Perceived Constraints on Participating in Walking or Hiking Along the Trans Canada Trail

BY

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A Thesis submitted to the Faculty of Graduate Studies
of

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in partial fulfilment of the requirements of the degree of

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MASTER OF ARTS

Abstract

The Manitoba section of the Trans Canada Trail (TCT) has provided its users with a wide variety of experiences: hiking/walking, biking, cross-country skiing, etc. Despite the well-documented benefits of the TCT, previous research in Manitoba indicates that the level of trail use is low and a large percentage of its surrounding population does not engage in physical activities on the trail. The overall purpose of this study is to explore Winnipeg residents' perceptions of constraints for walking/hiking on the TCT. The second set of objectives is to further this field of research by classifying respondents into groups according to their TCT use patterns (current participant, uninterested non-participant, potential participant, ceasing participant) and comparing the perceived constraints among the groups. The survey instruments were mailed to 1600 Winnipeg households which were randomly chosen from Manitoba Telecom Service Database. The results (N=413) indicated that the demographic variables including age, education, and income showed significant differences among groups. Exploratory factor analysis identified four dimensions of constraints: personal, temporal, structural and antecedent. The results also showed that the nature and importance of perceived constraints varied among groups. Implications for future research and tourism practice were discussed.

Keywords: trail use, perceived constraints, leisure participation, motivation, negotiation

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Chapter 1 Introduction

1.1 Background

Trails are an increasingly significant resource for recreational and physical activities in many countries. Trails make recreational activities more appealing through combining a self-motivating exercise program with social outdoor experience. They are particularly valued for providing a venue for family oriented vacations and generating economic benefits for the surrounding communities. Despite the increasing emphasis on developing such trails, there has been relatively little research into their usage (Ravenscroft, 2004). Previous research on recreational trails can be categorized into several general approaches including: visitor impacts approach (e.g., erosion prevention, conflicts between activities); benefits approach (e.g., personal, economic); management approach (e.g., planning and public involvement) and trail usage (e.g., user patterns, attitudes). The body of literature has some limitations in that most research has focused on trail users and little attention has been paid to understanding people who are not on the trail and the reasons that kept them from using it. Encouraging and keeping individuals involved in trail based activities has become an important issue in recent years as it has been reported that 59% of adult Canadians are not sufficiently active to achieve desired health benefits (Craig et al, 2004). There is a paucity of knowledge about reasons that keep people from using trails for sports and recreation activities. One conceptual framework that may help understand why individuals do not participate in specific trail activities is that of leisure constraints. The subject of leisure constraints represents a prominent area of research in North

American recreation and leisure studies (Jackson & Scott, 1999). Crawford, Jackson and Godbey (1991) defined a constraint to leisure as "anything that inhibits people's ability to participate in leisure activities, to spend more time doing so, or to take advantage of leisure service, or to achieve a desired level of satisfaction." During the last two decades, leisure constraints have been subjected to considerable empirical attention, conceptual development, and critical analyses. Perhaps one of the reasons leisure constraints attract so much attention is due to the potential for constraints to explain leisure participation/non-participation and their impact on leisure experience across a variety of contexts including outdoor recreation.

Despite the recent attraction to researching leisure constraints, the majority of the existing research has focused largely on problems of general leisure activities without much attention to more specialized activities such as attending festivals, dancing or hiking and even fewer efforts have been directed towards studying usefulness of the leisure constraints framework in the outdoor recreation and tourism context (Hinch & Jackson, 2000). Although several studies have attempted to explain why people don't make greater use of parks and recreation amenities (Scott & Jackson, 1996; Mowen et al., 2005; Crompton & Kim 2004), it appears that considerably more effort in the area would be warranted. More importantly, however, the leisure behavior of trail users and the constraints that they face in particular possess certain characteristics that can be found neither in general leisure nor other special activities. By exploring these unique attributes we can attempt to integrate the area of leisure constraint studies with the sub-field of outdoor recreation.

1.2 Problem statement

The goal of this research is to understand constraints that Winnipeg residents may face on using Manitoba sections of Trans-Canada Trail for walking/hiking. The following background information guides the objectives and the setting of this research.

1.2.1 Study Area

Winnipeg is the vibrant capital of Manitoba, the geographic centre of North America. With a population of 685,000 people of diverse background, Winnipeg is home to 60% of Manitoba's residents and the city continues to grow. Despite the fact that there were 6,009 domestic trips to Manitoba in 2004, which generated an expenditure of $967, 300 in Manitoba, most travellers in Manitoba are Manitobans and the most common purpose of travel to Manitoba is to visit friends and families (Statistics Canada, 2004). It appears that Manitoba's tourism market is mainly comprised of Manitobans and visitors who are influenced by Manitobans. As a result, Winnipeg residents' leisure behaviours such as motivation, preference, constraints, and evaluations could have direct and indirect impacts on Manitoba's recreation and tourism market. Despite the well-documented benefits of using trails, previous research in Manitoba indicates that the use level of Trans Canada Trail is low and a large percentage of its surrounding population does not engage in physical activities on the trail (Campbell and Lu, 2004). As hiking and walking have been confirmed as a growing market for tourism trips in North America, increasing recreational trail use in Manitoba could make significant contribution to Manitoba's tourism industry. In order to do so, this study will take the first step to explore and understand what factors have

limited Winnipeg residents' use of the trail.

1.2.2 Trail activity

This study focuses on using trails for the specific activities of walking/hiking for the following reasons. First, walking/hiking has consistently been the top ranked trail activity for both sexes and across all age groups (CFLRI, 2002). Also, walking is also considered the healthiest, safest way to start a total fitness program. As such, the results of this study would have wider and more relevant implications for promoting Canadian' health and quality of life. Secondly, walking and hiking have been confirmed as a growing market for tourism trips in Europe and North America. According to English tourism council, 36 percent of British holidaymakers took part in some form of walking, whether it is a gentle ramble or a long distance hike (Seward, 2001). Research in Ireland shows that people who visit Ireland for a walking holiday also enjoy many other activities including dining out, going to the pub and visiting tourism attractions (Corr, 2004). Finally, constraints are better understood by their relation to specific activities rather than just general trail use. Given the particular importance of walking and hiking as a growing tourism segment, obtaining an understanding of what factors prevent people from using trails for walking and hiking could provide insights for marketing as well.

1.2.3 Study Trail

Stretching approximately 18,000 kilometres across every province and linking hundreds of communities along its route, the Trans-Canada Trail will be the longest

trail of its kind in the world (TCT website, 2005). The Manitoba section of the Trans Canada Trail (TCT) provides its users with a wide variety of experiences, including hiking/walking, biking, cross-country skiing, etc. The many benefits from building the TCT include the preservation of the environment, promoting physical exercise, providing a venue for safe, family activity and generating economic benefits to local communities (TCT website, 2005). Given the current low level of usage, however, the trail is unable to fulfill its mission successfully. Results from this study will provide valuable information of current trail user behaviour and document the extent and nature of constraints that residents encounter. Future projects will address policies and practices intended to solve problems and encourage trail use.

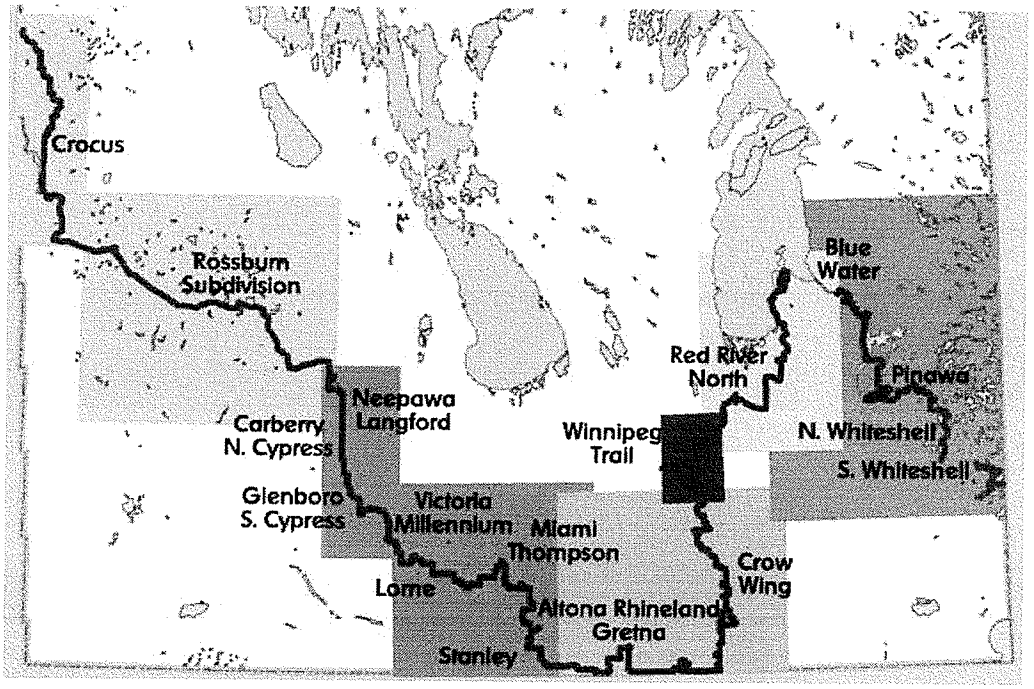


Figure 1 Manitoba section of The Trans Canada Trail (TCT Website, 2005)

Chapter 2 Literature Review

The goals of this chapter are threefold. The first objective is to provide a broad overview of what we know about specific aspects of constraints to leisure after 25 years of attention in the field of leisure constraints research. The second purpose is to integrate this knowledge with research on outdoor recreation and trail use. The third goal is to use existing literature to form the basis of this study and to enhance the growth of this field. This chapter will follow the structure in Figure 2.

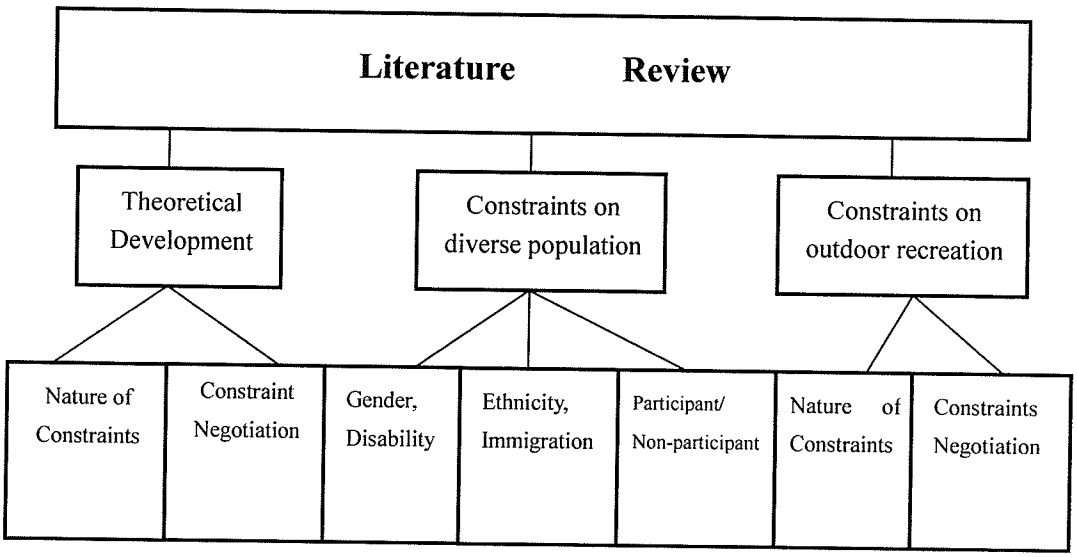


Figure 2 Organization structure of literature review

2.1 Theoretical development

2.1.1 Nature of constraints

In the past two decades, leisure constraints research has grown steadily into a distinctive sub-field of leisure studies (Jackson, 1991). It aimed to "investigate factors that are assumed by researchers and/or perceived or experienced by individuals to

limit the formation of leisure preferences and/ or to inhibit or prohibit participation and enjoyment in leisure" (Jackson, 2000, P. 62)

The empirical investigations and theoretical development of leisure constraints emerged from the mid-1980s. Searle and Jackson (1985) classified leisure constraints into internal and external constraints (see table 1). Crawford and Godbey (1987) proposed a hierarchical model of constraints, which classified perceived constraints into intra-personal (e.g., stress, perceived self-skill, religiosity), inter-personal (e.g., have no one to go with) and structural constraints (e.g., financial barriers, access, transportation) (See table 1). They also proposed that the three dimensions of constraints were experienced hierarchically and only when one type of constraints is absent or successfully negotiated can one experience the next level of constraint, which is lower on the hierarchy. A number of studies utilized the model and provided evidence for its applicability in understanding individual's leisure decision-making process (Raymore, Godbey, Crawford & Von, 1993; Alexandris & Carroll, 1997; Nyaupane & Morais, 2004). Henderson, Stalnaker and Taylor (1988) enriched the conceptualization of constraints by aggregating intra-personal and inter-personal constraints into "antecedent" constraints and adopted the term "intervening constraints" instead of structural constraints (See table 1). Jackson (1990) provided evidence of antecedent constraints (i.e. constraints that negatively affect leisure preferences rather than participation).

