel I take fairly good care of myself. I try to eat properly. Try to get a little bit of activity in and we don't smoke. I've never smoked. I sometimes have to stop and ask how old I actually am. I'm not on any blood pressure medication, my cholesterol is good, like all of those things are good even though I have a really strong family history of diabetes, high blood pressure and all of that, I don't have any of that." (Donna, Mountain)

4.8 Health Enhancing Activities

4.8.1 Exercise, Physical Activity, and Recreational and Leisure Activities

During interviews, when asked if respondents engaged in any activities to improve their health, most respondents (n=35) indicated that they have tried to exercise to improve their health at some point in time. Data in regards to exercise was collected from two individual sources: interviews and the time matrix (time diary) activity. Since data were collected in two different forms, there is some controversy as to the levels of 'reported' exercise levels collected from the interviews and 'actual' time-use patterns collected from the matrix. It is important to state the time matrix activity only collected data about a typical day (not several days) and the individual may have not exercised that particular day. Thus, differences in numbers may be entirely plausible. The summary table outlines the total time spent exercising weekly based on data collected from individual interviews:

Table 4.6: Weekly Exercising

HOURS EXERCISING PER WEEK	INDUSTRIAL n=20 (%)	MOUNTAIN n=20 (%)	TOTAL n=40 (%)
0	0 (0)	1 (5)	1 (3)
1-5	15 (75)	11 (55)	26 (65)
6-10	5 (25)	5 (25)	10 (25)
10+	0 (0)	1 (5)	1 (3)
Declined to answer	0 (0)	2 (10)	2 (5)

Exercise and physical activity emerged in the data collected from the time matrices. Exercise referred to the planned and regulated activities, such as running for an hour or attending the gym. Physical activity was seen as just being active and engaging in activities such as gardening, cleaning or simple recreational activities as described in the next section below.

According to data collected from the time matrix activity, the mountain neighbourhood reported the highest level of daily exercise in their daily time use matrices (N=9); however, only one mountain male reported exercise in his time-matrix, so mostly females exercised. The higher numbers are a result of mountain females reporting the high levels of physical activity in their daily time-use matrices (n=8). This number was sharply contrasted with the very low levels of physical activity reported by the rest of the sample in time matrix activity of the interview. Overall, three people in the industrial neighbourhood reported exercising in their daily time-use patterns. It is important to note that many respondents, while not engaging in intentional exercise, were quite active in their daily routines. For instance, some respondents were active at work, while others reported being active in the home:

> "I am physically doing something everyday. I am pretty much on my feet for those 9 hours everyday, 5 or 6 days a week, none stop everyday." (Sam, Industrial)

Some recreational and leisure activities can be viewed as forms of physical activity. For example, recreation and leisure activities included gardening, playing sports, going for a walk, etc. All female mountain respondents (n=10) reported engaging in leisurely activities, and a high number of males (n=9) reported spending some of their daily time on recreational tasks. The same trend was found in the industrial neighbourhood, with females (n=8) and males (n=9) both using some of their daily time on recreational activities:

Data collected from the time matrices can be compared to data collected from the interviews. For example, based on interview data, more mountain respondents (n=21), rather than industrial respondents (n=14) mentioned that they engaged in some form of physical activity to improve their health:

> "I try to improve my health by swimming, but that's about all I can do. If I had a bike, I'd go biking, but don't have one" (Dora, Industrial)

> "Yes. Well I think riding is one activity to improve my health. Yeah that is good exercise. When I walk, I walk very brisk and the next thing for my mind...what I do...I read a lot. Not a lot of different books but I spend pretty much of my main reading on religious material." (Logan, Industrial)

> "Ah... actually I'm rollerblading sometimes with the family." (Mikkel, Mountain)

> "That's why I started going to water aerobics, that's why we walk. That's why I go to Weight Watchers. Not just to lose weight but also to stay healthier." (Donna, Mountain)

Among the sample, exercise and physical activity were the main activities to keep people healthy, followed by diet (n=4):

> "To improve my health...I take vitamins and minerals." (Amanda, Industrial)

> "I take cooking courses for my repertoire in the kitchen. You know, I cook at home because my wife works, so that's a huge thing. Ten years or more ago we might have spent every night in a restaurant and now we don't kind of thing." (John, Industrial)

4.8.2 Constraints for Exercising

Completing daily tasks is a vital part of maintaining a healthy lifestyle. Tasks such as socializing with friends, picking up prescriptions, and engaging in exercise may all be important to maintaining good health; however, there may be some constraints in performing these activities. Overall, the mountain neighbourhood appeared to have fewer issues over difficulties with engaging in tasks. Half of the mountain respondents believed that they were perfectly capable of engaging in any tasks or activities that would be part of their lifestyle, though difficulties with exercise emerged as a theme later in the interviews:

Researcher: "Okay, and do you ever find it difficult to perform certain tasks or engage in certain activities?"

Participant: "No, I don't think so" (Sam, Industrial)

When asked if respondents had any difficulties with engaging in certain tasks or activities, some (n=7) indicated that engaging in exercise was difficult. Only one mountain respondent mentioned that they had difficulties with exercise. Thus, concerns about not engaging in exercise were mostly concentrated in the industrial neighbourhood:

> "Yeah. My body should be in better shape for what I do. (Chuckle) but it isn't. I do sometimes have struggles getting my free time to do it but ah...ah... (shrugging shoulders)" (Gabriel, Mountain)

> "Exercising is a difficult task. I have exercised a greater part of my life. I have exercised since age 19, and apart from some time ago, I exercise all the time, up until age...I got to say age 60. And from about age 60 is when I finally slowed down with the exercising and then, I am about to go back and start exercising. The doctors recommend that I must exercise, but I find it so hard to get back into the exercise." (Logan, Industrial)

It is not clear whether neighbourhoods acted as a constraint for exercising, but it was clear that exercising (planned and regulated activities) within one's neighbourhood boundaries was not very common theme. Only one mountain respondents indicated that her neighbourhood made it easy to engage in physical activity:

> "Probably going for a walk, we like to do the stairs down the mountain just for exercise. It's really easy to get to from our place. Even going to water aerobics is not that far for me to go. Walking...we walk to Shoppers Drug Mart and get our milk because it's there." (Donna, Mountain)

Thus according to this sample, neighbourhoods cannot be seen as an area of opportunity for exercise. Some respondents who did engage in scheduled exercise would do so outside their own self-defined neighbourhood boundaries. For example, those few respondents who noted attending gym facilities did so outside of their neighbourhood boundary. It is important to note, as mentioned earlier, recreational activities such as gardening, or visiting local parks were mentioned by several respondents in both neighbourhoods. Perhaps respondents were indeed engaging in physical activity/exercise within their neighbourhood boundaries, but failed to mention it during the physical activity portion of the interview.

Respondents provided many reasons for not exercising, but time was cited as a reason for lack of exercise. In these instances time was seen as a constraint that affected exercising:

> "I guess, I would really use time as an excuse. Time is my excuse for not exercising or things like that, but I could make time." (Tamaqua, Industrial)

> "That is one of the things I battle with, inertia. I really think that when I'd like to walk, there's always a time factor for me. In my mind I'm saying my daughter (special needs child) is much older now because she's had gone through a period of maturation and it has been extremely beneficial. But there was a period of time when I didn't even want to go outside with her because she was such a handful" (Marcella, Industrial)

Chronic pain and medical conditions were mentioned as a constraint earlier, but when asking about engaging in difficult tasks or activities, the theme re-emerged in some interview discussions as a constraint for not engaging in exercise:

> "Um… sometimes it's difficult to exercise. Yeah, I have a back injury." (John, Industrial).

> "I had my heart done and after I had the heart attack it was tough then but I'm back into it now its. I can lift things, if it's a real hot day and I have to do a lot of lifting ah crazy it wears me out pretty quick." (Dan, Industrial)

4.8.3 Diet and Meals

Exercise was not the only health enhancing activity. Diet was an important way to keep healthy among sample participants. According to the interview data, well over half of the respondents (n=28) indicated their diet was healthy, balanced, and regular. Mountain residents were more likely to view their diet as healthy (n=17), when compared to industrial participants (n=11):

"I think I'm reasonably healthy, I'm not perfect...I'm far from perfect, but I don't eat a lot of junk food, when I do eat I try to eat what is good for me." (Elizabeth, Industrial)

"I would say it's balanced. we don't tend to eat too much junk. Everything we eat is home cooked or at a restaurant. You know, like a good restaurant. We don't eat fast food. We don't eat junk food. A cookie or a piece of cake a day or a donut but that's about it. We don't drink pop or that kind of stuff." (John, Industrial)

"I'm a weight watcher....(Laughing). I try to get at least five servings of fruit and vegetables everyday. I try to drink, you know, a couple of liters of water every day. I try to stay away from all the bad fats, but I use Olive Oil and Canola Oil. I try to get some of that in every day. We tend to go with the whole grains, you know, more than white breads and healthy cereals, low fat and dairy products, but then we allow ourselves treats as well." (Donna, Mountain)

4.8.4 Constraints in Maintaining a Healthy Diet

In contrast, industrial residents (n=8) commented on how their diet was unhealthy most of the time, but efforts were being made to try and improve personal eating habits. Here time as a constraint came through, with diet being affected by not having enough time to eat a healthy balanced diet. For example, a rushed lifestyle or other constraints were often cited as reasons for not having a proper diet:

"Well, I play sports late and I'm out so its fast food for me, so that's not too healthy, but sometimes it's healthy." (Ali, Industrial)

"Unhealthy irregular, I eat a lot of sugars and greasy foods; I guess its getting better but..." (Cole, Industrial)

"Oh, [laughing], [my diet is] irregular. Well, I eat what ever I feel like it, whenever I can. With my work schedule I eat at odd hours, so for the most part I am coming home and eating at 4 in the morning, go to bed for 6, up at 11 and then run around and clean in the evening and then I don't really eat breakfast, except for yogurt." (Sam, Industrial)

"It's not healthy. I don't make the time to make healthy meals. Living alone, I don't take the time; I just throw something in the microwave." (Amanda, Industrial)

While the sample appeared to be engaging in health enhancing activities, some respondents mentioned that they partake in some activities that may be harmful to their

health. Overall, health damaging activities were not as easily discussed, and when some activities were mentioned in the interview sessions the concept of moderation was prominent.

4.9 Health Damaging Activities

When asked if respondents would engage in any activities that were harmful to health, half of the sample indicated they do not undertake activities that they believe would be damaging to their health (n=20). During these discussions, themes of enjoying things in moderation only emerged. So alcohol consumption and unhealthy foods were only consumed in moderation for many people in the sample:

> "No, I don't think so, I don't smoke and I limit my drinking to the times that I listen to music, so umm, no." (Dylan, Industrial)

> "No, because I think I exercise with common sense so I don't get hurt. I never smoked in my life. Now I may have a glass of sherry with some gin, or anything else, it would just be for fun." (Sophie, Mountain)

> "I really don't do things that are really harmful at all." (Callum, Mountain)

> "No. I don't drink, I don't smoke and I don't do drugs." (Lindsay, Industrial)

Smoking was cited as an activity that could be dangerous to personal health. More industrial residents (n=5) mentioned smoking when compared to the mountain group (n=2). A few themes of quitting were also noted:

> "Well…I'd like to quit but…" (Tyler, Industrial)

> "I smoke way too much…way too much. I think I'm up to a pack and a half a day now." (Hannah, Industrial)

> "Yes I smoke. August 7th is my quit date. That's coming up soon. It happens all the time, I looking forward to it [quitting]. Mind you, but by the same token, I sabotage myself. I know I'm going to quit so I smoke like a chimney, you know what I mean? It's weird. It's so weird, because I really have no other reason to smoke, my husband doesn't I don't like to smoke, it's just a nasty horrible habit and it's very embarrassing and inconvenient and it's not right." (Marcella, Industrial)

Overall, the health status of the sample varied by neighbourhood, as clearly illustrated by the interview data collected. The neighbourhoods also had different opinions of the overall health state of their local environment, as well as health damaging and health enhancing activities.

4.10 Chapter Summary

This chapter reviewed time-use activities as well as spatial activities within two local environments. Perceptions of neighbourhoods, time-use patterns, opportunities, and constraints were all examined. Finally, these concepts were brought together in a discussion about how time and space can affect health within the two neighbourhoods.

CHAPTER 5
DISCUSSION AND CONCLUSIONS

5.0 Introduction

This final chapter provides a summary of the main findings of this research. The key findings related to time, space, and health are presented, along with supporting evidence from other studies. Also, a discussion surrounding limitations of this research, as well as contributions to existing literature are explored. The chapter closes by examining some of the relevant policy recommendations and future directions associated with the main findings of this study.

5.1 Key Findings and Relevance to Literature

5.1.1Time-Use Patterns

Time-use patterns were classified into two categories: fixed and flexible schedules. In determining time-use patterns, both age and gender and employment status played a major role in dictating how time was spent. For instance, those with fixed schedules were likely to be male and employed. Although most males had fixed timetables, less industrial males were grouped in this category. Females represented a large portion of flexible schedules, as did seniors who were retired from full-time employment in the mountain neighbourhood. In western societies, work or the production calendar is often the keeper of time. Scheduling of private time or flexible time is often dictated by non-flexible employment schedules (Mills, 2000). This research is in keeping with work by Vilhelmson (1999), suggesting that flexible trips only account for 20% of trips made during the week, and 40% during the weekend, leading to the assumption that time is more flexible during the weekend when many people are off work.

For many people in the sample, time was spent on employment activities. High numbers of males in both neighbourhoods were employed, while lower numbers of females reported working. The employed members of the sample spent a vast amount of time on work-related activities such as driving to places of employment, preparing for work, and actually working. The journey to work was an issue for more mountain males than any other group in this study, as they were most likely to travel outside of their neighbourhood to engage in employment activities. For some members of the sample, the commute to and from work consumed more than one hour of their daily time-budget. These findings correspond to work by Schærström (2003), in which over ten percent of the working population of Stockholm was working outside of their local municipalities. Not only were residents leaving their own municipality to work, but Stockholm was receiving outside workers commuting into the region while others left for employment purposes. The population of Stockholm rose by 36% during the day suggesting that there is a high level of commuting taking place within this region.

For females and males in both neighbourhoods, unpaid work inside the home was an area in which several hours of daily time were consumed. Cleaning, gardening, preparing meals, and caring for dependents was slightly more common with the female members of the sample; however, a high number of males were engaging in these

activities, suggesting that the gender divide in unpaid work inside the home may be narrowing with more males contributing to domestic duties and sharing the burden of unpaid work in the home. According to Brandon (In Press), females are more likely to carry the burden of domestic chores and caring for dependents. Most of those who were employed outside of the home still managed to contribute several hours a week to domestic chores. It was also not uncommon for respondents to note that they received assistance from their partner or spouse in the area of domestic chores. During the interviews, themes of assistance, cooperation, and balance were noted by many respondents. These findings are in keeping with research by Pollak (1999) suggesting that both men and women engage in unpaid labour tasks within the home, with women spending slightly more time working than men. Also, findings from Young (1999) on women caring for families and neglecting personal health were relevant in this study, though more women in both the industrial and mountain neighbourhoods sought assistance from others as a way of coping with the demands of being a caregiver and active in the paid workforce. Also, women who cared of disabled children often experience a time trade-off in leisure activities or caring for a disabled child (Brandon, In Press).

5.1.2 Social Time and Social Capital

According to research, social health can be most effectively determined by social capital, which is defined as "...social, political, and economic networks and interactions that inspire trust and reciprocity among citizens" (Dannenberg et al., 2003, p.9). Individuals who demonstrate higher levels of this social capital are more likely to be civically engaged, volunteer and interact within their community, get together with friends and neighbours, and trust others (Leyden, 2003). It is important to note that when directly questioned about health enhancing activities, social participation was unexpectedly absent from these discussions; however the health benefits of social participation emerged within other contexts during the interviews. For instance, Marcella from the industrial neighbourhood discussed her feelings about social time at a local Tim Horton's coffee shop as positive for her health: "It's also a time when my husband and I can chat about important things...so that is a positive thing [for health] certainly". It is reasonable to assume that many respondents in this study were unaware of the health benefits of social capital or underreported the possible benefits. Results indicate social participation represented a major area of time-use for the entire sample, with mountain respondents being more social than industrial respondents. Visiting with friends, meeting at a coffee shop, or even talking on the phone represented some of the social activities in both neighbourhoods. In this sample, social participation appeared to be an important part of the day, as many participants cited being social as something they enjoyed. Not only was social participation cited as something enjoyable, it was also cited as an essential part of day in which one can communicate with their partner about their day, express emotions towards friends or family, and even vent some frustrations with the stresses of daily life.

Research by Odoi (2005) suggests individuals in low income neighbourhoods experience social exclusion as a result of barriers that limit social capital. This was not the case in this study, as the low income industrial neighbourhood had very high levels of

social interaction, knew their neighbours, and some were even civically engaged. The affluent mountain neighbourhood fits with the literature suggesting that affluent communities experience higher levels of social capital. Results from other studies also suggest a positive correlation between social capital and neighbourhood health (Ellaway et al 2001; Gold et al., 2002; Lochner et al., 2003;Yen and Kaplan, 1999). On the other hand, Veenstra et al. (2005) found weak relationships between social capital and neighbourhood health. Also, some research in the area of suburban health suggests more affluent suburban areas to have lower social capital due to isolation issues found in suburban communities (Frumkin, 2002; Leyden, 2003; Oliver, 2003). This research does not correspond to data collected in this study, as the suburban mountain neighbourhood displayed high levels of social interaction and social capital.

5.1.3 Neighbourhood Perceptions

Industrial respondents were more likely to cite physical conditions of their neighbourhood as a problematic issue. This neighbourhood represented the highest level of concern for environmental conditions, mostly pollution. Themes of decay, dirt, and dissatisfaction with present environmental conditions were present within the industrial sample. Many respondents believed they were in the heart of the pollution, and the first to feel the effects of the harmful pollutants. These accounts were contrasted by others within the industrial sample with themes of pride, ownership, history, and hope for future change and improvements. These respondents did not ignore the poor environmental conditions of industrial Hamilton, but rather addressed the stigmas with some of the positives aspects of the neighbourhood such as trees, parks, and friendly neighbourhoods with diverse backgrounds. Thus, the industrial neighbourhood can be characterized by themes of pollution and decay, and also associated with mixed feelings about the local environment, with some positives to balance out the negative perceptions of this neighbourhood. This research is related to work by Elliott et al (1999), where a survey of industrial respondents revealed over one third of respondents cited industrial pollution as an aspect of their community they disliked the most. Similar to the qualitative research findings presented in this thesis, work by Elliott et al. (1999) also revealed contrasting opinions about the industrial neigbourhood; tradeoffs between positives (local area amenities, and sense of community) and the negatives (pollution).

Perceptions regarding the mountain neighbourhood can be viewed as mostly positive. Themes of a clean environment with few imperfections, as well as higher qualities of life were cited by many respondents within this neighbourhood. The two major concerns within this neigbourhood were traffic and pollution. Industrial pollution appeared to be a more distant concern, as many respondents believed that they lived far away from the pollution of industrial Hamilton; however, traffic was a problem that was present within their own local environment. Themes of too many cars, fast driving, and busy streets appeared to be an area of concern for some residents. The themes found within this study related to research by Frumkin (2002), Perdue et al. (2003), and Savitch (2003), suggesting driving patterns of many suburban residents contributes to higher levels of toxic emission expelled from automobiles (Frumkin, 2002). Suburban communities are exposed to pollutants such as carbon monoxide, carbon dioxide,

particulate matter, nitrogen oxides, and hydrocarbons. Motor vehicles produce significant proportions of ground-level ozone, respirable particulates, and other pollutants (Perdue et al., 2003). A higher level of air pollution in the suburbs is a direct result of increased automobile use, as the majority of trips taken by suburban residents are short distances and are often taken by a single driver (Frumkin, 2002Savitch, 2003). This leads to a lower average distance travelled but more cars are being used more often and this poses health concerns for suburban communities with regards to pollution and traffic safety issues (Savitch, 2003).

While results indicate that the two neighbourhoods differed in terms of perceptions of the physical environment, their views on the social environment were similar. For instance, both neighbourhoods believed the social character of the environment was equally as important as the physical environment in determining neighbourhood satisfaction. Themes of coming together, supportive relationships, strong ties, and social cohesion were found within both neighbourhoods. These themes also appeared to have influence over the general happiness with local environmental conditions and it is this idea that resulted in the industrial neighbourhood having higher than expect neighbourhood satisfaction despite the environmental concerns with pollution from local industries. These findings are similar to work by Elliott et al. (1999), where nearly 20% of the sample in the industrial neighbourhood cited the social character and sense of community of the area as a positive aspect of their area despite concerns about pollution.