Table 1 Dimensions of constraints

Searle and Jackson (1985)	Internal constraints		External constraints
	Personal capacities, abilities, knowledge, and interest		Lack of time and money, geographical distance, and lack of facilities
Crawford and Godbey (1987)	Intrapersonal constraints	Interpersonal constraints	Structural constraints
	Individual psychological states and attributes which interact with leisure preference	Result of interpersonal interaction or the relationship between individuals' characteristics	Intervening factors between leisure preference and participation
Henderson, Stalnaker and Taylor (1988)	**Antecedent constraints**		**Intervening constraints**
	Constraints that negatively affect leisure preference rather than participation		Intervening factors between leisure preference and participation

At the beginning of 1990s, many early concepts and assumptions began to be re-evaluated. Research found that constraints are not insurmountable obstacles to leisure, but rather that they can be negotiated. (Kay & Jackson, 1991). Mannell and Zuzanek (1991) examined constraints on the physically active leisure of older adults and found that respondents "switched constraints" across behaviour context. They suggested, "Factors perceived to inhibit participation are variable and temporary in their influence". Henderson and Bialeschk (1993) suggested that constraints might not be experienced sequentially and hierarchically, but interactively and cumulatively. They also proposed an expanded model of leisure constraints, which showed the

complex and interactive relationships among preferences, constraints and participation. Samdahl and Jekubovich (1997) were concerned that the concept of negotiation was used so loosely and generally that it could limit the comprehensive understanding of people's leisure lifestyle and choice making processes. In a study conducted by Alexandirs and Carrol (1997), they provided evidence that there was a negative and significant relationship between the respondents' perception of constraints and their sport participation. Lack of interest, lack of knowledge and time dimension were reported as the best predictors for distinguishing participation or non-participation. Furthermore, motivation was found negatively related to perceived constraints. Nadirova and Jackson's (2000) study showed that constraints might be experienced sequentially not only between, but within constraints categories. They also suggested that "constraints less frequently block absolute participation in desired activities in which at least some level of participation occurs". Alexandris and Tsorbatzoudis (2002) investigated the influence of constraints on motivation. Their results suggested that intrapersonal constraints act as de-motivating forces. However, no relationships were revealed between interpersonal and structural constraints and motivation, and between constraint dimensions and extrinsic motivation.

2.1.2 Constraints negotiation

Recently, efforts have also been made to understand the nature of constraints negotiation. Research has been conducted to identify the negotiation strategies and resources used by people. For example, in a qualitative study of participating in contract bridge, Scott (1991) identified unique group-related constraints negotiation

strategies developed by contract bridge players such as two people jointly helping one another establish a schedule of games (filling slots), transit from social players into serious bridge to penetrate bridge clubs, etc. Henderson et al (1995) found that strategies including acknowledging constraints, modifying leisure experiences related to scheduling and frequency of participation, experiencing leisure by enjoying others who were active in recreation and leisure were employed by women with physical disabilities.

Another direction of constraints negotiation research has been to develop and test alternative models of negotiation process. These studies improved our understanding of how constraints interact with other variables, such as motivations, attitude, preference. Hubbard and Mannell (2001) tested four competing models of leisure constraints negotiation (independence, buffer, mitigation, reduction) that specified different relationships between constraint, negotiation, motivation and participation. The results strongly supported the mitigation model, which showed while no direct relationship between motivation and perceived constraint was found; motivation appeared to be strongly linked to participation through its strong positive influence on negotiation. They also suggested the need to distinguish between the negotiatory and facilitatory functions of negotiation resources.

2.2 Constraints on diverse population

Studies on subgroups of the population such as women, immigrants, and different race groups also have made a significant contribution to the constraints literature.

2.2.1 Gender, Disability and Constraints

Shaw (1994) identified three main approaches to the study of women's constraints: (1) constraints women face in their leisure are linked to structured societal gender roles; (2) leisure pursuits or activities themselves are constraining to women because they reinforce oppressive gender roles; and (3) women's leisure can offer opportunities for resistance because of qualities such as free choice and self determination.

Hawkins et al. (1999) tested the validity of the hierarchical model of leisure constraints (Crawford et al., 1991; Jackson et al., 1993) by applying constraints data from a sample of intellectually challenged adults. Model testing failed to replicate the hypothesized hierarchy among the three constraint categories. The findings also provide evidence regarding the nonhomogeneous nature of leisure constraints (Jackson & Dunn, 1991). They concluded, "Interpersonal constraints may have multiple meanings depending upon where one is situated along the continuum from dependence to interdependence to independence with regard to the freedom to do as one wishes and the power to act upon one's wishes"

2.2.2 Ethnicity, Immigration and Constraints

Stodolska (1998) studied static characteristics and the dynamic nature of constraints faced by recent Polish immigrants. Findings of this research showed that perceived importance of constraints diminished with increased level of assimilation among immigrants. This suggests that becoming a part of the mainstream might help decrease the perceived importance of constraints for immigrants.

Shinew et al. (2004) studied leisure preference and constraints of

African-Americans and Caucasians by using Shaw's (1994) framework for analyzing women's leisure constraints. African-Americans reported being less constrained that did Caucasians. The results also indicated that the two racial groups have distinct leisure preferences. More specifically, the analysis indicated that African-Americans reported a lower preference than did Caucasians for many of the nature-based activities and that African-American reported a greater preference for shopping and going to church.

Livengood and Stodolska (2004) studied the effects of discrimination and constraints negotiation on leisure behavior of American Muslims. The results indicated that non-violent discrimination has affected their willingness to participate in leisure activities and restricted their freedom of movement, travel, timing and location of activities. Constraints negotiation strategies, which they used to adapt to their environment, were identified by the study such as being vigilant and conscious about the surroundings, modifying travel patterns, etc.

2.2.3 Non-participants and Participants

In order to better understand constraints for different participation level groups, it is necessary to study the differences between participants and non-participants. Non-participants include those who never participate and with no interest to participate (uninterested non-participants); those who have expressed an interest/desire to participate but didn't participate (potential participants); and those who ceased participation in the identified leisure activities (ceasing participants).

Most early constraints research has focused on constraints facing potential

participants. The common identified internal constraints (see table 1) including personal skills, abilities, knowledge, and health problems, while external ones typically include lack of time, financial cost, lack of facilities, and transportation problems. Haukeland (1990) examined the correlation of social factors and a lack of holiday trips in Norway and found that an unsatisfactory social situation is neither a necessary nor a sufficient condition explaining the phenomenon of non-travel. Jackson (1990) found that the desire to participate in a new activity occurred most frequently among people whose leisure choices were relatively unconstrained. This finding was also interpreted as evidence that people who most frequently reported the lack of desire for a new activity were also most affected by antecedent constraints. Davies and Prentice (1995) indicated that the lack of interest expressed by non-participants might be a rationalization of concealing constraints and underlying motivations, rather than a true lack of interest. Picturing leisure constraints as a separate and independent concept may cause this result. Constraints of non-participation will therefore best be understood when it is contextualized with people's live experiences and choices.

Research has also been conducted on the cessation of participation as a measure of non-participation. One direction of this research is to identify the constraints factors facing ceasing participants. A study conducted by Boothby (1981) identified six important categories of reasons for giving up sports activities: loss of interest, lack of facilities, unfitness and physical disability, leaving a youth organization, moving away from the area and no time to spare. Backman and Wright (1993) compared constraints

faced by former hunters, people who had never hunted holding positive attitudes toward hunting, and people who had never hunted holding negative attitudes towards hunting. They indicated that former hunters and non-hunters experience constraints differently. The efficacy of using attitudes to further segment respondents into sub-groups was demonstrated. In a recent survey on the reasons for drop –out among Canadian skiers, Williams and Dossa (1995) found that the most frequent constraints facing them were a combination of having children who were too young to ski, and financial barriers.

Another contribution for understanding ceasing leisure participation is the employment of theories such as life span change and social exchange (Jackson, 1988; McGuire, 1989; Searle, 1991).

On a different track, some very innovative research was done to classify ceasing participants into different sub-groups. Jackson & Dunn (1988) pointed out that discontinuers are not a homogeneous group and classified them as replacers, quitters, adders and continers. Backman (1990) further categorized former participants as active discontinuers and passive discontinuers and indicated that personal (e.g., personal competence, values, intrinsic-extrinsic motivation) and environmental (e.g., side bets, price sensitivity) variables discriminate between the two categories of discontinuers. Searle (1991) studied individuals who ceased using a particular provider of the service but maintained the participation with a new agency. The results showed that the changing of service providers involves quality and value consideration, appropriateness of fit between individual and provider. This is

important because it suggests that the relationship between individuals and service providers might serve as an important role in leisure preference and decision making process.

There have been some studies that expanded categories to include different levels of participation frequency and interest. Wright and Goodale (1991) have identified that participants can also be constrained from participating as frequently as they desire. Shaw & Bonen (1991) investigated the relationship between reported constraints and participation and the results did not support for the hypothesis that barriers are associated with low levels of participation. On the contrary, some constraints were shown to have positive rather than negative relationships with participation. Little (2002) found that some of the constraints could reinforce women adventure recreationists' commitment to adventure as a life priority. Prioritization of adventure recreation occurred not only through personal recognition but also in very practical ways such as managed their time more effectively and reduced their living needs. The process is best described through one participant's own words: "I finally decided I was important enough and recognized the benefits for me from these types of activities. That's when ways to find time, to find a way to make something for me, became a priority" (Little 2002).

2.3 Leisure constraints and outdoor recreation

Research on understanding constraints to participation in tourism and recreation activities expanded in recent years. Nevertheless, the early studies tended to be more

descriptive than explanatory. In addition, relatively little theoretical and conceptual research has been done between these two areas (Walker and Virden, 2005). In this section, we will review some of these studies and discuss the potential to integrate the knowledge of constraints research with outdoor recreation research and contribute theoretical and conceptually to each other.

2.3.1 Nature of leisure constraints on outdoor recreation

Early constraints research on outdoor recreation can be traced back to the research by Bialeschki and Henderson (1988). This research sought to identify potential correlates and barriers to trail use in Wisconsin. They found that hiking, cross-country skiing, snowmobiling and biking were the most popular trail activities and users expressed high satisfaction with the existing trails. Overall, trail users could be distinguished from nonusers by the demographic characteristics of age, income, and gender. Of the respondents who did not use trails, 20 percent were unaware that recreational trails existed in the area; 42 percent did not perceive any constraints to their use; only 16% of the sample indicated lack of time, information, money, social support and poor health as their constraints on trail use. However, the analysis was conducted on an item-by-item basis, which is difficult to describe the patterns and categories of constraints. In addition, without specifying a particular trail activity, the conclusions were limited.

Gilbert and Hudson (2000) examined both the constraints of non-participants and participants in a nature-based tourism activity (skiing). The results of both qualitative and quantitative research indicated that non-skiers suffer higher level of intra-personal

constraints than do skiers, and skiers' main constraints are structural constraints. Non-skiers perceive skiing to be dangerous and harder to learn than other sports. They also see this sport as an elitist pastime. However, many of these constraints are based on preconceptions that may not be valid, so the authors suggest that marketers should counteract these images in their promotional activity. More importantly, the authors also built a new model of leisure constraints (pertaining to skiing) based on the hierarchical model proposed by Crawford and Godbey 1991).

Pennington and Kerstetter's (2002) study investigated the constraints keeping individuals from taking pleasure trips for engaging in outdoor recreation. Their results indicated that the way individuals perceive constraints to participation in nature-based tourism is similar to traditional leisure activities and the most important constraints were structural (money, followed by time).

Crompton and Kim's (2004) research on temporal changes in perceived constraints to visiting state parks employed a repeated measures design surveying the same sample of respondents at a 16 and 12 months interval. They identified four dimensions of constraints to visiting state park (time, personal, structural and weather) and indicated that the all these dimensions did change significantly over time. However, no relationship was found between constraints and variations of visit levels. This can be explained by the fact that the perceived constraints might not be important and strong enough to impact visitation decisions. One of the limitations of this research project was that the questionnaire mainly employed structural constraints, rather than focusing equally on all of the possible constraints.

Nyaupane and Morais (2004) examined the reasons that keep individuals from participating in three nature-based tourism activities (canoeing, horseback riding and rafting). Confirmatory factor analysis supported the hierarchy model proposed by Crawford and Godbey (1987) for each activity. However three out of six items from structural constraints did not fit into the model. These were "unavailability of area close to home," "family commitments," and "lack of time." Overall, rafting showed the highest intra-personal constraints, horseback riding showed high structural constraints and canoeing was always the activity with the lowest constraints. Their research also uncovered that the importance of each type of constraint differed across the three activities for the same group of individuals. This research shows the importance of looking at all of the different constraints over different activities.

In summary, previous research indicated that constraints on outdoor recreation are similar to general leisure activities. Time availability, financial cost, lack of information and weather are perceived as significant constraints on participating in outdoor recreation. One of the unique characteristics of outdoor recreation is that it is based on land use (use of certain natural settings). Therefore, it may require more time and financial commitment than other local leisure activities in addition to being influenced by external factors such as weather. On the other hand, it appeared that the validity of employing the hierarchy model proposed by Crawford and Godbey (1987) on outdoor recreation hasn't been confirmed.

2.3.2 Motivation, preference, constraints and negotiation

The role of motivation and preference in the constraint negotiation process has

received more attention in recent years.

Hunting provided an example of negotiating employed in Wright and Goodale's (1991) study of hunters. This study proposed a model in which "non-participants" was sub-divided based on the presence or absence of interest in participation and the category "participant" was divided by frequency of participation and presence or absence of interest in additional participation. Further, attitude and preference variables were shown to affect interest and/or participation. Groups of uninterested non-participants reported highest score on negative attitudes towards hunting and lack of preference for hunting.

Scott and Jackson (1996) assessed factors that limit and strategies that might encourage people's use of public parks. Findings indicated that lack of time and preoccupation with other activities/responsibilities were the main constraints across the entire sample. The most desired constraint negotiation strategies were making parks safer, providing more information about parks, providing more park activities, and building parks closer to home. Furthermore, they also found that women were more constrained in their park use relative to men (Scott & Jackson, 1996).

A qualitative analysis presented by Little (2002) studied women with a history of participation in adventure recreation. Adventure recreation, a specific form of leisure that tends to be physically and intellectually challenging, has traditionally been recognized as a male dominated arena. The study revealed that while the women experience varying sources of constraints similar to findings in previous leisure research, they could also successfully negotiate these constraints by restructuring their

adventure experience or by reinforcing their commitment to adventure as a life priority.

Mowen et al. (2005) sought to examine the change and stability of constraints on park visitation and preferred constraint negotiation strategies across a 10-year period. They compared a 2001 telephone survey of residents from Northeast Ohio with an identical survey administered in 1991. The results showed that perceived constraints and desired constraint negotiation strategies remained relatively stable across time. Despite the overall stability of park visitation constraints, several statistical variations were found. While fear of crime was a relatively major factor in limiting park use, it was significantly less important in 2001 than in the 1991. Other statistical variations include a reduction that reporting parks are too far away, parks are too crowded, and lack of transportation as important constraints to park use.

In conclusion, the research suggests individual's preference, attitude and motivation towards an outdoor activity play an important role in shaping one's constraint perception, negotiation process and participation. Secondly, unique negotiation strategies have developed by individuals and service providers to increase participation.

2.4 Summary of literature review

In summary, to more fully understand the nature of constraints, there is a need for further research investigating constraints to participation of both participants and non-participants in a particular activity. Whereas leisure constraints of some out-door

activities such as skiing has generated considerable interest among leisure researchers, only a few isolated studies have tackled constraints associated with trail use. On the other hand, earlier research on trail use has mainly focused on describing characteristics, motivations, attitudes and use patterns of current trail users. (Lucas 1985; Cole 2001; Watson 1997 etc) The social-psychological aspects that influence the behavior of non-participants have been largely overlooked. This suggests there is a gap in understanding constraints and barriers that prevent current and potential trail users from using them.

Given the limited research conducted on trail to date, the overall purpose of this study is to address that need by exploring Winnipeg residents' perceptions of constraints to use the TCT for walking (hiking). The second set of objectives is to further this field of research by classifying respondents into groups according to their TCT use patterns (current participant, uninterested non-participant, potential participant, ceasing participant) and comparing the perceived constraints among the groups. Previous research has inferred that reported obstacles do not always prevent participation (Kay and Jackson 1991). Therefore, it is possible that existing trail users have the same constraints as nonusers but still use the trails. This could have important implications for recreational trail development and Manitoba's tourism industry. In addition, we can gain a fuller understanding of high potential nonusers (people who showed interests but did not participate in selected activity), with respect to what factors might heighten their interest and willingness to go walking (hiking), what constraints have repressed their previous involvement, and what incentives and

promotional messages might influence their future levels of trail use.

Chapter 3 Research Design

The goals of this chapter are to introduce the research questions and provide a brief description of the methodology for this study. We begin by introducing three sets of research questions and hypothesis that address the purpose of this study. The second part of the chapter describes and discusses the methodology for this study including research method, data collection strategies, sampling method, survey instrument, survey administration and data analysis.

3.1 Research Questions

To accomplish this purpose and guide the research, we addressed the following questions and hypothesis:

How do social demographic characteristics affect trail use behaviours?

H1. Use of trail for Hiking/walking will vary as a function of residents' socio-demographic attributes such as age, gender, income, education, marital status, and ethnicity.

What are Winnipeg residents' perceptions of constraints on participation of activities along TCT?

H1. There will be three identifiable dimensions of constraints: intra-personal, interpersonal and contractual constraints of hiking or walking the Trans Canada Trail for Winnipeg residents.

3. Will the characteristics and degree of perceived constraints differ among groups

(uninterested non-participants, ceasing participants, potential participants and participants)?

H1. Participants (current users) will be least constrained and uninterested non-participants will be most constrained among the four groups.

H2. The participants' main constraints will be structural constraints.

H3. Lack of awareness of the trail, lack of information and the trail's proximity to the city will be important constraints to potential participants.

H4. Loss of interest and domestic commitment will be important constraints to ceasing participants.

3.2 Methodology

3.2.1 Research Method

The survey research design is the method best suited to achieving the goals of this study. The survey research design is one of the three broad research designs available in social research. The other research designs are the experiment and the case study. Several reasons guided researcher in the choice of this method. First of all, the researchers' goal is to obtain an understanding of the constraints that prevent people from using trails for sport & recreation activities. Surveys can fulfill this goal as they are frequently used to find evidence about some of the likely causes of people's behaviours or attitudes. Second, since the target respondents are city residents, the author believes that surveys can collect data from many people at relatively low cost and, depending on the survey design, relatively quickly. In contrast, the case study

design is incapable of providing a generalizing conclusion because it lacks of a sufficient number of cases. In fact, survey research design is often the only means available for developing a representative picture of the attitudes and characteristics of a large population. Thirdly, in contrast with experiment, surveys deal with differences between respondents that are given, not experimentally created (Aldridge & Levine, 2001). In this study, we are trying to explore city residents' perceptions and attitudes towards trail use behaviours. We do not experimentally create differences; our respondents present them to us. Therefore, a survey is the appropriate design for this study.

In order for the survey to succeed, it is crucial to minimize the risk of errors of observation and non-observation. Errors of observation refer to poor measurement of cases that are surveyed. Potential problems may be result from the survey questions, the way these questions are presented in the questionnaires, and the measurement strategies used. Errors of non-observation- the omission from the survey of some cases that should be included—are a major problem in survey research (Bourque and Fielder, 2003). Nonresponse can distort the sample when individuals refuse to respond or cannot be contacted. Coverage of the population can be inadequate due to a poor sampling frame. The process of random sampling can also result in "sampling error". Dillman's (2000) approach of using social exchange theory to guide our expectations about survey error is employed in this survey design to mitigate potential sources of error. This theory presents that behaviour is motivated by the return expected to the individual for the behaviour (Blau, 1964). A well-designed survey will maximize the

social rewards and minimize the costs for participating in the survey and establish trust that the rewards will outweigh the costs.

3.2.2 Data collection strategies

Data was collected using self-administered mail questionnaires. The advantages of self-administered questionnaires are their lower cost compared with other methods (e.g., interviews), wider coverage of sample population, fewer personnel and less complicated procedures for data processing. Questionnaires are usually designed for descriptive research and analytical (explanatory) research. This study is considered a combination of descriptive and analytical research as it aims to measure a phenomenon (constraints on trail use)--to find out how widespread it is, how it varies across a given population, and why it takes the form it does. In addition, many surveyors believe that people are more likely to give complete and truthful information on sensitive topics in a self-administered questionnaire than in a focus group or interview (Haslam, 2003). One of the most significant disadvantages of using mail questionnaires is their potential low response rate. However, with careful design of procedures, it is possible to produce both high quality information and high response rates. Self-reported methods of participation might suffer from a response error, that is, the difference between actual and reported participation (Chase & Harada, 1984). However, self-reported measures of activity participation have been used widely in similar studies (e.g. Alexandris & Tsorbatzoudis, 2002; Hubbard & Mannell, 2001). In addition, self-administered questionnaires also enable the use of quantitative measures with interval level properties. Such measures provide

information not only about the relative standing of people on a construct (as in nominal or ordinal data) but also about the magnitude of the difference between people.

3.2.3 Sampling method

The survey instruments were mailed to 1600 Winnipeg households according to the Dillman Total Design (2000) approach. The sample was randomly chosen from the Manitoba Telecom Services database so that it correctly represented the spatial distribution of the population of the city. The self-administered mail-out survey is aimed to collect over 400 samples (25% response rate). The probability sample was drawn to provide a margin of error of +/- 5% and a 95% level of confidence. One house member (adult with the next birthday) from each household was asked to complete and return a self-administered questionnaire.

3.2.4 Survey instrument

The first part of the questionnaire contained in-depth questions about trail usage (see appendix 1). The questions included levels of trail use (Q1, Q1a, Q2, Q2a and Q3); visit motivations (Q1e); use patterns: use frequency (Q1b), length of stay (Q1c), companion (Q1d). The frequency of engaging regular physical activity was asked to measure personal physical activeness (Q2c).

The second part of the questionnaire consists of questions regarding respondents' perceived constraints on participating hiking/ walking along the TCT (Q 3). The questions were assessed through the use of multi-item scales. Respondents were asked

to evaluate the importance of each of statements as limiting factors for their TCT participation. A seven-point Likert-type scale ranging from extremely important (7) to not at all important (1) was used. The constraint items were developed based on previous literature (Crawford and Godbey 1987; Crawford et al.1991; Carroll and Alexandris 1997; Nyaupane, Morais and Graefe 2004;) and the results of an elicitation survey with a sub-sample (N=15) of the target population (see table 3). The elicitation survey consisted of an open-ended question asking respondents about what they view as limiting factors of hiking or walking on trails. Constraint item 2, 13, 17 were identified from the elicitation survey.

The last part of the questionnaire also contains questions about socio-demographic variables. Variables include age, gender, marital status, number of years living in Winnipeg, education, income, ethnicity, and were measured by close-ended questions (Q4-Q 11).

Table 2 Survey constraint items

Item	Reference	Category
The activity is too physically demanding	Nyaupane & Morais (2004)	Intrapersonal
I never think about it	Wright & Goodale (1991)	Preference for leisure
I don't feel safe or secure	Nyaupane & Morais (2004)	Intrapersonal
I consider it not appropriate	Elicitation survey	Unspecified
I don't feel confident	Alenxandris & Tsorbatzoudis (2002)	psychological
I prefer other trails	Elicitation survey	Unspecified
I prefer other activities	Boothby (1981)	Personal
I'm not interested	Alenxandris & Tsorbatzoudis (2002)	Interest
I participated and did not like	Alenxandris & Tsorbatzoudis (2002)	Interest
Health problem	Alenxandris & Tsorbatzoudis (2002)	Psychological
Loss of interest	Henderson & Stalnaker (1988)	Interest
Injury or handicap	Shaw & Bonen (1991)	Unspecified
Low energy	Shaw & Bonen (1991)	Unspecified
I have no one to go with	Nyaupane & Morais (2004)	Interpersonal
My family and friends are not interested in going	Nyaupane & Morais (2004)	Interpersonal
My family and friends do not have time	Shinew & Parry (2004)	Interpersonal
No leaders available	Shaw & Bonen (1991)	Unspecified
Lack of social contacts	Boothby (1981)	Social
My family or friends don't approve	Elicitation survey	Unspecified
Being married	Boothby (1981)	Social
Having children	Elicitation survey	Unspecified
The weather is too bad	Elicitation survey	Unspecified
The activity is too costly	Nyaupane & Morais (2004)	Structural
No enough facility along the trail	Alenxandris & Tsorbatzoudis (2002)	Facilities
Poor quality of the Trans Canada Trail	Alenxandris & Tsorbatzoudis (2002)	Facilities
Trail is too crowded	Alenxandris & Tsorbatzoudis (2002)	Facilities
Transportation takes time	Alenxandris & Tsorbatzoudis (2002)	Accessibility
I don't have transportation	Alenxandris & Tsorbatzoudis (2002)	Accessibility
I am not aware of the trail	Henderson & Stalnaker (1988)	Unaware
I don't know where I can get information	Nyaupane & Morais (2004)	Structural
Not skilled enough	Stodolska (1998)	Personal
Time spent on working or studying	Alenxandris & Tsorbatzoudis (2002)	Time
Time spent on domestic commitments	Alenxandris & Tsorbatzoudis (2002)	Time
Time spent on other interests	Crompton & Kim (2004)	Time

3.2.5 Survey administration

A questionnaire, a self-addressed prepaid envelope and a cover letter explaining the

purpose and importance of the study were mailed to each of the 1600 households (Dillman 2000). One week after the initial mailing, a postcard reminder was sent to each person to encourage early response. 15 days after the second mailing, a replacement questionnaire with follow-up letter was sent to participants who did respond and 10 days after the third mailing, a second reminder card was sent as the final contact to participants who haven't responded. An incentive prize draw was held to award five TCT map packages to those who indicated their interest in the draw and returned the questionnaire (whether completed or not). Survey progress reports were made once a week. The first purpose of the report is to record the total number of completed questionnaires and number of questionnaires that were undeliverable. The second purpose is to eliminate labels for those who returned and who are lost to follow up (no usable address, moved and left no address, refuse to complete).