5.1.4 Uses of Space and Mobility

Spatially, there were differences in the shape and appearance of self-defined neighbourhood drawings. For instance, mountain respondents drew their neighbourhoods as more circular in shape, more expansive, and followed major streets, some of which did not follow a grid pattern. On the other hand, industrial respondents had smaller more compact neighbourhoods that followed street grid patterns. Data collected from the map exercise suggests different senses of place and associations of local communities based on road networks and other features of the built environment. A street network, such as the grid street network found in the industrial community, is a symbol of unity, balance, and sense of place (Jackson, 1994). In both communities, perhaps the reasons why the neighbourhoods took the form they did is a response to the existing features of a neighbourhood, such as parks, streets, or the overall form of the built environment.

In this study respondents were able to meaningfully define their own neighbourhood (*see Appendix B*), leading to boundaries different than the original researcher-defined boundaries. According to Luginaah et al. (2001), original work from the four neighbourhood study suggests "qualitative methods, particularly in-depth interviews with residents in these areas, may serve to delineate boundaries in a way that is meaningful to local populations" (p.146). While many respondents did indeed draw their neighbourhood within the original researcher-defined boundaries, participant-defined boundaries were smaller. These findings relate to research by Coulton et al. (2001) suggesting census-based or researcher-based neighbourhood boundaries differ from actual respondent perceptions of the location and size of their neighbourhood.

Neighbourhoods were defined by many as simply the place and spaces that were the most traveled. Services, shops, and activities were all important aspects of nearly all respondent's definitions. Thus, neighbourhoods appeared to have some functional purpose such as work, leisure, or an area where services were provided. While the neighbourhood appeared to be an action space for all essential activities, a very high proportion of respondents in both neighbourhoods noted that they traveled outside of their local neighbourhood to complete simple daily tasks such as shopping, employment, and socializing. Results suggest many respondents were viewing their neighbourhoods as smaller communities, not large expansive areas, so it is no wonder that many people are traveling outside of their defined neighbourhood for simple tasks. These findings suggest that while neighbourhoods are important in daily time-use patterns, what happens outside of the neighbourhood is equally as important. Oakely (2005) believes that with new technology and a fast-paced business economy, sense of place and uses of space are being altered. The activity space for common daily activities had widen as a result of high-speed travel made possible by the invention and wide-spread use of the personal vehicle in western societies (Vilhelmson, 1999). It is no wonder that respondents in this study are using spaces and places outside of their own defined neighbourhood, since distant places can be reached with ease (Frumkin, 2002; Vandegrift and Yorked, 2004). It is almost essential for respondents to be traveling outside of their defined neighbourhood to engage in the larger economy or simply to adapt to the spatial organization of a society that favours high levels of mobility (Miller, 2004; Massey, 1994; Vilhelmson, 1999).

Both neighbourhoods shared the theme of high personal mobility. For many people in the sample, being mobile meant having access to vehicular transportation. Automobile transportation was cited as the main method for transportation for employment and leisure activities. Results indicated the mountain neighbourhood was slightly more auto-dependent and cited convenience, need for personal freedom, and time-savings as the main reasons for driving their car. While the industrial neighbourhood did indeed have high rates of automobile use, a higher number of industrial respondents did not have access to a vehicle, meaning that these respondents were selecting other methods of transportation such as walking or public transit. For an overwhelmingly high number of auto users in both neighbourhood, the vehicle was part of a fast-paced lifestyle in which convenience and time-savings were key. This corresponds to work by VanEck et al. (2005) suggesting that people are experiencing increased mobility and choices in travel patterns. Changes in mobility patterns leads to increased mobility and access, and often results in valuable time-savings (Hess et al., 2005). According to social psychologist Harry Triandis, individualistic cultures, similar to the sample population in this study, place a high value on achievement leading to fast-paced lifestyles in which time is a valued commodity (Levine, 1997). This concept of time as a valuable commodity was documented in many interviews, especially surrounding issues of auto-use as time-savings device.

These themes were found in both neighbourhoods, with the mountain displaying more auto-reliant behaviour. The mountain neighbourhood was less likely to consider other methods than the vehicle. The industrial neighbourhood was more likely to view public transit as an opportunity even though access may be difficult for some, while the

mountain neighbourhood viewed public transit as a major constraint in completing daily tasks. This is perhaps due to the physical nature of the built environment, as the mountain neighbourhood is a spatially expansive suburban community making vehicular transportation more essential. According to Perdue et al. (2003) the spread-out design of many suburban communities increases individual reliance on motorized transportation For instance, roads may be more available than sidewalks, leading many suburban residents to drive rather than walk or cycle (Frumkin, 2002). Essentially, the physical structure and design of the suburban transportation systems limits travel choice, resulting in a suburban nation reliant on the automobile for personal mobility (Vandegrift and Yorked, 2004).

5.1.5 Opportunities for Accomplishing Tasks

The local environment, time, determination, and assistance from others were some of the major themes noted within both neighbourhoods. There were subtle difference in opportunities within each neighbourhood, and mountain and industrial respondents believed that their neighbourhood contained all the necessary services and everything was close by. Themes of accessibility, being close to nature and recreational activities were equally cited as an opportunity in both neighbourhoods. These findings are in contrast to Hagerstrand's (1970) theories about capability and authority constraints, since most respondents believed that they were capable to access services and establishments. According to Zang (2005), higher accessibility lead to more participation in non-work related activities. Respondents were highly mobile and did not view accessibility as a major problem, thus participation in activities such as shopping, services, and recreation was a highly noted theme in this research.

As part of their daily lives, many respondents in both neighbourhoods used time to their advantage resulting in time being seen as an opportunity in this sample. These findings are contrary to the literature on time use in advanced societies where time acts as a constraint (Giddens, 1991; Hagerstrand, 1970; Massey, 1994). Planning ahead, maintaining a schedule, and utilizing time management strategies were all seen as ways to accomplish tasks, and thus can be viewed as an opportunity. Contrary to the literature, time can be seen as an opportunity rather than a constraint. Here the concept of time-compression is relevant, as it helps to understand the tightening of time schedules and the expansion of activity spaces where time is spent. Similar to research by Massey (1994), through proper planning, the sample is able to maximize time and their uses of space. Research by Recker et al. (2001) suggests time or time-budgeting was seen as a constraint, as many travel activities were scattered throughout the city making it difficult to schedule time for daily tasks.

In discussion with participants, themes of ability, willpower, determination, and strength of mind were common in both neighbourhoods. Many respondents were clear that they only took on tasks they knew they can achieve. This mentality resulted in many of the sample being able to complete many of their daily tasks. Some of the reasons cited for completing tasks were assistance from others such as family, friends, or neighbours. So once again social support is seen a positive aspect within both neighbourhoods, as it allows for daily tasks to be completed. Schærström (2005) reveals that an individual's

conduct "is part of a wider social and cultural context" (p.6) in which many other actors (family, employers, and friends) influence personal decisions and uses of time and space. Thus, relying on others was a common theme in the study; however, it was contradicted with themes of independence and negative attitudes about relying on others. It is in this aspect that the mountain and industrial neighbourhood differed.

The mountain neighbourhood displayed higher levels of cooperation and coupling behaviour. For these participants meeting up with others to complete a task is seen as an opportunity rather than a constraint. This is contrary to Hagerstrand's (1970) constraint theories and Triandis ideas about individualistic societies (Levine, 1997). Hagerstrand believed that meeting up with others acted as a constraint for completing daily tasks; however, this was not the case, as many respondents in the sample believed they required assistance from others to complete tasks. These results imply that the sample is operating on both an individualistic and collective mode of thinking (Levine, 1997). For example, maintaining a fast-paced lifestyle and placing a high value on time places the sample in the individualstic category, but observed themes of cooperation and mutual support is more collective (Levine, 1997).

5.1.6 Constraints for Accomplishing Tasks

Although many respondents were able to complete all of their required daily tasks, those who were unable to accomplish tasks were mostly from the mountain neighbourhood. One of the major reasons for not accomplishing tasks was medical conditions and pain. Themes of poor health restricting uses of time and space were trends observed in both neighbourhoods. Similar findings were also noted in a study by Crooks (2007), where women changed their uses of time and space to accommodate their medical condition.

According to results, the mountain neighbourhood cited other priorities or other more important tasks as a possible constraint. These types of constraints were not as noted in the industrial area. Also, family or others was noted as a reason for not being able to complete daily tasks. These themes occurred mostly in the context of caring for children or other dependents. Children are immoveable pegs in time use patterns and tend to act as major constraints (Young, 1999; Recker et al., 2001).

Themes of procrastination were common in both neighbourhoods. Putting off tasks until a more suitable time allowed for more flexibility in scheduling. An interesting theme of laziness almost exclusively emerged in some industrial interviews, but was almost absent in the mountain neighbourhood.

As mentioned previously, the concept of time was seen as an opportunity; however, some respondents believed that time was a constraint. These accounts were mostly concentrated in the mountain neighbourhood. Themes of not making deadlines, not having enough time, and pressures of time management came through in various parts of the interviews; however, not as much as originally expected if following previous work about time constraints (Hagerstrand, 1970; Levine, 1997; Massey, 1994; Zang, 2005).

Contrary to the literature (Zang, 2005) accessibility was not a highly noted constraint. For the most part, themes of being able to access services, places, and other establishments were achieved with ease for most of the respondents within this sample.

This is in contradiction with Hagerstrand's theories on constraints. Those few who did mention constraints, spoke of difficult to access services, medical attention, or establishments. These accounts correspond to Hagerstrand's (1970) constraints theory. Perhaps accessibility related constraints were not as prominent in the sample as a result of living in a society with increased personal mobility, and prominent focus on the value of time (Levine, 1997; Massey, 1994).

5.1.7 Neighbourhood Health

Overall, both neighbourhoods were in good health, as well over half of the sample believed they were either satisfied or somewhat satisfied with their health. The mountain neighbourhood appeared to have the health advantage, as less people perceive their health as poor. On the other hand, according to the data, the industrial neighbourhood had the highest levels of poor self-rated health and overall low health satisfaction reports; however, many industrial respondents did indeed perceived themselves to be in good health, but this neighbourhood had the highest concentration of those in poor health or unsatisfied with their health status. A study by Browing et al (2005) suggests that concentrated poverty in Chicago neighbourhoods was linked to poor health. In this study, the industrial area is a neighbourhood of low affluence (Wilson et al, 2004), and had poorer health when compared to the mountain neighbourhood; however, findings from Mcintyre et al. (2002) are relevant in this discussion, as it is nearly impossible to fully understand the relationship between place and health because "place effects appear to have a residual category, an unspecified black box of somewhat mystical influences on health which remain after investigators have controlled for individual and place characteristics" (p.125). Results from Shouls et al (1996) indicate health status differences may be a result of various compositional and contextual factors similar to the work of Macintrye et al (2002). For instance, health status variations by neighbourhood may be a result of personal genetics, personal uses of time and space (compositional) or the nature of the physical environment (contextual) (Ross, 2000). Given the qualitative nature of this study, it is not possible to establish a causal link between places and health; rather, this project offers descriptions and understandings of that complex relationship.