3.3 Data Analysis

The analysis was developed based upon the purpose of and the methodology for this study.

First of all, descriptive statistics were used to provide a profile of respondents according to their trail use behaviours. Respondents were further divided into four groups according to their reported trail use behaviour: 1) Participants are those who hiked or walked along the trail in the last 12 months; 2) Ceasing participants are those who had hiked or walked along the trail in the past but didn't hike or walk along the trail in the last 12 months; 3) Uninterested non-participants are those who never hiked

or walked along the trail and express no interest/desire to participate in the future; 4) Potential participants are those who never hiked or walked along the trail but express an interest/desire to participate in the future.

The sample consisted of 59 (15%) participant, 41 (10.4%) ceasing participants, 127 (32.3%) uninterested non-participants and 166 (42.2%) potential participants. Breaking the sample intro four groups reduced the sample size, especially for participants and ceasing participants. As a result, analysis based on these groups may limit the reliability of the results.

Compare-means was employed to identify significant constraints items among general residents and within each group. Total constraint score are calculated by summing up scores from all the constraint items included in Question 3. Summing up responses and dividing by the number of items calculate average total scores of the perceived importance of each constraint dimension. The examination of multiple bivariate-correlations revealed the significant correlation between certain social –demographic variable and reported constraints; use patterns and reported constraints. The second stage of data analysis employed exploratory factor analysis with varimax rotation to determine whether there were any identifiable dimensions that could be used to describe many of the constraints variables in the study. Cronbach's alpha coefficient was used to assess the internal consistency reliability of the items used to measure perceived constraints dimensions. Exploratory factory analysis is chosen for this study for three reasons. 1) Exploratory factory analysis is often used for instrument development and theory construction. The literature review suggested that

there are limitations with the three dimension hierarchical model and it might not be applicable to outdoor recreation constraints; and that other models may be more suitable for specific activities such as hiking or walking. The result of the analysis, will either provide evidence to support the three dimensions model of constraints or help develop new models to measure perceived constraints of trail use; 2) Exploratory factor analysis reduces data for subsequent analysis (such as regression or analysis of variance) on the reduced data. Thus, it simplifies the process of phenomenon explanation; 3) One danger of using confirmative factor analysis would be that if the predetermined theory in fact does not fit, the researcher might be unable to explain the relationships among the variables being analyzed (Thompson, 2004).

Chapter 4 Results

The results of the survey are split up into four sections, since each part of the analysis has its own significance. The first section briefly describes survey response. The second section provides a brief profile of respondents according to their trail use behaviours, socio-demographic characteristics. Next, results of the factor analysis on trail use constraints will be presented. Finally, research questions and hypothesis are addressed.

4.1 Survey response

The survey sample consisted of 1600 Winnipeg residents. From September 3rd to Oct 30 th 2005, a total of 413 questionnaires were returned. Eliminating 94 questionnaires that were undeliverable, the effective response rate was 27.4%.

A telephone follow-up to test for non-response bias was conducted with a 4% sample of non-respondents (n=40). Non-respondents were queried regarding their interest in hiking, past and present hiking activities, and social-demographic variables. No significant differences were found between the responses of respondents and non-respondents (See appendix D)

4.2 Profile

4.2.1 Socio-demographic characteristics of respondents

Approximately half of the respondents were female (48.1%). The majority of respondents were between 45–64 years old (38.8%); among these respondents, there

were 59 percent European Canadian, 30.6 percent Canadian, 6.8 percent Asian Canadian, 1.4 percent native Canadian and 1.4 percent African-Canadian. The sample averaged less than 2 children per household and 32 years lived in Winnipeg. The median of household income reached level 3 ($50,000-74,999). The most frequently reported level of education reached was some postsecondary (not university). The majority of the respondents were now married and living with spouse (61.3%) (See Table 3). Based upon Winnipeg's demographic statistics in 2004 (Statistics Canada, 2004), these general characteristics are consistent with demographic data about the city, while the age profile showed some over representation of the 45-64 group and an under representation of the 18-24 group compared to population data for the city.

Table 3 Social-demographic variable

Variables		Participants (N=59)	Non-participants (N=350)	# of cases	% of total
Age		(N= 59)	(N=346)		(N=405)
	18-24	6.7%	93.3%	15	3.7%
	25-34	18.3%	81.7%	60	14.8%
	35-44	16.5%	83.5%	97	24%
	45-64	16.6%	83.4%	157	38.8%
	>65	6.6%	93.4%	76	18.8%
Gender		(N=58)	(N=337)		(N=395)
	Male	12.2%	78.8%	205	51.9%
	Female	17.4%	82.6%	190	48.1%
Marital status		(N=58)	(N=346)		(N=404)
	Married	13.4%	86.6%	246	60.9%
	Common-law	21.1%	78.9%	38	9.4%
	Single	17.2%	82.8%	58	14.4%
	Separated	33.3%	66.7%	12	3%
	Divorced	3.7%	96.3%	27	6.7%
	Windowed	8.7%	91.3%	23	5.7%
Education		(N=59)		(N=341)	(N=400)
	Less than high school	3.7%	96.3%	27	6.8%
	High school graduate	6.9%	93.1%	72	18%
	Some post-secondary	15.2%	84.8%	132	33%
	University graduate	20.2%	79.8%	109	27.3%
	Post-graduate	18.3%	81.7%	60	15%
Household income		(N=54)		(N=306)	(N=360)
	Under $15,000	0	100%	23	6.4%
	$15,000 to $49,999	9.4%	90.6%	149	41.4%
	$50,000 t0 $74,999	27.8%	72.2%	90	25%
	$75,000 to $99,999	14.5%	85.5%	55	15.3%
	Great than $100,000	16.3%	83.7%	43	11.9%
Ethnicity		(N=56)	(N=310)		(N=366)
	Oceania Canadian	0	100%	1	.3%
	Asian Canadian	4%	96%	25	6.8%
	European Canadian	16.2%	83.8%	216	59%
	African Canadian	0	100%	5	1.4%
	South American Canadian	0	100%	2	.5%
	Aboriginal Canadian	0	100%	5	1.4%
	Canadian	17.9%	82.1%	112	30.6%

When asked about their previous trail use experience, 70% of respondents said they had used other trails for recreational walking/hiking before and 47% of them had used other trails in the last 12 months (see table 4).

Table 4 Use of other trails by general

Have you used other trails before? [1]		Have you used other trails in the last 12 months?[2]	
Yes	No	Yes	No
256 70.7%	106 29.3%	185 47.0%	209 53.0%

For further analysis, respondents were divided into participants, ceasing participants, potential participants and uninterested non-participants (see table 5). The majority of participants said they had used other trails for recreational walking/hiking before or in the last 12months. 87.2% of ceasing participants reported using other trails before but only 58.5% of them reported using other trails in the last 12 months. Quite a number of potential participants reported using of other trails both previously and in the last 12months (77.6%, 50.9%). The result also showed that a large percent of uninterested non-participants had never used trails before (60.7%).

Table 5 Use of other trails by group

	Have you used other trails before? [2]		Have you used other trails in the last 12 months?[2]	
	Yes	No	Yes	No
Participants	58	1	50	9
	98.3%	1.7%	84.7%	15.3%
Ceasing	36	5	24	17
Participants	87.8%	12.2%	58.5%	41.5%
Potential	115	34	81	81
Participants	77.6%	22.4%	50.9%	49.1%
Uniterested	42	64	26	98
non-participants	39.3%	60.7%	20.8%	79.2%
Total	251	104	181	205
	100.0%	100.0%	100.0%	100.0%

Note1. Chi-square= 82.188 P=.000, df=3;
Note2. Chi-square =71.359 P=.000, df=3

Chi-square analyses were used to test the relationship between trail use groups and socio-demographic characteristics including age, sex, marital status and ethnicity (Table 6 and Appendix C). "Chi-square analysis is used to determine if there is a significant difference between the frequencies of observed and expected observations in two or more categories with two or more levels." When age was examined with trail use groups, Pearson Chi-square value x^2 =10, P<. 05, therefore Ho was rejected and significant difference in trail use groups and age was found. Those respondents aged between18-45 were more likely to be participants and potential participants. Those who aged over 45 were more likely to be non-participants. The results of other socio-demographic variables (gender, ethnicity) were not significant therefore Ho can

not be rejected and no relationship between those variables and trail use groups could be found.

The relationship between use of the trail and education was investigated using Pearson product-moment correlation coefficient (Table 6 and Appendix D). There was a small positive correlation between the two variables [r=0.137, n=409, p=0.006], therefore, we can infer people with higher levels of education were more likely to participate. When use of the trail and household income was examined, a small positive correlation was found between the two variables [r=0.111, n=409, p=.036], in other words, those with higher levels of household income were more likely to participate.

Table 6 Profile by group

Variables		Participants	Ceasing participants	Potential Participants	Uninterested Non-participants	# of cases	% of total	Test statistic	p	df
Age		(N=59)	(N=41)	(N=166)	(N=125)		(N=391)	X^2=10	.018	3
	18-24	1.7%	2.4%	6.6%	1.6%	15	3.8%			
	25-34	18.6%	9.8%	17.5%	10.4%	57	14.6%			
	35-44	27.1%	29.3%	25.9%	20.0%	96	24.6%			
	45-64	44.1%	51.2%	37.3%	35.2%	153	39.1%			
	>65	8.5%	7.3%	12.7%	32.8%	70	17.9%			
Gender		(N=58)	(N=40)	(N=162)	(N=122)		(N=382)	X^2=3.21	.360	3
	Female	56.9%	47.5%	47.5%	42.6%	181	47.4%			
	Male	43.1%	52.5%	52.5%	57.4%	201	52.6%			
Marital status		(N=58)	(N=41)	(N=166)	(N=125)		(N=390)	X^2=0.13	.988	3
	Married	56.9%	65.9%	57.2%	67.2%	239	61.3%			
	Common-law	13.8%	7.3%	13.3%	3.2%	37	9.5%			
	Single	17.2%	12.2%	16.9%	10.4%	56	14.4%			
	Separated	6.9%	2.4%	2.4%	1.6%	11	2.8%			
	Divorced	1.7%	9.8%	6.6%	7.2%	25	6.4%			
	Windowed	9.1%	4.5%	27.3%	59.1%	22	5.6%			
Education		(N=59)	(N=41)	(N=165)	(N=22)		(N=387)	R=0.137		N=409
	Less than high school	1.7%	2.4%	5.5%	12.3%	26	6.7%			
	High school graduate	8.5%	14.6%	15.2%	28.7%	71	18.3%			
	Some post-secondary	33.9%	41.5%	33.3%	29.5%	128	33.1%			
	University graduate	37.3%	24.4%	29.1%	20.5%	105	27.1%			

Variables		Participants	Ceasing participants	Potential Participants	Uninterested Non-participants	# of cases	% of total	Test statistic	p	df
Household income		(N=54)	(N=37)	(N=156)	(N=102)		(N=349)	R=0.111	N=409	
	Under $15,000	0	5.4%	5.8%	11.8%	23	6.6%			
	$15,000 to $49,999	25.9%	32.4%	50.0%	40.2%	145	41.5%			
	$50,000 to $74,999	46.3%	24.3%	22.4%	16.7%	86	24.6%			
	$75,000 to $99,999	14.8%	21.6%	12.2%	18.6%	54	15.5%			
	Great than $100,000	13.0%	16.2%	9.6%	12.7%	41	11.7%			
Ethnicity		(N=56)	(N=39)	(N=153)	(N=106)		(N=354)	X^2=23.214	.182	18
	Oceania Canadian	0	2.6%	0	0	1	.3%			
	Asian Canadian	1.8%	2.6%	10.5%	6.6%	25	7.1%			
	European Canadian	62.5%	61.5%	58.2%	55.7%	207	58.5%			
	African Canadian	0	0	2.0%	1.9%	5	1.4%			
	South American Canadian	0	0	1.3%	0	2	.6%			
	Aboriginal Canadian	0	2.6%	0.7%	2.8%	5	1.4%			
	Canadian	35.7%	30.8%	27.5%	33.0%	109	30.8%			

Respondents were also asked about their participation in regular physical activities. Table 7 below indicated that in general over half of respondents engaged in regular physical activities more than 3 times a week. Most respondents of all four groups engaged in regular physical activities once a week or more (88%). Secondly, the result showed that participants and ceasing participants were more physically

active than potential participants and uninterested non-participants. It suggests that for these groups it is already an important part of overall active lifestyle.

Table 7 Frequency of engaging regular physical activities by general

More than 3 time a week	Once a week	Once a month	Less than once a month	Total
219	132	24	25	400
55%	33%	6%	6%	100%

Table 8 Frequency of engaging regular physical activities by group

	More than 3 time a week	Once a week	Once a month	Less than once a month	Total
Participants	41	17	0	1	59
	69.5%	28.8%		1.7%	100%
Ceasing Participants	28	10	2	0	40
	70%	25%	5%	0	100%
Potential Participants	85	54	14	9	165
	52.1%	33.9%	8.5%	5.5%	100%
Nonparticipants	55	44	8	12	120
	45.8%	36.7%	6.7%	10.8%	100%
Total	209	125	24	22	384
	100.0%	100.0%	100.0%	100.0%	100%

Note1. Chi-square= 21.748 P=.01, df=9;

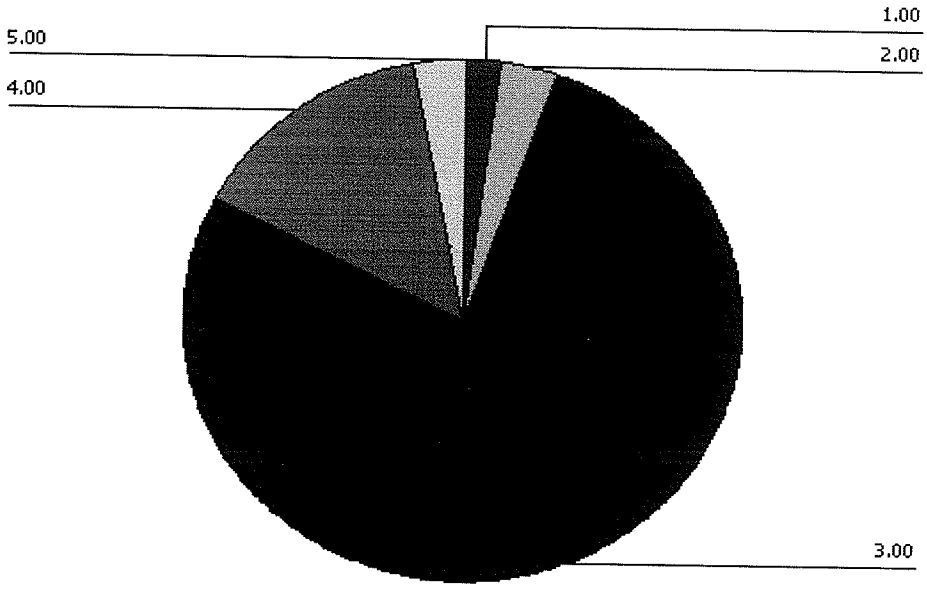
4.2.2. Trail use behaviours

It was reported that 68.1% percent participants use Manitoba section of the Trans Canada Trail less than 5 times a year, and the average frequency of trail use is 8 times/year, only a small portion of current participants (18.7) are heavy users of the Trans Canada trail (Table 9).

Table 9 Yearly frequency of trail use

Yearly frequency	Number of participants	Percent
0-5 times/year	62	68.1
5-10 times/year	12	13.2
>10 times/year	17	18.7

When asked to indicate their main purpose to the trail, respondents reported their purpose as hiking/walking/exercising (n=79, 81.4%,), Experiencing nature/Sight seeing (n=9, 9.3%), and other purposes included seeing wildlife, spending time with family and friends, photography and get out of the city.



1= seeing wildlife/birds
2= Spending time with family & friends
3=hiking/walking/exercising
4=Experiencing nature/sight seeing
5 = others (photography/relay/get out of the city)

Figure 3 Main purpose of visiting

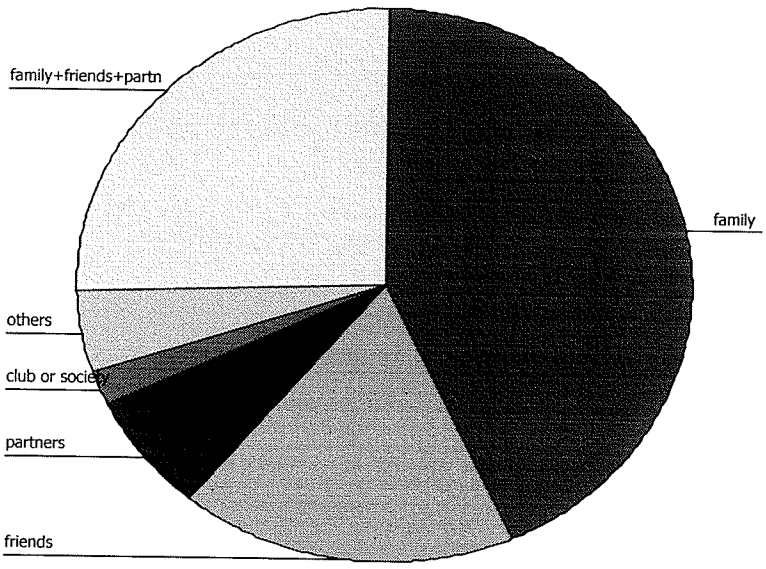


Figure 4 Travel companions

Most users reported their companions are family members, friends and partners (93.1%). There's also a small portion of users chose to visit the trail alone or with club/society members.

4.3 Factor analysis on trail use constraints

Exploratory factor analysis with varimax rotation was used to reduce the initial 30 constraint items into a smaller number of factors and to reveal identifiable dimensions of constraints. Prior to performing EFA the suitability of data for factor analysis was assessed. The Kaiser-Meyer-Oklin value was .839, exceeding the recommended value of .6 (Kaiser, 1974) and the Barlett's Test of Sphericity reached statistical significance, supporting the factorability of the correlation matrix.

Nine factors emerged with eigenvalues greater than 1 (table 10), explaining 69.3% of the total variance. An insepection of the screeplot revealed a clear break after the 4th factor. Using Catell's (1966) scree test, it was decided to retain four factors for further investigation.

Varimax rotation was performed to aid in the interpretation. 4 items were omitted based on the initial factor analysis results ("I don't have transportation", "being married", "my family and friends don't approve" and "I prefer other trails"). These items weren't strongly associated with any single factors. Thus, the items did not meet the threshold loading used in this study (>0.4). Also the researcher reported that "being married" and "my family and friends don't approve" were confusing to subjects, and the frequency of use by subjects was low. After these items were eliminated, the rotated solution revealed the presence of simple structure with four factors. This solution accounted for almost 54.5% of the total variance, with factor 1 contributing 17.7 percent, factor 2 contributing 15.1 percent, factor 3 contributing 14.9 percent and factor 4 contributing 7.8 percent. Factors were named as follows:

Personal; Temporal; Structural; Antecedent (Table 10) based upon the commonality of the items' meaning.

Factor 1 appeared to represent intrapersonal and interpersonal constraints such as health problems, low energy, lacking safety or security, and having no one to go with. The second factor was composed of constraints that were related with time (i.e. Time spent on domestic commitment; my family and friends don't have time). The third factor included items that concerned with structural constraints (i.e. poor quality of the trail, the activity is too costly, I don't know where I can get information). The last factor was composed of antecedent barriers to participation, constraints that negatively affect leisure preference rather than participation (i.e. I never think about it; I am not aware of the trail). Cronbach's alpha reliability coefficient for factor one was 0.8979, for factor two was 0.8379, for factor 3 was 0.8354 and for factor 4 was 0.6675. These suggest good internal consistency.

When compared with the three dimensional hierarchy model proposed by Crawford and Godbey (1987), intra-personal and interpersonal dimensions were combined into one factor (personal). Also, temporal constraints, which were part of the structural constraints in the hierarchy model, were strong enough to become an independent dimension in this study. The structural dimension was retained for this study. In addition, antecedent constraints were identified as a unique dimension in this study despite only two constraints items loaded on this dimension.

Table 10 Factor analysis

Items	Personal	Temporal	Structural	Antecedent
Health Problems	.727			
Injury or handicap	.708			
Low energy	.702			
I don't feel confident	.639			
The activity is too physically demanding	.628			
I'm not skilled enough	.602			
i consider it not appropriate	.598			
I have no one to go with	.522			
Lack of social contacts	.545			
No leader available	.481			
i don't feel safe or secure	.456			
My family and friends are not interested in going	528			
Time spend on domestic commitments		.826		
Time spend on working or studying		.822		
Time spend on other interests		.798		
My family and friends do not have time		.640		
Having children		.543		
Transportation takes time		.517		
i prefer other activities		.473		
Poor quality of the trail			.805	
Trail is too crowded			.765	
No enough facilities along the trail			.731	
I participated and did not like			.589	
The activity is too costly			.589	
The weather is too bad			.548	
I don't know where I can get information			.448	
Loss of interest			.444	
I'm not aware of the trail				.756
I never think about it				.684
Eigenvalues	9.324	3.158	1.947	1.654
% of variance explained	17.683%	15.100%	14.899	7.779
Cronbach's Alpha	0.8979	0.8379	0.8354	0.6675

As we can see from table 11, the summated means of each factor indicated that antecedent constraints were perceived to be the most important constraints by Winnipeg residents, which scored 4.14 on a 7 point scale. Temporal constraints (time availability) were the second most important constraints and scored 3.613. However, personal and structural constraints appeared to be less important constraints for Winnipeg residents, which both scored less than 3.

Table 11 Summated Means for Each factor

Factor	M
Factor 1 Personal	2.715
Factor 2 Temporal	3.613
Factor 3 Structural	2.798
Factor 4 Antecedent	4.14

4.4 Comparison of perceived constraints among groups

4.4.1 Participants

When total constraint score was concerned, participants were the third most constrained group (mean=67.2). When we looked at the importance of the four constraints dimensions for participants, the highest mean score (3.38) was for antecedent constraints. Time constraints were scored 2.73, structural constraints were scored 2.26, and personal constraints were least scored (Table 13). The unawareness

of the trail was reported as the main antecedent constraint. Time spent on working or studying was considered the main temporal constraint for participants. Although structural dimension appeared as a less meaningful dimension than antecedent and time constraints dimensions, several specific structural constraints items were considered very important to participants. "The weather is too bad" and "Not enough facilities along the trail" were particularly reported by participants as the most important constraints (Table 14)

Table 12 Group total constraint score

Trail use group	Mean of total constraints score	Std. Deviation
Participants	67.2	24.8
Ceasing Participants	79.6	37.3
Potential Participants	76.6	30.6
Uninterested Non-participants	62.4	34.8

Table 13 Factor Means

	Personal	SD	Temporal	SD	Structural	SD	Antecedent	SD
Participants	1.89	0.7	2.73	1.2	2.26	0.9	3.38	1.7
Ceasing Participants	2.58	1.4	3.69	1.5	2.46	1.2	3.50	1.6
Potential Participants	2.47	1.2	3.67	1.3	2.58	1.2	4.43	1.7
Uninterested non-participants	2.66	1.6	3.57	1.7	1.88	1.2	4.41	2.2

4.3.2 Ceasing participants

As shown in table 12, ceasing participants appeared to be least constrained among the

four groups (mean=62.4). For ceasing participants, the top constraints dimension was time constraints (3.69). Antecedent constraints scored second (3.50), Structural and Personal constraints dimensions were reported less important. "Time spent on domestic commitments" and "my family and friends do not have time" were particularly reported by ceasing participants as the most important constraints.

4.3.3 Potential participants

For potential participants, the antecedent constraints dimension had the highest mean score (4.43). Temporal constraints (3.67) were second, followed by personal constraints and structural constraints. It was found that a large percentage of the potential participants were aged between 35-64 (63.2%) and of whom 46.4% were female. Of the potential participants, 70.5% were married or living with common law partners. The potential participants were mainly of European decent, and the next largest population was of Asian descent (10.5%). The average education for potential participants was some post-secondary, and the average income was 15,000 to 49,000. "Time spent on domestic commitments" was particularly reported by potential participants as the most important constraints. Potential participants also reported the highest antecedent constraints among the groups.