Moreover, those who were in poor health often listed chronic pain, medical conditions, and reliance upon prescription drugs as problematic for overall health status and uses of time and space. These findings verify research by Crooks (2007) and Takahashi et al (2001) linking a medical conditions, such as FMS or HIV/AIDS, with changes in uses of time and space. For instance, HIV/AIDS patients were limited in their daily tasks due to complex drug-taking routines, or frequent medical appointments (Takahshi et al, 2001).

As results indicate, many respondents believed that there was room for improvement when it comes to their health. According to Schærström (2005), a change in life conduct or behaviour can be seen as a recreation to prevent ill-health or to help with a preexisiting condition. In the sample, themes of effort to maintain good health emerged within the data from both neighbourhoods. Exercise was noted as the main health enhancing activity then followed by diet. In this sample, respondents defined exercise loosely, as many participants believed that simply being active was the same as planned

and regulated exercise. While people in both neighbourhoods exercised, the mountain area was more active according to the interview data. Also, the mountain neighbourhood reported fewer constraints or issues with exercise, while the industrial neighbourhood was more likely to cite time or pain as major constraints. The mountain neighbourhood also appeared to have a healthier diet when compared to their industrial counterparts who struggled to maintain a balanced diet. These findings are similar to findings from Vuillemin (2005), suggesting those who were physical active had higher qualities of life. These findings are relevant to this study as the mountain neighbourhood had the highest levels of self-reported health and they also had slighter higher levels of exercise when compared to their industrial counterparts.

Questions about health damaging activities were answered with caution by many respondents. Even after being probed, many respondents provided text book answers during this portion of the interview. Although respondents were holding back, themes of control, effort to avoid unhealthy activities, and moderation were noted especially surrounding alcohol consumption. Smoking was also considered a risky and unhealthy activity within the sample with more industrial respondents engaging in smoking; however, there appeared to an underreporting of smoking within the sample.

5.2 Finding the Link Between Time, Space, and Health

Within both neighbourhoods, spatial-temporal and health links were observed. Although only a small portion of respondents made direct observable links in regards to time, space, and health, through the collection of various forms of data (i.e matrix, maps, and scripts) it was possible to untangle the relationships. For instance, the mountain neighbourhood was viewed by many as an area with plenty of natural green space. This green space was noted as a health promoting aspect of the local environment. Residents spent some of their scheduled time in these places, and they believed that this was beneficial for their health. These themes did not emerge as prominently within the industrial neighbourhood. Perceptions of a dirty, unhealthy, local environment as a direct result of pollution were concentrated in the industrial area. Residents were less likely to enjoy the physical environment for health-related purposes. Also, in the industrial neighbourhood, respondents were unhappy with the high levels of pollution and resulting black soot, and these conditions often affect their daily time-use patterns (not being able to enjoy the outdoors, as well as health (concerns about health effects).

In addition, medical conditions and chronic pain affected daily uses of space and time, as well as overall health and quality of life. For example, Nicole from the industrial area mentioned that her chronic condition affected her uses of time and space: "I have asthma and arthritis. If it's too humid, I can't do lots of things...well I can't breathe because of the air quality". Once again, themes of time, space, and health are linked and similar accounts were noted in both neighbourhoods.

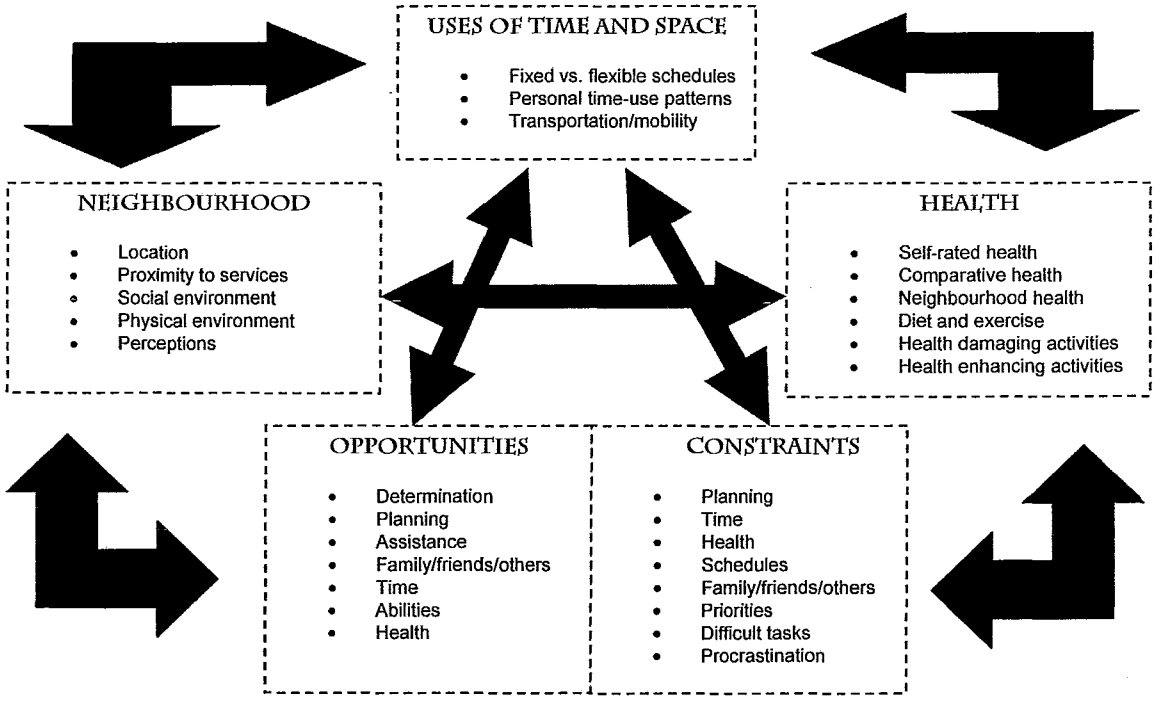
In the industrial neighbourhood, respondents believed the nature of the built environment (being more compact), resulted in better health, as respondents could be active and engage in daily tasks without using a vehicle for transportation. These themes were not found in the mountain neighbourhood. Mountain respondents were more likely to feel trapped into using vehicular transportation due to the spread out nature of their

neighbourhood, and some respondents noted that they wished they could be more active and not rely on their car. Some even contemplated the effects of high auto reliance on their health. These examples are just some of the ways this study has linked time and space patterns and health within the two neighbourhoods. The time, space, and health model provides an overview of how these factors interact.

5.2.1 Time, Space, and Health Model

As part of the nature of the inductive analysis of this project, findings have been summarized as a model. Within this model, all factors interact and are influenced by one another. As depicted in this model, uses of time and space within the neighbourhood related to other factors such as opportunities and constraints, and health. It is also important to note that opportunities and constraints are linked together, as many opportunities can also present challenges, thus acting as a constraint. For instance, the concept of time can be seen as an opportunity when it is in abundance. In the event that time is scarce, it serves to act as a constraint.

Figure 5.1: Model of Time, Space, and Health



5.3 Study Limitations

In this study of time, space, and health several limitations exist: first, a sample size of 40 participants satisfied the requirement of saturation in qualitative research (Creswell, 1994), yet findings from this study are not generalizable to larger populations. For instance, generalizations about the entire industrial and mountain neighbourhoods outside this sample population are not possible, as information collected in this study

serves to provide an understanding of a particular case or group, rather than generalizable results that can be applied within a larger context (Yin, 2003). Thus, these results only remain meaningful in the context of this sample to uncover feelings, perceptions, and understanding of time, space, and health as it is experienced within the neighbourhood context.

Second, this study utilized various forms of data in keeping with the case study approach (Yin, 2003). Field notes, photographs, participant drawn maps, time matrices, and interview scripts provided detailed information about each case. Map drawings, matrices, and interview scripts provided information on uses of time and space, as well as health information, while field notes and photographs provided the context and understandings of each local environment; however, having so many forms of data often lead to complications in data analysis and even contradictions between the various sources of information. For example, many sample participants reported exercising during the interview portion, but exercise levels were generally under-reported in the time matrices. These contradictions are potentially a source of bias in this study.

Finally, relating to the time matrix activity, it was difficult to engage participants in discussion about linking time, space, and health. Participants were able to provide high-quality details in regards to places visited, duration, and time of events, but had difficultly conceptualizing the impacts of these journeys on their health. Thus, the health portion of the time matrix did not yield sufficient information needed to create a more concrete understanding of time, space, and health within the two neighbourhoods. Since the purpose of the study was to produce information about time, space, and health links, results in this area are limited.

5.4 Theoretical and Methodological Contributions

Contributions of this research can be found in two major areas: theoretical and methodological contributions. This research not only examined the impacts of space and time, but also added the dimension of health. Since time is such a fundamental part of life (Adam, 1990), understanding the complex nature of time, space, and health is important in medical/health geography (Schærström, 2003). The sub-discipline of time-geography has existed for several decades, but very few researchers have made an attempt to link time, space, and health. Those who have successfully researched in this area have focused on European or American contexts (Browning et al., 2003; Ellegard, 1999; Schærström, 2003; Schærström, 2005; Takahashi et al., 2001). This study brings together an understanding of time and space and impacts on health at the local level within a much-needed Canadian context.

Other theoretical contributions can be associated with adding to the growing body of literature on neighbourhoods and health. Determinants of health and perceptions of health at the local level have been widely studied (Ellaway et al., 2001; McLaren and Gauvin, 2001; Wilson et al., 2004), and this study adds to existing research on the topic, as well as sheds light on topics of temporal and spatial constraints on health status (Hagerstrand, 1970) at the local level, utilizing a population health perspective which examines health from a holistic lens (Kingdig and Stoddart, 2003). This qualitative study's theoretical contribution comes through exploring health status of two contrasting

communities with different uses of space and time. This study is among the few studies to examine determinants of health at the local level with a focus on spatial and temporal activities that can produce health damaging or enhancing behaviours.