4.3.4 Uninterested non-participants

When total constraint score was concerned, uninterested non-participants were the least constrained among the four groups. Antecedent constraints dimension had the highest mean score (4.41) for uninterested non-participants. Time constraints were

second (3.57), followed by personal constraints and structural constraints. "I prefer other activities" and "time spent on domestic commitments" were particularly reported by uninterested non-participants as the most important constraints (Table 14).

Table 14 Top constraint items

All respondents	1. I don't know where I can get information (Mean=4.34) 2. I am not aware of the trail (Mean=4.28) 3. Time spend on working/studying (Mean=4.02) 4. Time spend on other interests (Mean=3.97) 5. I never think about it (Mean=3.96)
Participants	1. I am not aware of the trail (Mean=3.72) 2. Time spend on working or studying (Mean=3.56) 3. I don't know where I can get information (Mean=3.35) **4. The weather is too bad (Mean=3.2)** **5. Not enough facilities along the trail (Mean=3.17)**
Ceasing Participants	1. Time spend on working/studying"(Mean=4.55) 2. Time spend on other interests (Mean=4.14) 3. I don't know where I can get information (Mean=4.00) **4 Time spend on domestic commitments (Mean=3.94)** **4. My family and friends do not have time (Mean=3.85)**
Potential participants	1. I don't know where I can get information (Mean=4.88) 2. I am not aware of the trail (Mean=4.66) 3. Time spend on working or studying (Mean=4.19) **4. Time spend on domestic commitments (Mean=4.08)** 5. I never think about it (Mean=3.96)
Uninterested non-participants	1. Time spend on other interests (Mean=4.49) 2. I never think about it (Mean=4.35) **3. I prefer other activities (Mean=4.33)** 4. I am not aware of the trail (Mean=4.66) **5. Time spend on domestic commitments (Mean=4.13)**

Chapter 5 Discussion

In this Chapter, research findings will be discussed in three aspects: respondents profile, Comparison with research on constraints and comparison among groups.

5.1 Profile

Of those who responded, 14.9% were current TCT users and 85.1% were non-users, indicating that the use level of Trans Canada Trail was low and only a small percentage of its surrounding population engaged in physical activities on the trail. This was consistent with a previous Trans Canada Trail survey in Manitoba (Campbell and Lu, 2004). This suggests the survey response results are unbiased since the majority of the respondents were not trail users. The result of the telephone survey of 40 non-respondents (4%) also indicated low non-response bias as no significant differences was found between the demographic profiles of respondents and non-respondents (See appendix D). It was reported that 70.8 percent of the respondents used other trails for hiking or walking before and 47.2 percent of the respondents were current users of other trails. This finding suggested that recreational trails have become an increasingly significant resource for recreational and physical activities in Canada.

The results indicated that three demographic variables including age, education, and income showed statistically significant differences between groups. The result that participants and potential participants tended to be younger, and participants tended to be richer and had higher education level than uninterested non-participants

was consistent with past research (Bialeschki & Henderson 1988; Gibert & Hudson, 2000). In contrast, however from Bialeschki & Henderson's result in 1988, no significant difference was found between gender and use of the trail in this study. This was consistent with previous research which reported that hiking/walking has consistently been the top ranked trail activity for both sexes (CFLRI, 2002). It suggests a shift in attitudes about participation in outdoor recreation in the past 15 years or is reflective of adult culture. In addition, it may also be seen as a local effect.

5.2 Comparison with previous research on constraints

Factor analysis was performed on a number of the constraints identified from the literature and elicitation survey. This was done to better understand Winnipeggers' perception of the constraints of using the Trans Canada Trail for hiking/walking. The results of the factor analysis identified four dimensions: Personal, Temporal, Structural and Antecedent.

5.2.1 Personal Constraints

The first identifiable dimension was named the Personal factor as it consists of psychological and physical constraints that affect the individual; and interpersonal or social relationship constraints between individuals. There were 11 items loaded on personal factor (table 10). This factor explained 17.7 percent of the total variance and had large factor loadings on the three variables of health problem, injury or handicap and low energy. Personal factors have been found to be applicable to both general and

special populations even though in some studies additional constraint items might be included. For example, Crawford & Godbey (1991) proposed the hierarchical leisure constraint model for general population that further divided personal constraints into intrapersonal and interpersonal constraint dimensions. The personal factor was also identified in Crompton (2004)'s study on constraints to visiting state park and Hawkins (1999)'s study on constraints to intellectually challenged adults (individual's dependence was taken into consideration as part of interpersonal constraints).
In contrast to the three dimension hierarchy model, intrapersonal and interpersonal factors combined together as personal factor in this study. This suggests that intrapersonal and interpersonal factors may not be completely distinct or exclusive, but interact and influence each other in a reciprocal manner. For example, "fear of crime", which is reported as an important intrapersonal constraint for women to participate outdoor activities (Crompton & Kim 2004), may also be linked to interpersonal constraints such as "I don't want to participate alone" or "having difficulty of finding someone to go with", and consequently, inhibit interest in the activities.

Scott (1991) also found these types of reciprocal links. He found that intrapersonal constraints of young people (i.e., an aversion to playing bridge) create interpersonal and structural constraints for others by limiting opportunities (not enough players to keep the groups going; scheduling problems for group members as a whole).

A study of participation in aerobics classes presents another example of the

interaction of intrapersonal and interpersonal constraints (Frederick, Havitz and Shaw, 1994). The presence of others who look better or move more gracefully (interpersonal factor) can be inhibiting and may even be threatening to self-esteem if the participants were more interested in psychological self-enhancement than in physical self-improvement (Intrapersonal factor).

5.2.2 Temporal constraints

The second factor, labelled temporal constraints, accounted for 15% of the total variance. Temporal factor included constraints that are related to time availability. High factor loadings were observed for two constraint items in particular, time spent on domestic commitment and time spent on working/studying. Lack of time has been considered by far the most intense and widespread category in previous studies on constraints to leisure participation and active lifestyle. (Brown & Brown, 2001; Crompton 2004; Scott & Jackson 1996; Wright & Goodale 1991; Shaw, Bowen & McCabe, 1991). In this study, time spent on working/studying were most reported by ceasing participants (those who those who had hiked or walked along the trail in the past but didn't hike or walk along the trail in the last 12 months). Time spent on other interests was also a factor for uninterested non-participants. Such difference may reflect the profile of the sample in that ceasing participants were more likely to be aged between 45-64, and this age group is likely to be most engaged with vocational and family commitment. The analysis also showed that people over the age of 65 were most likely to be uninterested non-participants. This age group has less domestic or work commitment and they are able to spend more time on preferred leisure activities.

This suggests an opportunity in that this might be age related, and therefore we should market differently for each age group. For example, for people over the age of 65, the lack of time and interest in using the TCT may be largely a matter of having previously established priorities and choosing those leisure involvements that are the most important. Therefore, it is possible to intervene or "remedy" their lack of interest by influencing their attitudes toward trail use to create an interest and motivation to participate.

It wasn't surprising to find the item "having children" under the time constraints dimension. Brown & Brown's research on mothers with young children reported that more than a quarter of mothers with young children had no time to spend in active leisure during the previous week and two thirds of the mothers were inadequately active in their leisure time to achieve health benefits. Strategies they used to overcome time constraints included exercising while children were asleep, attending leisure activities that provide childcare service, and the use of family support. Thus, this finding suggests that there is a demand for childcare services to be located close to outdoor recreation service locations. The results also showed that the majority of respondents still managed to be physically active. Thus the so-called "time constraint" may not be only about how much time one has but also how one negotiates it. Another explanation of the dominance of time constraints may be that it was an easy response for people to make and it could conceal other constraints. (Shaw & Bonen, 1991)

5.2.3 Structural Constraints

The third factor that was extracted describes structural constraints. This constraint accounted for 15% of the total variance and had large factor loadings on the three constraints of poor quality of the trail; the trail is too crowded and not enough facilities along the trail. The constraint of the trail being crowded was unexpected, considering the low level of usage. It suggests that some of the negative attitudes held toward the trail may not be true, and these negative attitudes may reduce or completely suppress interest in participation. Leisure researchers and practitioners should explore and assess attitude change as a way to overcome constraints. Structural constraints have been the focus of a number of research on constraints to leisure (Crawford and Godbey, 1987); Jackson, 1993; Jackson, 2000; Walker, 2005). Some common structural constraints such as lack of money and lack of information were identified; however, some of the constraint items used in this study could be applicable only to outdoor activities (i.e. bad weather, not enough facilities along the trail, trail is too crowded). Walker (2005) proposed four new categories of outdoor recreation structural constraints: natural environment structural constraints, social environment structural constraints, territorial structural constraints and institutional structural constraints. These constraints can be directly related to the trail, and its usage. The first category is natural environment structural constraints. Weather is considered as one of the environment structural constraints. Weather can cause flood, avalanches, excess/lack of snow which in turn make outdoor-recreation activities unsafe, unpleasant or impossible. Other environment factors include landscapes (i.e. lack of trail, size of water bodies), potential interaction with wildlife (i.e. snake, bear,),

etc. These can relate to the trail in that on days that the weather is bad, trail usage will likely be lowered. In addition to weather, parts of the trail that are more challenging, or covered by snow/ice may result in a change in trail use, especially if that area is unsupervised. Some suggestions to improve these constraints might be to have supervision on certain sections of the trails which are more challenging. In addition, having places along the trail where people can sit down, rest, or shelter from the rain may also prove helpful for dealing with natural environment structural constraints.

The second category is social environment structural constraints. For example, crowding, conflicts between different activities, without a permit to enter certain outdoor recreation area. The fear of crowding and conflicts may not only influence one's leisure preference, but also affect the quality of outdoor experience. This constraint may apply since a lot of people have stated the trail being crowded as a constraint. It is possible that only some portions of the trail are crowded while the rest of the trail is not. To solve this, a suggestion may be to find out which areas are used the most, then survey those who use it to find out why they prefer those areas of the trail. We can use the results of the survey to improve the areas that are least used, thus allowing for a more evenly distributed usage of the Manitoba portion of the trail.

The third category is territorial structural constraints. This category focuses on ethnicity, social economic factors that may restrict the access to some activities and some places of certain people or group. Even though ethnicity did not seem to have any significance in the result, it might be worth further study into as most of the respondents were from an European background (when not listed as being from a

Canadian background).

The last category is institutional structural constraints. This category includes institutional policies and practices that may be perceived as limiting factors for outdoor recreation. For example, agency staff may restrict some areas to certain type of recreationists (i.e. nonmotorized users); lack of information provided for visitors or potential visitors, etc. The lack of information was found to be a very important factor in usage. It may help to send out brochures and maps to people to let them know more about the trail. During the study, some of the respondents even went out of their way to ask for a map to be sent to them.

5.2.4 Antecedent Constraints

What we can refer to as antecedent constraints constituted the last dimension extracted by the factor analysis. It accounted for 7.8% of the total variance and had large factor loadings on the two constraints of "unaware of the trail" and "never think about it". Antecedent constraints are factors that negatively affect or suppress one's preference for or interest in particular leisure activities. Antecedent constraints may either cause lack of awareness of or interest in that activity, which likely result in non-participation. There are a wide range of potential antecedent constraints. For example, gender socialization, accessibility of facilities, climate conditions, cultural expectations, etc. This type of constraints are unlikely to be identified by respondents as perceived constraints on their leisure choices if antecedent constraints are powerful enough to entirely suppress the awareness of , or interest in certain leisure activities. Moreover, it seems impossible for individuals to actively and consciously negotiate

with antecedent constraints as the effects are not apparent to them. In this study, antecedent constraints were considered the most important constraint dimensions for participants, potential participants and uninterested non-participants. It suggested that antecedent constraints were faced by both participants and non-participants. Participants can be constrained in the type, frequency, and preference of participation. This finding found resonance with previous research conducted by Jackson in 1990. He pointed out that people who express the desire for a new activity might also be affected by antecedent constraints.

5.2.5 Constraint Negotiation

An interesting finding of this study was that when total constraints score was concerned, uninterested non-participants rather than participants appeared to be least constrained among the four groups. This finding challenged the traditional belief that reduced constraints leads to increased participation and supported for the negotiation proposition developed Jackson et al. (1993) that individuals negotiate constraints, and the outcome of this negotiation is dependent on the interaction between motivation and constraints. The results may be explained in at least two ways. First, Alexandris and Tsorbazoudis indicated that intrapersonal constraints such as lack of interest act as de-motivating forces for individuals. If we accepted that amotivation results in non-participation or drop out from participation (Fortier et al. 1995), the outcome for uninterested non-participants (those who were less constrained in total but amotivated by intrapersonal constraints), will be non-participation. Second, the results may be explained by using the constraint-effects-mitigation model proposed by Hubbard &

Mannell. They suggested that encounters with constraints trigger greater negotiation efforts. Although constraints still have negative effects on level of participation, the negotiation efforts triggered may completely counteract or mitigate these negative effects (P.158-159). In other words, individuals who are more highly motivated to participate expend greater effort on negotiating and are more successful at starting, maintaining, or increasing their level of participation.