As for methodological contributions, this research builds on previous work from the *Deconstructing the Neighbourhood Determinants of Health Project*. Previous Hamilton neighbourhood studies identified several future directions for research (Luginaah, 2001; Wilson et al., 2004). This study was developed on the basis of these recommendations. First, the qualitative nature of this project builds on previous quantitative research in Hamilton neighbourhoods (Luginaah, 2001; Wilson et al., 2004) by providing a deeper understanding of the feelings, attitudes, and perceptions of neighbourhood and health from original sample participants. This study also evolved beyond original studies by adding the dimension of time to studies of neighbourhood health.

Second, understanding respondent perceptions in neighbourhood boundaries was cited as an important future direction in earlier studies with the same population (Luginaah, 2001; Wilson et al., 2004). This research fully captured neighbourhood boundary perceptions by allowing respondents to outline their neighbourhood on a map. According to Coulton et al. (2001) findings suggest, "when residents' maps were used to create neighbourhood boundary definitions, the resulting units covered different space and produced different social indicator values than did census-defined unit"; however, research by Ross et al (2004), suggests creating meaningful boundaries for studies rather than census defined is probably unnecessary, as census tracts do have some social meaning. Yet maps produced from this Hamilton neighbourhood study revealed that there is a difference in participant-defined and researcher-defined neighbourhood boundaries, with this sample viewing their neighbourhood as smaller. It is important to note that the original boundaries, as defined by Luginaah, are still meaningful as many respondents drew their boundaries within the researcher-defined areas of the industrial and mountain neighbourhoods.

The final, methodological contribution comes in the way of time activity and health data collection. While the time matrix activity provided reliable information on time-use patterns and uses of space, the added health component is a major contribution in studies of time, space, and health. This component, even if respondent could not properly conceptualize time use and health links, was still useful in understanding how respondents used time and space for daily tasks, as well as for health-related activities. Perhaps these methods could be developed in further quantitative surveys of time, space, and health at the local level (see future directions for further information).

5.5 Policy Implications

This research has several policy implications. Firsts, deprived areas, such as the industrial community, should be an area of special attention for policy makers. "Research indicates that the burden of illness is greater among minorities and low income communities" (Srinivasan et al., 2003, p.1447). The industrial area in Hamilton is a community that is known to be a highly polluted area with special needs and requirements. Based on findings from this study, policies should be tailored to reducing

pollution levels, increasing mobility/accessibility, as well as working on creating a political voice for this particular community. During interviews many respondents spoke of issues of pollution but did not anticipate any changes in the near future. This mentality may create a sense of hopelessness in an already disadvantaged community. Providing this community with the tools need to be politically active may serve to make positive changes in their neighbourhood, as this area will have the opportunity to have their voice heard (Elliott et al., 1999).

Secondly, transportation systems in both neighbourhoods should be reviewed. In the mountain neighbourhood, many respondents cited having a car as an essential needed. Respondents in this neighbourhood were also less likely to take public transit due to inconvenience and inaccessibility of public transit. It is these two issues that may be of concern for policy. The spread out structure of suburban communities, such as the physical design of the mountain neighbourhood, needs to be reevaluated by planners, policy makers and health officials (Duany et al., 2000; Safdie, 1997; Sturm, and Cohen, 2004). Strong road networks and weak public transit systems in the mountain neighbourhood can lead to little transportation choice for residents. Planners and transportation specialists can consider alternatives to automobile use, such as increasing walking paths, changing the nature of public transit, and ride sharing programs in the mountain neighbourhoods.

In the industrial neighbourhood, access to public transit was cited as an opportunity, but here too respondents also expressed some concern in regards to accessibility and alternative methods of transportation. While the number of routes and timing of buses were noted as efficient in the industrial neighbourhood, this neighbourhood could benefit from more walking paths, cycling trails, and also improvements to the already good transit system.

The third policy implication surrounds issues of access to services. Services should be located in the areas that need them most. According to Law et al. (2005) women in the more affluent mountain neighbourhood had the highest rates of medical utilization. Results from this study indicated there were indeed significant barriers for access to care and unmet needs. While this thesis project uncovered few access to care problems, it is important that some did feel that their medical needs were unmet. Access to other services or places, such as recreational facilities, parks, and other leisure activities should be a consideration in urban regeneration or even health promotion policies.

The final policy recommendation brings attention to the fact that not all neighbourhoods are created equal; thus a one size fits all policy approach would be less effective when compared to tailored policy programs. While both neighbourhoods will benefit from policy considerations, the disadvantaged industrial neighbourhood should be the first to be targeted to reduce health disparities in comparison to the more affluent neighbourhoods. Based on findings from this research, health promotion policies in regards to smoking, dietary habits, as well as policies to reduce harmful pollution and community empowerment, would be better targeted at the industrial community. Whereas, urban and transportation policies that favour changing the nature of the spatially

expansive mountain environment would be useful in reducing auto-dependency and traffic, as well as pollution.

5.6 Future Directions

This study has identified several areas for future research. To begin, quantitative research that examines the role time, space, and health would help to create a better understanding of current qualitative research findings. A new study could use the time-diary approach (similar to a time-matrix) to uncover spatial and temporal patterns of a larger population. Various other research projects have been successful at implementing the diary approach in quantitative research (Hammin Kellegrew and Kroksmark, 1999; Milligan et al., 2005; Parkin et al., 2004). Revealing the time, space, and health patterns of a larger sample would counter some of the limitations of this study and make findings more generalizable to wider populations.

Also, to further the qualitative nature of this study, similar projects in different neighbourhoods or even in different cities could take place to see if findings from this thesis hold. For instance, research in other contrasting neighbourhoods, utilizing similar methods, could confirm or disconfirm some of the themes and patterns examined within this sample. It would also be interesting to note the different opportunities and constraints faced by other communities in comparison to the mountain and industrial study areas.

In keeping with the time-geography and health-geography approach, different social groups can be sampled. Within this study, interesting patterns of time and uses of space emerged for different groups. For instance, seniors displayed high levels of personal freedom and mobility in their schedules, but often noted pain and medical conditions as a major constraint. Previous research has been successful at investigating time and space patterns within a particular group. For instance Young (1999) revealed the spatial-temporal constraints of female caregivers, and Takahashi et al. (2001) were able to link time, space, and health in their study about HIV/AIDS patients. It would be advantageous to collect information from one particular group within a given neighbourhood rather than sample from all age groups or social status.

Research that examines neighbourhood boundaries more in-depth may provide a much needed understanding of the four original communities identified in the *Deconstructing the Neighbourhood Determinants of Health studies* (Luginaah et al., 2001; Wilson et al., 2004). While this thesis did uncover some interesting findings, more research is need since two other neighbourhoods have not been examined. Keeping in mind that sample sizes were small in this study, more research is need in order to come to any definitive conclusions about boundaries within these neighbourhoods in Hamilton.

Finally, building on the insights of time-matrix activity, future studies can focus on collecting data that is relevant to health. Designing a more comprehensive health component in time-diaries/time matrices may help respondents conceptualize the effects of uses of time and space on health. "Accounts of time use can tell us much about quality of life, social and economic well-being and patterns of leisure and work" (Corti, 1993, p. 2). Collecting data in this fashion allows informants to become empowered by actively participating in the health research process through identifying priorities, as well indicating the importance of certain places, events, or activities on health (Milligan et al., 2005).

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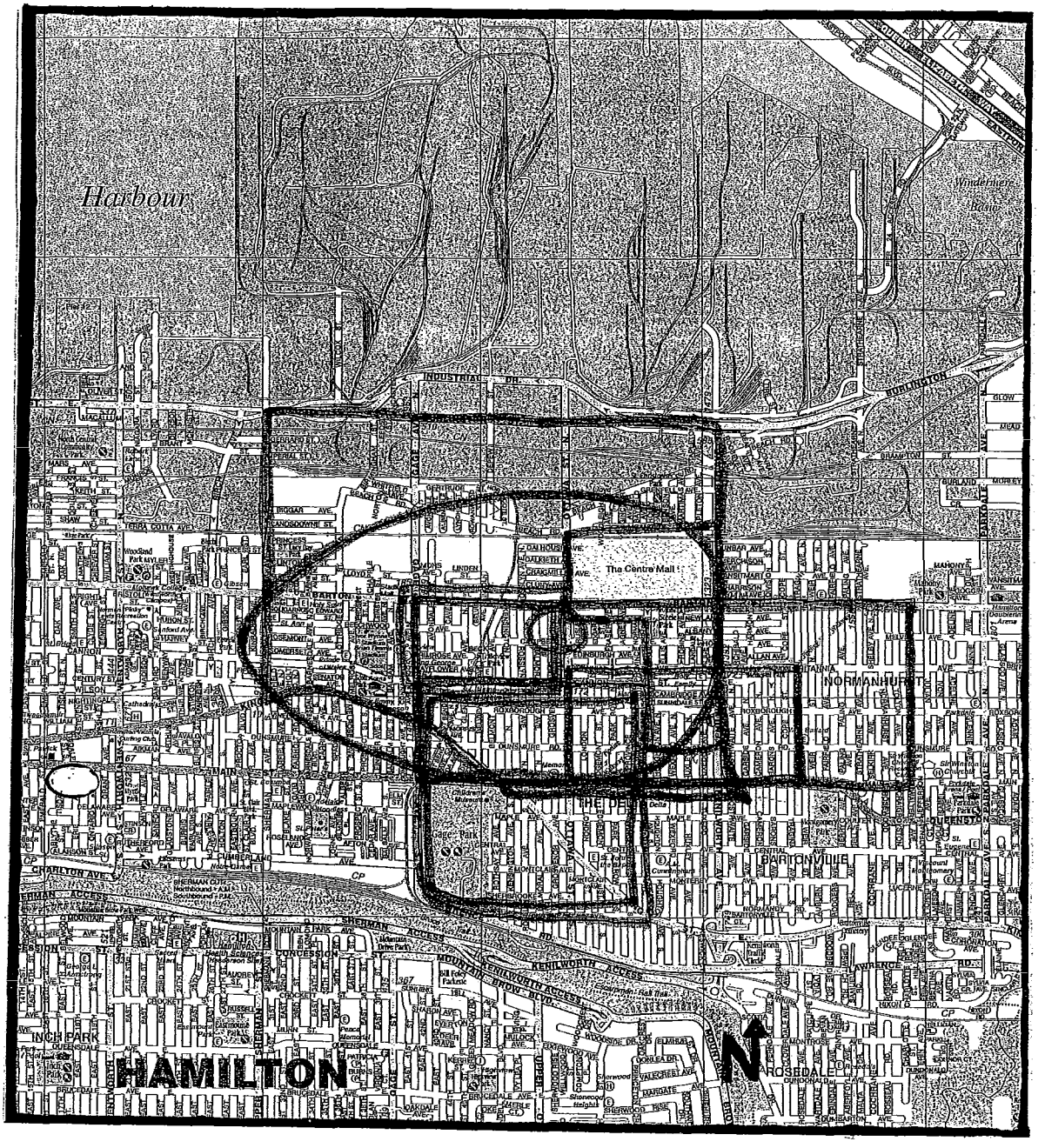
APPENDIX A
TIME MATRIX