5.3 Comparison of perceived constraints among groups

This study indicated large differences between the four trail use type groups. These are discussed separately below.

5.3.1 Participants

First of all, the results indicated that the unawareness of the trail was reported as the main antecedent constraint for participants. It means that even current trail users' knowledge about the trail is limited. As a result, future promotion should pay attention to increase both participants and non-participants' awareness of the trail. Secondly, time spent on working or studying was considered the main temporal constraint for participants. As participants were reported to be aged between 18-45, it suggests that time constraints may be age related, and therefore different marketing strategies should be applied for each age group. In addition, although structural dimension appeared as a less meaningful dimension than antecedent and time constraints dimensions, several specific structural constraints items were considered very important to participants. "The weather is too bad" and "Not enough facilities along

the trail" were particularly reported by participants as the most important constraints. Gobster's (2005) study on urban trail use indicated that highly active and health-motivated trail users might also be more sensitive to changes that could disrupt their use. As a city located in western Canada, weather is considered a very important factor that can intensively affect the level, type and experience of participating outdoor recreation. For example, in a cold winter climate such as Winnipeg's, snow covering the trails can limit use to committed users.

5.3.2 Ceasing participants

This study found that "time spent on domestic commitments" and "my family and friends do not have time" were particularly reported by ceasing participants as the most important constraints. It suggested that a purpose of using the trail for this group might be social. A suggestion might be to create a system for finding people to use the trail with or to encourage the use of it if it already exists (I looked on the website and was unable to find one). Previous research on ceasing or drop out participants further categorized this group into different subgroups such as quitters (who ceased participation of the activity), switchers (who ceased using a particular provider of the service but maintained the participation with a new agency) and continuers (who ceased but planning to resume the activity (Jackson 1988; McGuire, 1989). Future research may focus on identifying subgroups of ceasing trail users to help better understand this group.

5.3.3 Potential participants

Where potential participants were concerned, antecedent constraints dimension had the highest mean score (4.40). Potential participants also reported the highest antecedent constraints among the four groups. It suggested that it is only through increasing their awareness and understanding that increased level of trail use for potential participants can be achieved. This constraint is really hard to deal with; however, there is still potential to work with these constraints. For potential users who don't know the trail exists or have never thought about it, we could send out information packets with maps and brochures. For potential participants who never thought about walking/hiking on the TCT , more research might be requires, including looking at the ethnical, psychological, and cultural aspects to find out which factors influenced their preference.

5.3.4 Uninterested non-participants

For uninterested non-participants, antecedent constraints dimension had the highest mean score (4.31). "I prefer other activities" and "time spent on domestic commitments" were particularly reported by uninterested non-participants as the most important constraints. It appeared that antecedent constraints and intrapersonal constraints to some extent affected uninterested non-participants' leisure preferences. Gilbert and Hudson (2000) found that some of non-skiers' constraints are based on preconceptions that may not be valid. For example, they perceived skiing to be dangerous, harder to learn than other sports. They also see this sport as an elitist pastime. Non-participants may be influenced by their preconceptions about trail use as

well; however their pre-conceptions may not be the same. For example, a number of residents refused to participate in this survey as they considered themselves too old to use the trail. In fact, some sections of the trail are also wheelchair accessible. Therefore, efforts should be made to counteract these invalid images and recapture the essence of walking or hiking along the trail.

Chapter 6 Implications and Conclusion

This study provided an overview of Winnipeg residents' perception of constraints on hiking/walking along the Trans Canada Trail. The study has allowed us to go beyond leisure participation perspective and to explore leisure constraints in general and among different behavioural groups.

6.1 Contribution of Research

First, to our best knowledge, this study provided the first opportunity to assess the perception of trail use constraints on participants as well as non-participants, and segmenting non-participants into subgroups as ceasing participants, potential participants and uninterested non-participants. For a decade, researchers have been investigating constraints faced by sub-groups of non-participants. Some researchers have sub-categorized non-participants into those who did and those who did not desire to participate in a recreation activity (Searle and Jackson, 1985), whereas Jackson and Dunn (1988) investigated internal homogeneity of leisure by assessing the similarity and differences of constraints as reasons for ceasing participation and barrier to participate in a new activity. Weight and Goodale also sub-divided participants into two groups based on interest or lack of interest in participating more. There has been little constraint research focused on trail usage. Bialeschki and Henderson described constraints encountered by both users and nonusers of recreational trails. However, the generic nature of non-users requires researchers to formulate sub-groups that are less heterogeneous and more distinct from other sub-groups. In order to do so, this study segmented Winnipeg residents according to their behaviours (i.e. participants,

ceasing participants,) and their desire to participate (i.e. potential participant, uninterested non-participants). Therefore, this research supplied a gap in studying constraints faced by different trail use groups.

Second, the study identified four different dimensions of trail use constraints: Personal; Time; Structural and Antecedent, which is a different classification of factors than found in earlier studies. Personal constraints include intrapersonal constraints (i.e. health problem, perceived self-skill, low energy) and interpersonal constraints (i.e. family and friends are not interested in going, lack of social contact). Temporal constraints were composed of constraints related to time availability (i.e. Time spent on domestic commitment; my family and friends don't have time). Structural constraints included those "intervening factors between leisure preference and participation" (Jackson, 1990). Examples include "poor quality of the trail", "lack of facilities", and "bad weather". Antecedent constraints included those constraints that affect leisure preferences rather than participation. Examples found in this study were "not aware of the trail" and "never think about it".

Evidence of Antecedent constraints such as lack of awareness of the existence trail ("I'm not aware of the trail") and absence of thought about the trail ("never think about it") were found to play an important role in this study. Crawford and Godbey (1987) suggested that leisure preferences are formed when intrapersonal constraints

are absent or negotiated. This implied that constraints do not only intervene between preferences and participation but also affect the formation of leisure preference. Henderson et al. (1988) recognized antecedent constraints and defined it as "attitudes associated with an a priori recreation situation such as personal capacities, personality, socialization factors, interest, etc". Jackson (1991) studied a group of non-participants who apparently did not wish to begin participating in a new activity and found that "at least a portion of these are affected by antecedent constraints, which modify preferences, rather than by a genuine lack of interest". In this study we interpreted "unawareness of the trail" and "I never think about it" as antecedent constraints because these factors served to affect the formation of leisure preference. The lack of awareness could be caused by sex-role socialization, aging, religiosity, ethnicity, geographic phenomena, etc. Since there might be an array of possibilities for types of antecedent constraints, it would be a good idea to further research into how do different types of antecedent constraints affect the formation of leisure preference.

The findings supported the "negotiation" and "balance" proposition proposed by Jackson, Crawford, & Godbey, 1993). They suggested that participation is not dependent on the absence of constraints but on successful negotiation of leisure constraints. This study also shed light on that motivation may be an important construct in negotiation of leisure constraints. The results suggested that some type of constraints might enter early in people's decision-making process and act as demotivating forces. (Alexandris & Tsorbatzoudis, 2002).

6.2 Implications for tourism practice

The first set of objectives of this research was to explore constraints and barriers that prevent people from participating recreation trails. The second set of objectives was to further this field of research by classifying respondents into groups according to their TCT use patterns (participant, non-participant, potential participant, ceasing participant) and comparing the perceived constraints among groups. The results from this study may have direct or indirect implications on tourism and trail management

6.2.1 Strategies for Participants

Current trail users, especially highly active and health-motivated users are more sensitive to changes that could affect their use (Gobster 2005). As a result, improving trail conditions, enhancing trail maintenance, providing more facilities (i.e. lighting, accommodation) could effectively help maintain or even increase current participants' level of trail use.

Second, Mowen et al. (2005) reported that special events and festivals were more likely to attract infrequent park users. The result of this study showed that 68.1% of the participants were infrequent participants. Therefore, develop special events and festivals may also increase trail use by increase motivations of infrequent and potential users.

Besides, promotional efforts may also focus on designing incentive programs to encourage participation or more participation of trail use.

6.2.2 Strategies for ceasing participants

As temporal constraints was ranked as the most important constraint factor for this group, providing assistance with care of children/family members may help ceasing participants whose have to take care of their children, partners and aging parents to resume their hiking/walking along the trail.

In addition, it seems that an important purpose for ceasing participants to use the trail is social. Therefore there is a need for a forum/system on the website, where people could share trail experiences, as well as meet new people to walk with can also reduce personal constraints (i.e. my family and friends not interested in going, have no one to go with). If these are already on the website, then it may be a matter of increasing the features' visibility.

6.2.3 Strategies for potential participants

In order to reduce antecedent constraints for potential participants, we need to increase the awareness of the activity and the trail through sophisticated communication strategies. Firstly, recreational trail organizations should cooperate with physical educators and health care providers to promote actively lifestyle through participating physical activities using recreational trails. Through education, the benefits of using trails can be informed; information about trails can be introduced in details such as the location of trails and how to get to them easily, safety aspects of their areas and what facilities are available. Group focused communication should be conducted. For example, using groups of seniors, people from different ethnicity groups, etc. We should then try in-depth follow-up interviews with potential and ceasing trail users to guide the direction of the TCT marketing. Second, efforts need to

be made to better inform Winnipeg residents about trail characteristics through the Internet. Because the Internet has been considered one of the fastest and most important information resources for tourism, it may help reduce both antecedent and time constraints for Winnipeg residents. Third, although there is no significant relationship found between ethnicity and the level of trail use; this might be caused by most of the respondents being European Canadian. Previous research indicated that sub-groups of the population might suffer different level and type of constraints and have different leisure preference (Henderson 1991; Stodolska 1998; Yu & Berryman, 1996). For example African-Americans reported a lower preference than did Caucasians for many of the nature-based activities and that African-American reported a greater preference for shopping and going to church. Therefore, cultural and ethnicity difference should be taken into consideration for designing the format and content of the communication or education. Using different languages or employing professionals from the same culture background may be able to facilitate better communication and gain better understanding of their needs and what type of programs would attract them.

Group tours, which were requested by Asian residents in the survey, can provide people with convenient transportation, lower travel cost, well-planned itinerary and interpretive guide.

6.2.4 Strategies for uninterested non-participants

In order to reduce antecedent constraints, which was reported as the most important constraint dimension for uninterested non-participants, detailed information about

what activities and facilities are available should be provided to increase their awareness and motivations. For instance, walking along the trail can be combined with other leisure activities such as berry picking, bird watching, photographing, and heritage sites visiting. Similarly, inform participants about what facilities are available (i.e. campsite, hotels and motels in the local communities, canoe and bicycle goods and rental service, cottages) can give them a better idea about what they can do and what they can get.

Furthermore, advertising through traditional media channels should continue with increased efforts, not only to raise the awareness of recreational trail use but also to change preconceived attitudes toward recreational trails such as dangerous, too physically demanding for seniors, etc

6.3 Study limitation and Future Research

First of all, by choosing the sample from the Manitoba Telecom Services database, residents without landline were excluded from this survey. With a response rate of 27.4%, limitation regarding possible non-response bias should also be addressed. Those who were not interested in trail activities might also constrained responding to survey on the subject. Breaking the sample into participation groups further reduced the sample size, and analysis based on these groups may limit the reliability of the results. As this study only focused on constraints on hiking or walking, constraints on other trail activities such as cycling or cross-country skiing were overlooked. Similarly, Selecting the Trans Canada Trail as the study trail for this study limited the

implication of the results in that constraints faced by residents on using urban trails could be different from using the TCT. In addition, the artifact of constraint items for the survey could also bias the results of the study.

The first recommendation for future research addresses the need for more trail research. Recreational trails have created numerous benefits and opportunities for trail users and the communities that they pass through. However, little has been done regarding the many factors affecting trail usage. Future research should emphasize on the investigation of trail user behaviours and its impact on tourism.

Second, as the present study employs quantitative survey and the concept of negotiation was not incorporated into this survey, follow-up studies could use focus group or in-depth interviews to uncover constraint factors that haven't been identified by researchers and provide insight into complicated process of negotiation with constraints. Future research could be made to test the group variances of factor dimensions. Research can be made to measure the impact of the negotiation strategies and policies implemented by recreation organizations to minimize trail use constraints and how their efforts may have influenced subsequent constraints and constraint negotiation preferences. Furthermore, as most of leisure constraints research has been cross-sectional, longitudinal studies are needed to determine whether reported constraints on trail use are transitory or continuous over time. Another direction for future constraints research would be to identify potential antecedent constraints and their impacts on different behaviour groups. Last but not least, further research is required to clarify the role of motivation in individual's decision-making process, and

the interaction between motivation, constraints, negotiation and participation.