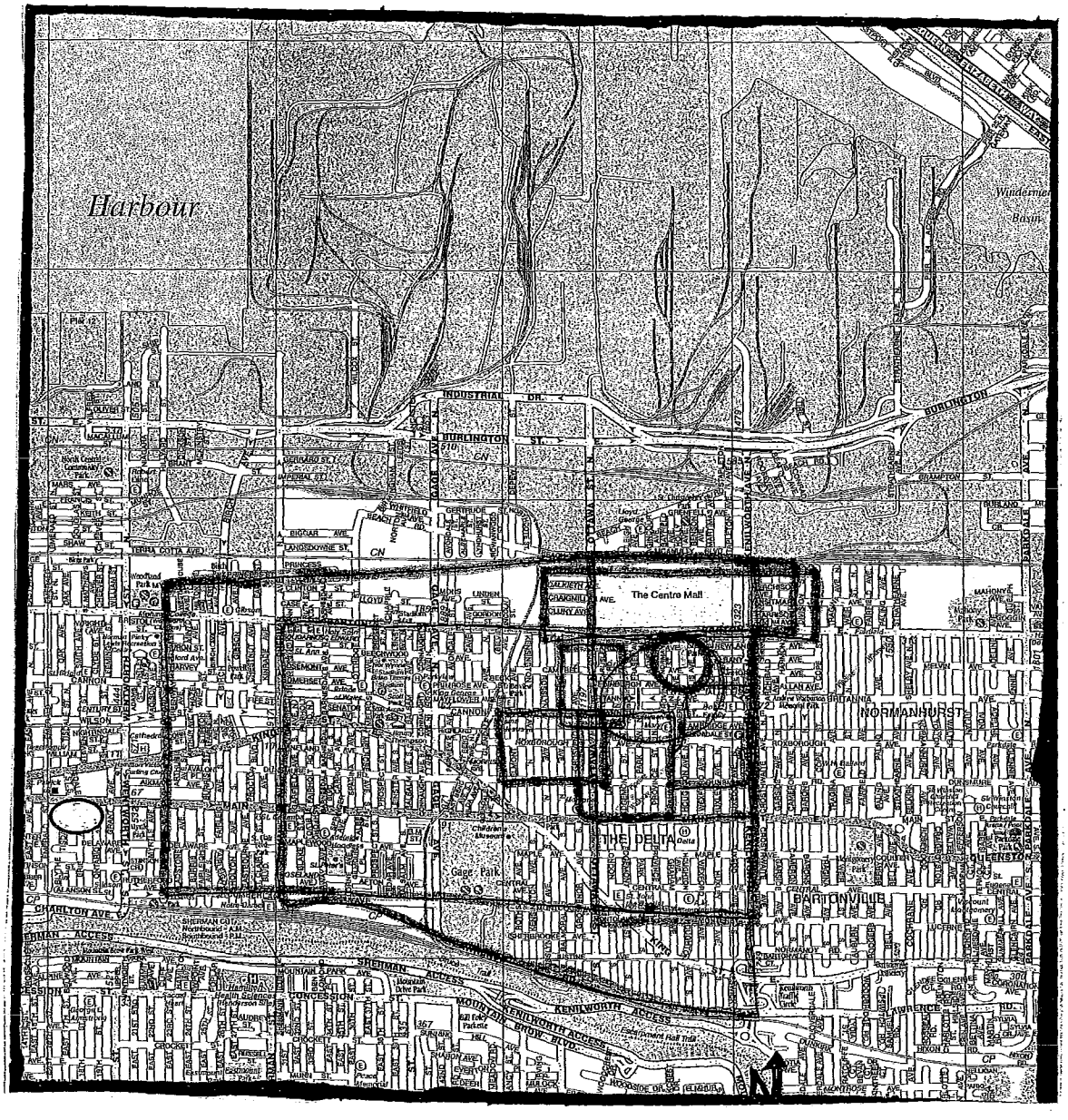
Subject #:	**Interview Date:**				
TIME	**ACTIVITIES**	**DURATION How long?**	**LOCATION Street/area**	**OTHERS With whom?**	**HEALTH PERCEPTIONS Relate to your Health? Pos/neg/neutral**
6:00					
7:00					
8:00					
9:00					
10:00					
11:00					
12:00					
13:00(1)					
14:00(2)					
15:00(3)					
16:00(4)					
17:00(5)					
18:00(6)					
19:00(7)					
20:00(8)					
21:00(9)					
22:00(10)					

23:00(11)					
24:00(12)					
1:00					
2:00					
3:00					
4:00					
5:00					

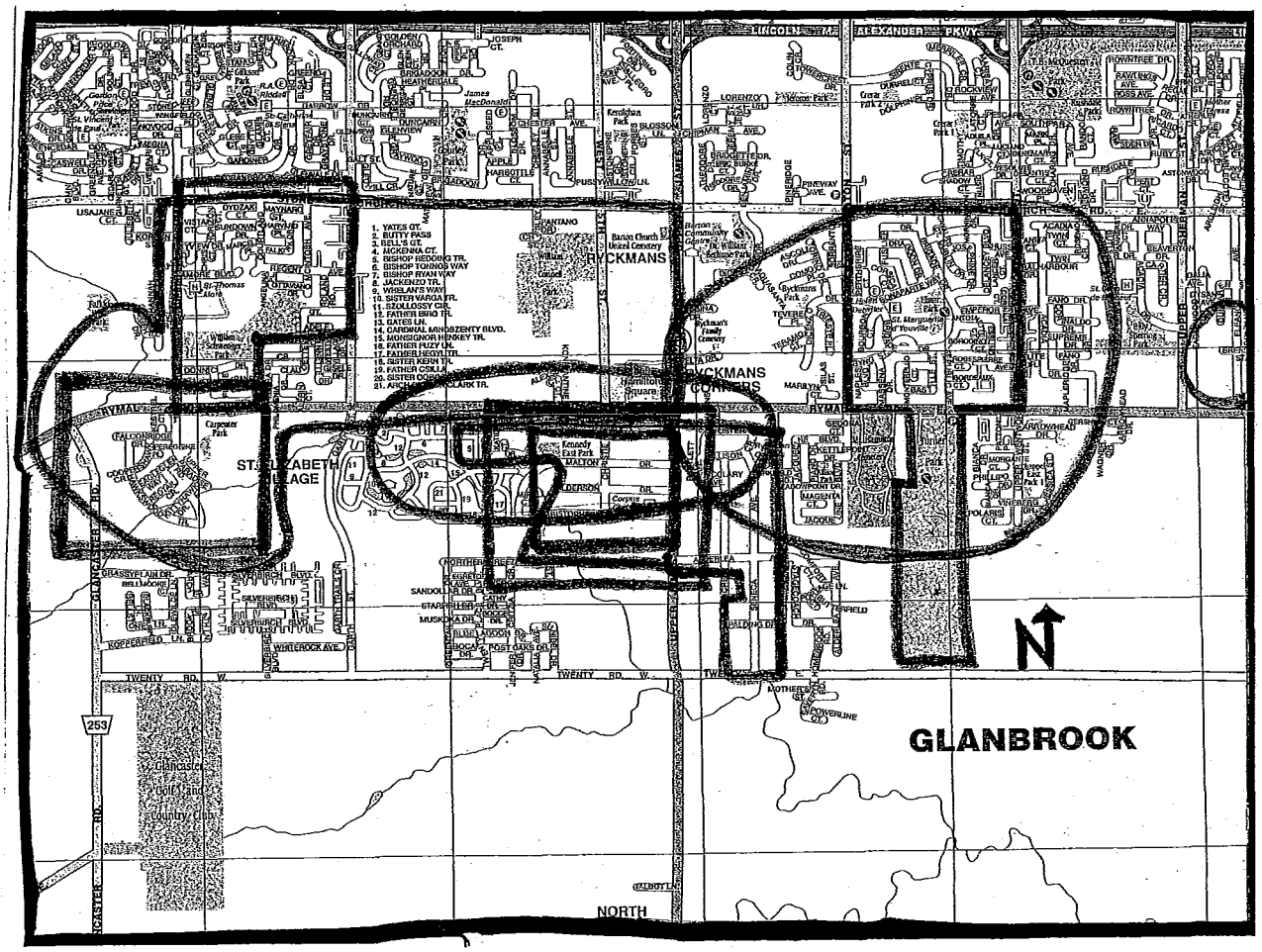
APPENDIX B
Industrial Male Neighbourhood Boundary Maps



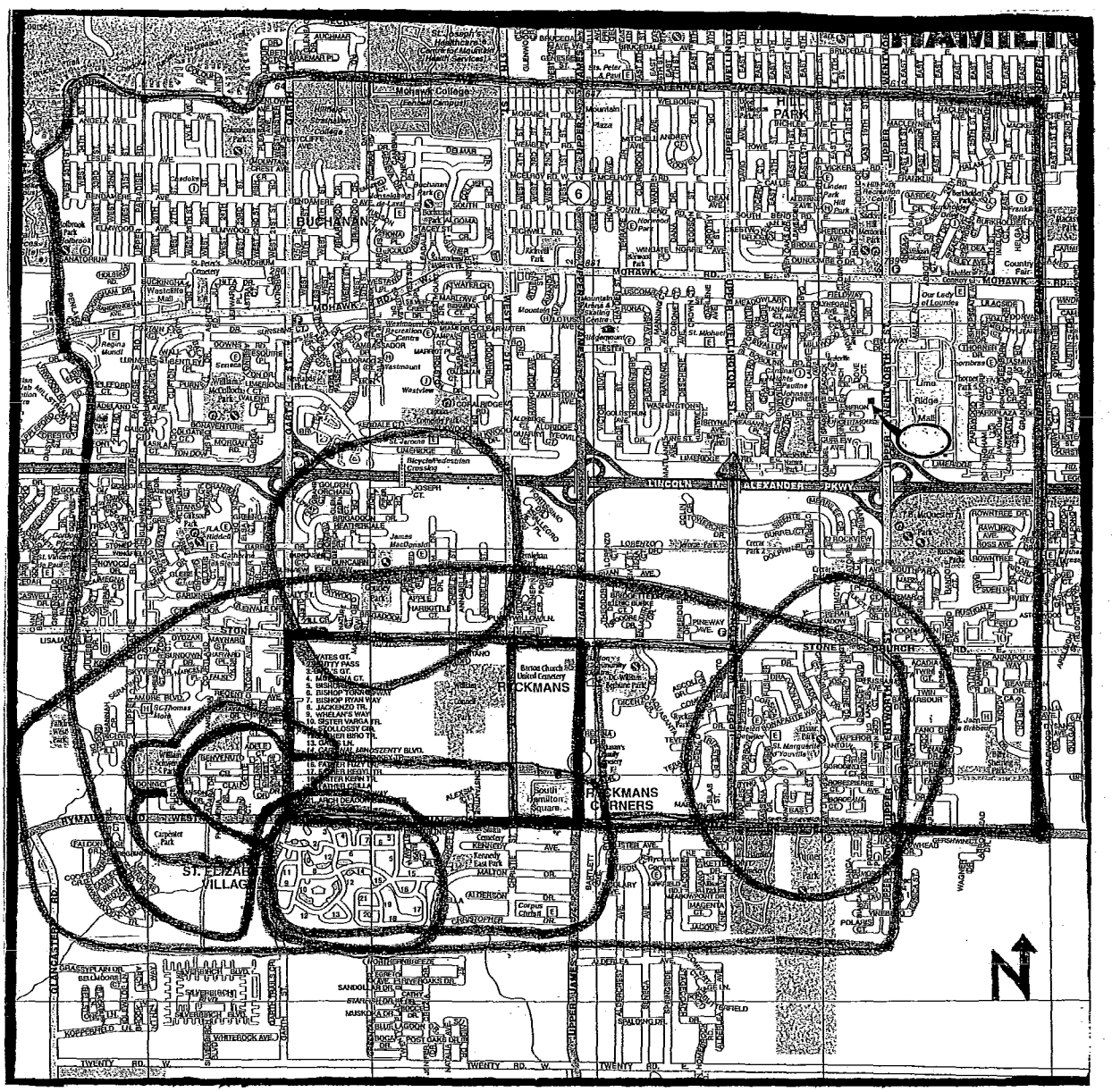
APPENDIX B
Industrial Female Neighbourhood Boundary Maps



APPENDIX B
Mountain Male Neighbourhood Boundary Maps



APPENDIX B
Mountain Female Neighbourhood Boundary Maps



APPENDIX C
FINAL INTERVIEW QUESTIONS:

Introduction: In this interview I will be asking you questions about personal time-use patterns and how these patterns affect perceptions of health. As indicated on the consent form, you can stop, pause or skip questions during the interview. Also with your permission I would like to tape record this interview and take some notes for my reference.

Time Chart

I would now like to ask you about how you spend your time on a *typical day* during the week. It may be helpful to think back to yesterday and try to recall how you spent your time on that day provided that yesterday was a typical day.

I would like your help in filling in this chart. I would like to know about your daily activities, where they took place (street intersections or neighbourhoods if possible), who you were with, and then I will ask you if you see that affecting your health.

So to get things started there are some activities that we can fill in right away:

First of all sleep...now what hours can I block off on this chart?
What time did to wake up?
Did you leave the home when you woke up? What did you do?
Do you attend work?

***** BRING OUT MAPS *****

1. Neighbourhood

In this section of the interview I would I am interested to know a bit about your neighbourhood. I have another task for you: I have indicated the location of your household on this map, can you outline your neighbourhood's boundaries.

A. Where is your neighbourhood located? Can you outline it on the map?
   - Why do you draw it this way?
   - Where are its boundaries (streets; intersections; lake; escarpment).
   - How would you describe your neighbourhood?
B. What are characteristics of your neighbourhood
C. How many times per week do you travel outside of your neighbourhood?
D. Why would you travel outside of your neighbourhood (for what reasons)?

2. Household Characteristics, Activities

I would like to ask you some questions about yourself and your family.

Household Characteristics:

A. What type of dwelling do you live in?
   - house, apartment, condo, townhouse
B. Do you live alone or with others? (May not be needed if live alone)
C. How many people live in your household?
D. What is your relationship to these people
   - children, spouse, roommate etc
E. Do you have children?
   - How many children?
   - Age?
   - Who is the primary caregiver?
F. Do you care for others in your household
   - disabled, sick, elderly etc
G. What is your average household income per year?
   - 0-20,000
   - 21-40,000
   - 41-60,000
   - 61-80,000
   - 80,000 +
H. How many hours per week do you spend working inside the home
   - caring for children, cleaning etc

Personal Education:

I. What is your highest level of education?
J. Are you currently receiving an education? What type?

Occupation:

K. Do you work outside of the home?
L. How do you get to work?
M. How many hours (if ever) do you work overtime in an average week?
N. What is your current position/ title held at work?
O. What is the nature of your work
   - industry, office/professional, technical, etc
P. What is your main method of transportation to work?
   - walk, cycle, drive, transit, driven by others

Personal Vehicles:

Q. Do you or someone in your household own/operate a vehicle?
R. How may cars do you or someone in your household own?
S. How many cars do you have regular access to?
T. How often do you use your car per week (how many hours per week)?

Transportation:

U. What is your main method of transportation
   - cycle, walk, drive, bus, being driven

V. Why do you select _____ as your main method of transportation?

W. Have you considered other methods of transportation?
   - Why/why not?

3. Opportunities and Constraints

Now I would like to ask you about things that make life easier or more difficult.

Constraints:

A. Are you able to accomplish all of your set tasks during an allotted time?
   - If yes, then skip next questions

B. If you are unable to finish your tasks, what are some of the reasons for this?

C. Do you find it difficult to perform certain tasks or engage in certain activities
   - exercise, visiting a doctor, picking up kids from school etc
   - Skip next question if NO

D. What are some reasons for this?

E. Do you feel that certain areas, place/establishments or activities are difficult to access? Why do you believe this to be true....reasons?
   - Access to [transportation]. Access in [gatekeepers]).

F. What percentage of your daily tasks require you to meet with someone else to complete the task/activity?
   - carpooling, picking up kids, going to movies with friend etc
   - virtually all, most, some, hardly any, none (options)

Opportunities:

G. If you manage to accomplish your allocated tasks, what are some of the reasons for accomplishing the tasks?
   - having facilities close by, receiving assistance from a friend, good public transit, the internet

H. Are there any tasks that are easy to perform because of your location and neighbourhood?
   - going to the doctor's, picking up kids from school, going shopping etc

I. Do you think that you live in a healthy neighbourhood?
   - Why do you stay that?

J. What aspects make your neighbourhood healthy/unhealthy?
   - Can you give some examples?
   - Any aspects of the environment?

4. Health

Finally, I would like to end the interview by asking you a few questions about your health.

Health Questions:

A. How would you describe your status compared to others of the same age and in the same neighbourhood?
B. Are you satisfied with your overall health?
   - very satisfied
C. What would you say about your daily food choices?
   - balanced/health or unhealthy, irregular eating patterns etc
   - Why do you stay that?
D. Do you ever engage in activities to improve your health? Explain
E. Do you ever engage in activities that you believe may be harmful to you health?
   - Explain...why do you say that?
F. How many times p/week do you engage in physical activity/exercise? How long?

The before the interview is complete, is there anything else you would like to add? Any additional information you would like to share?

5. End of Interview Debriefing Script (Read to Respondents)

Thank you for your participation in this study. As mentioned on the consent form, you can withdraw from this study at anytime even after the interview has taken place. If you need to contact myself or Dr. John Eyles, please refer to the consent form for contact information. A summary of findings will be made available on the internet during the fall of 2007, but you can also request a paper copy. The website URL is also found on the consent form.

APPENDIX D
PARTICIPANT CHARACTERISTICS

NAME	#	AGE	SEX	NEIGHBOURHOOD
Amanda	1	45	Female	Industrial
Elizabeth	2	79	Female	Industrial
Lindsay	3	55	Female	Industrial
Marcella	4	50	Female	Industrial
Kelly	5	57	Female	Industrial
Dora	6	38	Female	Industrial
Tamaqua	7	33	Female	Industrial
Sienna	8	72	Female	Industrial
Hannah	9	73	Female	Industrial
Nicole	10	54	Female	Industrial
Dylan	1	76	Male	Industrial
Ali	2	38	Male	Industrial
Cole	3	42	Male	Industrial
Jamal	4	49	Male	Industrial
Sam	5	38	Male	Industrial
Dan	6	32	Male	Industrial
Tyler	7	48	Male	Industrial
Logan	8	53	Male	Industrial
Smith	9	43	Male	Industrial
John	10	40	Male	Industrial
Jenny	1	80	Female	Mountain
Sophie	2	77	Female	Mountain
Abbey	3	78	Female	Mountain
Miranda	4	83	Female	Mountain
Gwen	5	58	Female	Mountain
Elena	6	77	Female	Mountain
Samantha	7	40	Female	Mountain
Joy	8	33	Female	Mountain
Sonya	9	47	Female	Mountain
Donna	10	48	Female	Mountain
Jim	1	69	Male	Mountain
Mikkel	2	45	Male	Mountain
Callum	3	52	Male	Mountain
James	4	35	Male	Mountain
Gabriel	5	48	Male	Mountain
Leo	6	47	Male	Mountain
Preston	7	39	Male	Mountain
Gavin	8	77	Male	Mountain
Milo	9	60	Male	Mountain
Owen	10	36	Male	Mountain

APPENDIX E
NVIVO CODING

NVivo revision 2.0.163 **Licensee: Josie Messina**

Project: Decon **User:** Administrator **Date:** 20/11/2006 - 2:14:52 PM

NODE LISTING

Nodes in Set: All Tree Nodes

Created: 31/10/2006 - 1:20:12 PM
Modified: 20/11/2006 - 2:02:24 PM
Number of Nodes: 233

1 (1) /Nhood defined
Description:
How respondents defined their nhood.

2 (1 1) /Nhood defined/most travelled
3 (1 2) /Nhood defined/newer
4 (1 3) /Nhood defined/low traffic
5 (1 4) /Nhood defined/Convenient
6 (1 5) /Nhood defined/good neighbours
7 (1 6) /Nhood defined/clean
8 (1 8) /Nhood defined/landmark
9 (1 10) /Nhood defined/nature
10 (1 11) /Nhood defined/social participation
11 (1 12) /Nhood defined/employment
12 (2) /Times travelled outside
Description:
How many times per week they travelled outside their defined nhood.

13 (2 1) /Times travelled outside/0-5
14 (2 2) /Times travelled outside/6-10
15 (2 3) /Times travelled outside/11-15
16 (2 5) /Times travelled outside/15+
17 (3) /Reasons Travel outside
Description:
Why they would travel outside of their nhood

18 (3 1) /Reasons Travel outside/physical activity
19 (3 2) /Reasons Travel outside/shopping
20 (3 3) /Reasons Travel outside/services and medical
21 (3 4) /Reasons Travel outside/leisure
22 (3 5) /Reasons Travel outside/social participation
23 (3 6) /Reasons Travel outside/employment
24 (3 12) /Reasons Travel outside/nature
25 (4) /Dwelling
Description:
Dwelling type.

26 (4 1) /Dwelling/house
27 (4 3) /Dwelling/condo
28 (5) /Household
Description:
Who did they live with

29 (5 1) /Household/others
30 (5 2) /Household/alone
31 (7) /Income
Description:
Income bracket per year, total household income p/year.

32 (7 1) /Income/41-60
33 (7 2) /Income/61-80
34 (7 3) /Income/decline
35 (7 4) /Income/80+
36 (7 5) /Income/0-20
37 (7 6) /Income/21-40
38 (8) /Working in home
Description:
How many hours worked inside home per week

39 (8 1) /Working in home/11-20
40 (8 2) /Working in home/40+
41 (8 3) /Working in home/21-30
42 (8 4) /Working in home/31-40
43 (8 5) /Working in home/5-10
44 (8 7) /Working in home/0-4
45 (9) /Education
Description:
Highest level of education.

46 (9 1) /Education/post secondary
47 (9 2) /Education/secondary
48 (9 3) /Education/primary
49 (10) /Work outside
Description:
Do respondents work outside the home. Having a job/career.

50 (10 1) /Work outside/no
51 (10 1 1) /Work outside/no/retired
52 (10 2) /Work outside/yes
53 (11) /Operate vehicle
Description:
Do they operate a car?

54 (11 1) /Operate vehicle/yes
55 (11 2) /Operate vehicle/no
56 (12) /Number of cars
Description:
Number of cars in household.

57 (12 1) /Number of cars/2

58 (12 2) /Number of cars/1
59 (12 3) /Number of cars/4
60 (13) /Hours of car use
Description:
Hours of car use p/week.

61 (13 1) /Hours of car use/6-10
62 (13 2) /Hours of car use/0-5
63 (13 3) /Hours of car use/15-20
64 (13 4) /Hours of car use/20-30
65 (13 5) /Hours of car use/11-15
66 (13 6) /Hours of car use/30+
67 (14) /Main transportation
Description:
Main method of transportation used most often

68 (14 1) /Main transportation/car
69 (14 2) /Main transportation/cabs
70 (14 3) /Main transportation/driven
71 (14 4) /Main transportation/walking
72 (14 5) /Main transportation/bus
73 (15) /Transportation justification
Description:
Reasons for selecting particular method.

74 (15 1) /Transportation justification/convenience
75 (15 2) /Transportation justification/only option
76 (15 3) /Transportation justification/enjoy
77 (15 5) /Transportation justification/distance
78 (15 7) /Transportation justification/cost
79 (15 8) /Transportation justification/proximity
80 (16) /Consideration of methods
Description:
Would they ever consider any other methods other than their current method?

81 (16 1) /Consideration of methods/not possible
82 (16 2) /Consideration of methods/no
83 (16 3) /Consideration of methods/maybe
84 (16 4) /Consideration of methods/yes
85 (17) /Accomplish tasks
Description:
Reasons for finishing/not finishing tasks.

86 (17 1) /Accomplish tasks/yes
87 (17 2) /Accomplish tasks/time
88 (17 3) /Accomplish tasks/planning
89 (17 4) /Accomplish tasks/determination
90 (17 5) /Accomplish tasks/no
91 (17 6) /Accomplish tasks/assistance
92 (17 8) /Accomplish tasks/medical
93 (17 9) /Accomplish tasks/luck
94 (17 10) /Accomplish tasks/transportation
95 (18) /Unable task

Description:
Reasons for not finishing a task.

96 (18 1) /Unable task/difficult
97 (18 2) /Unable task/age
98 (18 3) /Unable task/problems and complications
99 (18 5) /Unable task/priorities
100 (18 6) /Unable task/time
101 (18 7) /Unable task/medical
102 (18 8) /Unable task/no
103 (18 9) /Unable task/lazy
104 (18 10) /Unable task/procastination
105 (18 11) /Unable task/planning
106 (20) /Access
Description:
Do they have problems accessing a task/service/area.

107 (20 1) /Access/no
108 (20 2) /Access/yes
109 (20 3) /Access/services
110 (20 4) /Access/time
111 (20 5) /Access/transportation
112 (20 6) /Access/medical
113 (21) /coupling
Description:
Percentage of weekly tasks that require them to meet up with others

114 (21 1) /coupling/none
115 (21 2) /coupling/hardly any
116 (21 3) /coupling/some
117 (21 4) /coupling/most
118 (21 5) /coupling/harly any
119 (21 7) /coupling/virtually all
120 (22) /Nhood task easier
Description:
Things that are easy to do b/c of nhood.

121 (22 1) /Nhood task easier/shopping
122 (22 2) /Nhood task easier/proximity
123 (22 3) /Nhood task easier/leisure
124 (22 4) /Nhood task easier/nature
125 (22 5) /Nhood task easier/social participation
126 (22 6) /Nhood task easier/safe
127 (22 7) /Nhood task easier/no
128 (22 8) /Nhood task easier/yes
129 (22 9) /Nhood task easier/services
130 (22 11) /Nhood task easier/physical activity
131 (22 12) /Nhood task easier/transportation
132 (23) /Healthy nhood
Description:
Reasons why they think they live in a healthy nhood.

133 (23 2) /Healthy nhood/yes

134 (23 3) /Healthy nhood/low traffic
135 (23 4) /Healthy nhood/peaceful
136 (23 5) /Healthy nhood/nature
137 (23 6) /Healthy nhood/social participation
138 (23 7) /Healthy nhood/safety
139 (23 8) /Healthy nhood/pollution
140 (23 9) /Healthy nhood/diverse
141 (23 10) /Healthy nhood/services
142 (24) /Comparative health
Description:
How they view their health compared to others.

143 (24 1) /Comparative health/same
144 (24 2) /Comparative health/same or better
145 (24 3) /Comparative health/better
146 (24 4) /Comparative health/worse
147 (25) /satisfactions with health
Description:
Are they satisfied with their health?

148 (25 1) /satisfactions with health/somewhat
149 (25 2) /satisfactions with health/satisfied
150 (25 3) /satisfactions with health/not
151 (25 4) /satisfactions with health/active
152 (25 5) /satisfactions with health/weight
153 (25 6) /satisfactions with health/Very
154 (26) /diet
Description:
Diet classification.

155 (26 1) /diet/healthy
156 (26 3) /diet/irregular
157 (26 4) /diet/unhealthy
158 (27) /improve health
Description:
Type of activities that improve health.

159 (27 1) /improve health/physical activity
160 (27 2) /improve health/no
161 (27 4) /improve health/diet
162 (27 5) /improve health/mental
163 (27 6) /improve health/social participation
164 (27 7) /improve health/leisure
165 (27 8) /improve health/services
166 (28) /harmful to health
Description:
Activities that are harmful to health

167 (28 1) /harmful to health/no
168 (28 2) /harmful to health/drinking
169 (28 3) /harmful to health/moderation
170 (28 4) /harmful to health/smoking
171 (28 5) /harmful to health/work

172 (28 6) /harmful to health/exercise
173 (28 7) /harmful to health/computer
174 (28 8) /harmful to health/lifestyle
175 (28 9) /harmful to health/yes
176 (28 10) /harmful to health/diet
177 (29) /hours of physical activity
Description:
Hours per week being active.

178 (29 1) /hours of physical activity/6-10
179 (29 2) /hours of physical activity/0-5
180 (29 3) /hours of physical activity/no
181 (29 4) /hours of physical activity/10+
182 (29 5) /hours of physical activity/None
183 (29 6) /hours of physical activity/Physical at work~home
184 (30) /Nhood characteristics
Description:
What is the nhood like?

185 (30 1) /Nhood characteristics/clean
186 (30 2) /Nhood characteristics/safe
187 (30 3) /Nhood characteristics/nature
188 (30 4) /Nhood characteristics/low traffic
189 (30 5) /Nhood characteristics/good neighbours
190 (30 6) /Nhood characteristics/family oriented
191 (30 7) /Nhood characteristics/newer
192 (30 8) /Nhood characteristics/changing
193 (30 9) /Nhood characteristics/social participation
194 (30 11) /Nhood characteristics/high SES
195 (30 12) /Nhood characteristics/diverse
196 (30 13) /Nhood characteristics/older
197 (30 14) /Nhood characteristics/pollution
198 (30 15) /Nhood characteristics/safety and crime
199 (30 16) /Nhood characteristics/bad neighbours
200 (30 17) /Nhood characteristics/low SES
201 (30 19) /Nhood characteristics/Community
202 (31) /caregiver
Description:
Do they care for others?

203 (31 1) /caregiver/no
204 (31 2) /caregiver/yes
205 (33) /overtime
Description:
Work beyond 40 hrs p/week at work.

206 (33 1) /overtime/yes
207 (33 2) /overtime/no
208 (41) /transportation work
Description:
Main method to work.

209 (41 1) /transportation work/car

210 (41 2) /transportation work/carpool
211 (41 3) /transportation work/bus
212 (41 4) /transportation work/walk
213 (44) /Difficulty with tasks
Description:
What tasks are difficult and why.

214 (44 1) /Difficulty with tasks/problems and complications
215 (44 2) /Difficulty with tasks/no
216 (44 3) /Difficulty with tasks/too busy
217 (44 4) /Difficulty with tasks/yes
218 (44 5) /Difficulty with tasks/medical
219 (44 6) /Difficulty with tasks/procastination
220 (44 7) /Difficulty with tasks/exercise
221 (44 8) /Difficulty with tasks/time
222 (45) /public transit attitude
Description:
Attitude towards bus system.

223 (45 1) /public transit attitude/negative
224 (58) /Unhealthy nhood
Description:
Reasons why nhood is unhealthy.

225 (58 1) /Unhealthy nhood/lifestyle
226 (58 2) /Unhealthy nhood/pollution
227 (58 3) /Unhealthy nhood/traffic
228 (58 4) /Unhealthy nhood/crime
229 (58 5) /Unhealthy nhood/safety
230 (58 6) /Unhealthy nhood/homeless
231 (58 7) /Unhealthy nhood/People unhealthy
232 (70) /volunteer
Description:
People who volunteer.

233 (70 1) /volunteer/yes