6.4 Conclusion

In summary, this study assessed the perception of trail use constraints on participants as well as non-participants, and segmenting non-participants into subgroups as ceasing participants, potential participants and uninterested non-participants. This study indicated that three demographic variables including age, education, income showed statistically significant differences between groups. Four dimensions of constraints were identified: personal, time, structural and antecedent. The present study provided evidence of antecedent constraints. Furthermore, it also supported Jackson et al. (1993)'s proposition that participation is not dependent on the absence of constraints but on successful negotiation of leisure constraints.

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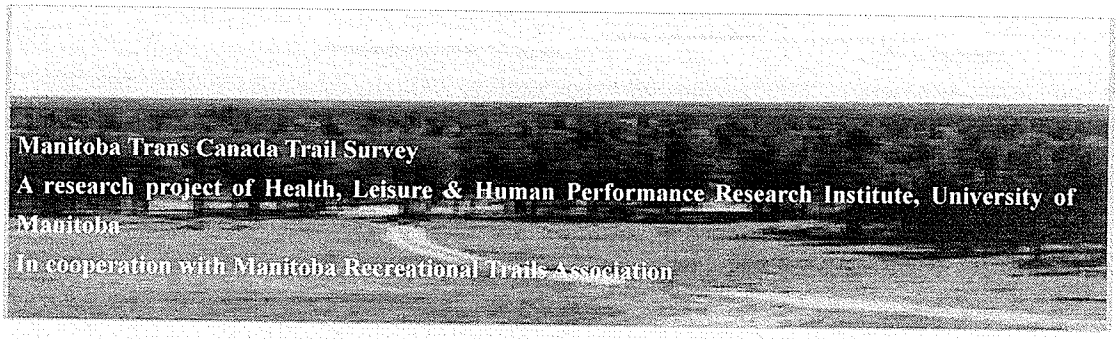
Appendix

Appendix A. Questionnaire



Thank you for agreeing to participate in this study. You will be providing valuable information for recreational trails management in Manitoba. This questionnaire should take about 10 minutes to answer. Please answer these questions as completely as you can and return the questionnaire in the enclosed postage-paid envelope.

START HERE

Your Use Of The Trail

1. **Have you ever used Manitoba section of Trans Canada Trail (TCT) for walking/hiking before? (Trail map is attached on page 4)**

O Yes (see question below) O No (skip to question #2)

1a. (If yes) Have you used TCT for walking/hiking in the last 12 months?

O Yes O No

1b. Overall, how many times would you say you use the trail for walking/hiking per year?

_____

1c. In general, how long is your trip of visiting the TCT?

O Less than one day O One day O Two days

O Three days O Longer (Please specify) _____

1d. **Who are your traveling companions?**

O Family O Friends

O Partners O Club or Society O Others (Please specify) _____\

1e.**What is your main purpose of visiting the TCT?**

2. **Have you used other trails for walking/hiking before?**

O Yes O No

2b. Are you interested in walking/hiking along Manitoba section of Trans Canada Trail in the future?

O Yes O No

Perceived Constraints

4. Please rate (√) the importance of each of statements as limiting factors for your participation of hiking/walking along Trans-Canada Trail. Circle your response where *1= Not at all important,* 7= *Extremely important* and 8=not applicable.

	Not at all Important						Extremely Important	N/A
The activity is too physically demanding	①	②	③	④	⑤	⑥	⑦	⑧
I never think about it	①	②	③	④	⑤	⑥	⑦	⑧
I am not aware of the trail	①	②	③	④	⑤	⑥	⑦	⑧
I don't feel safe or secure	①	②	③	④	⑤	⑥	⑦	⑧
I don't feel confident	①	②	③	④	⑤	⑥	⑦	⑧
I consider it not appropriate	①	②	③	④	⑤	⑥	⑦	⑧
I prefer other trails	①	②	③	④	⑤	⑥	⑦	⑧
I prefer other activities	①	②	③	④	⑤	⑥	⑦	⑧
I participated and did not like	①	②	③	④	⑤	⑥	⑦	⑧
Health problems	①	②	③	④	⑤	⑥	⑦	⑧
Injury or handicap	①	②	③	④	⑤	⑥	⑦	⑧
Low energy	①	②	③	④	⑤	⑥	⑦	⑧
I have no one to go with	①	②	③	④	⑤	⑥	⑦	⑧
mily and friends are not interested in going	①	②	③	④	⑤	⑥	⑦	⑧
My family and friends do not have time	①	②	③	④	⑤	⑥	⑦	⑧
No leader available	①	②	③	④	⑤	⑥	⑦	⑧
Lack of social contacts	①	②	③	④	⑤	⑥	⑦	⑧
My family or friends don't approve	①	②	③	④	⑤	⑥	⑦	⑧

Being married	①	②	③	④	⑤	⑥	⑦	⑧
Having children	①	②	③	④	⑤	⑥	⑦	⑧
The weather is too bad	①	②	③	④	⑤	⑥	⑦	⑧
The activity is too costly	①	②	③	④	⑤	⑥	⑦	⑧
Poor quality of the Trans Canada Trail	①	②	③	④	⑤	⑥	⑦	⑧
ıgh facilities along the trail (i.e. restroom, food outlet, parking lot	①	②	③	④	⑤	⑥	⑦	⑧
Trail is too crowded	①	②	③	④	⑤	⑥	⑦	⑧
Transportation takes time	①	②	③	④	⑤	⑥	⑦	⑧
I don't have transportation	①	②	③	④	⑤	⑥	⑦	⑧
I don't know where I can get information	①	②	③	④	⑤	⑥	⑦	⑧
I'm not skilled enough	①	②	③	④	⑤	⑥	⑦	⑧
Time spend on working or studying	①	②	③	④	⑤	⑥	⑦	⑧
Time spend on domestic commitments	①	②	③	④	⑤	⑥	⑦	⑧
Time spend on other interests	①	②	③	④	⑤	⑥	⑦	⑧
Other(specify):_____	①	②	③	④	⑤	⑥	⑦	⑧
Other(specify):_____	①	②	③	④	⑤	⑥	⑦	⑧

A Few Questions About You

4. What is your age group? Please check (√) one:

O 18-24 O 25-34 O 35-44 O 45-64 O 65 or older

5. Your gender: O Female OMale

6. What is your current living arrangement?

O Now married and living with spouse O Common-law relationship or live-in partner

O Single - never married O Divorced

O Separated O Widowed

7. How many children do you have? _____

8. How long have you lived in Winnipeg? ___month ____ years

9. What is your highest level of education?

O Less than high school O High school graduate O Some post-secondary (not

university)

O University graduate O Post-graduate

10. How would you describe your ethnic identity? _____

(Examples of ethnic or cultural groups would be: Ukrainian, Japanese, French-Canadian, aboriginal people, etc.)

11. What is your total household income before taxes?

O Under $15,000 O $15,000 to $ 49,999 O $50,000 to $74,999

O $75,000 to $99,999 O Greater than $100,000

How many people contribute to that income? _____

12. Do you have anything that you would like to add about the survey?

_____

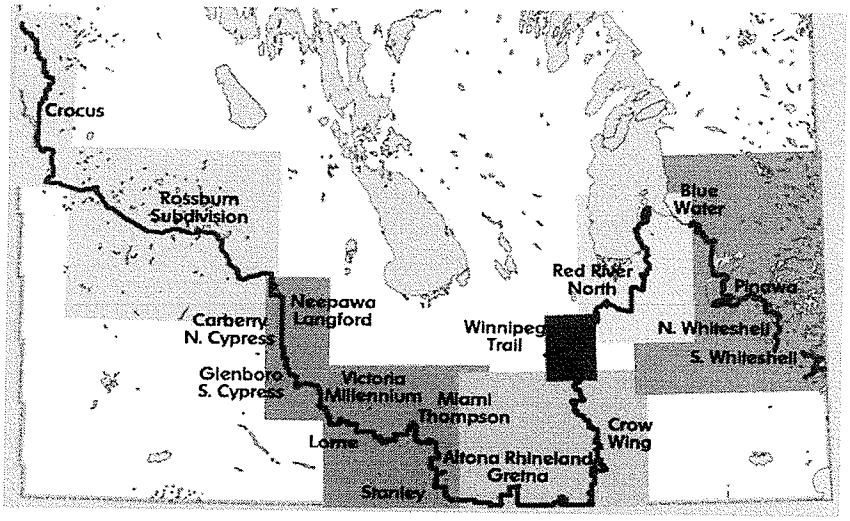
_____

_____

Thank-you for completing the questionnaire !

A summary of the results of this research may be viewed on Dr. Campbell's website www.umanitoba.ca/faculties/physed/research/people/campbell.shtml after January 1, 2006.

The Trans Canada Trail Map (Manitoba Section)



Appendix B

1. Initial Factor Analysis

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.826
Bartlett's Test of Sphericity	Approx. Chi-Square	2675.076
	df	528
	Sig.	.000

Communalities

	Initial	Extraction
The activity is too physically demanding	1.000	.559
I never think about it	1.000	.800
i am not aware of the trail	1.000	.767
i don't feel safe or secure	1.000	.628
i don't feel confident	1.000	.674
i consider it not appropriate	1.000	.707
I prefer other trails	1.000	.685
i prefer other activities	1.000	.680
I participated and did not like	1.000	.730
Loss of interest	1.000	.757
Health Problems	1.000	.822
Injury or handicap	1.000	.758
low energy	1.000	.702
I have no one to go with	1.000	.752
my family and friends are not interested in going	1.000	.820
my family and friends do not have time	1.000	.768
No leader available	1.000	.666
Lack of social contacts	1.000	.720
My family or friends don't approve	1.000	.736
being married	1.000	.659
having children	1.000	.640
The weather is too bad	1.000	.476
The activity is too costly	1.000	.664
Poor quality of the TCT	1.000	.738

No enough facilities along the trail	1.000	.697
Trail is too crowded	1.000	.612
Transportation talkes time	1.000	.587
I don't have transportation	1.000	.608
I don't know where I can get information	1.000	.549
I'm not skilled enough	1.000	.619
Time spend on working or studying	1.000	.764
Time spend on domestic commitments	1.000	.779
Time spend on other interests	1.000	.742

Extraction Method: Principal Component Analysis.

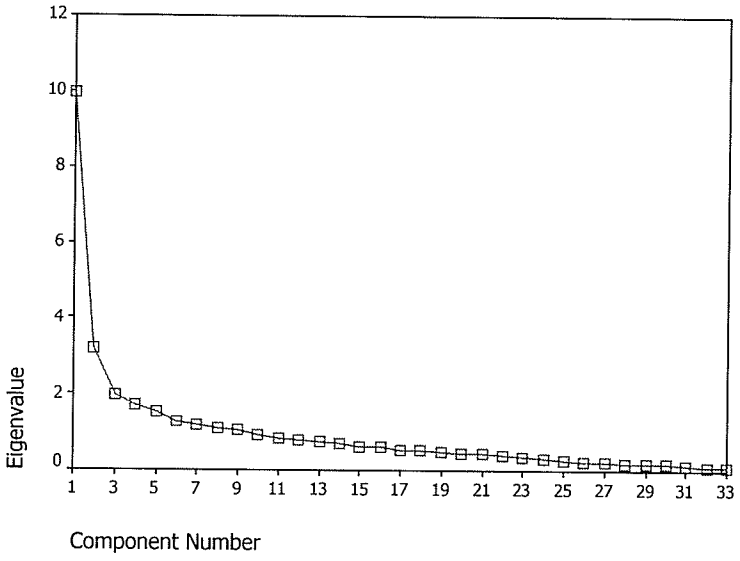
Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	9.938	30.114	30.114	9.938	30.114	30.114
2	3.190	9.667	39.781	3.190	9.667	39.781
3	1.984	6.013	45.794	1.984	6.013	45.794
4	1.681	5.095	50.889	1.681	5.095	50.889
5	1.509	4.572	55.461	1.509	4.572	55.461
6	1.260	3.819	59.280	1.260	3.819	59.280
7	1.168	3.540	62.820	1.168	3.540	62.820
8	1.104	3.344	66.164	1.104	3.344	66.164
9	1.029	3.118	69.282	1.029	3.118	69.282
10	.901	2.732	72.014			
11	.810	2.455	74.469			
12	.784	2.377	76.846			
13	.731	2.214	79.060			
14	.692	2.096	81.157			
15	.627	1.899	83.056			
16	.590	1.789	84.845			
17	.540	1.637	86.483			
18	.527	1.597	88.080			
19	.465	1.410	89.490			
20	.450	1.365	90.855			
21	.433	1.312	92.167			

22	.385	1.166	93.333			
23	.330	1.000	94.334			
24	.295	.895	95.229			
25	.278	.842	96.071			
26	.231	.701	96.772			
27	.212	.643	97.415			
28	.194	.588	98.003			
29	.179	.542	98.545			
30	.153	.463	99.008			
31	.127	.385	99.393			
32	.108	.328	99.721			
33	9.196E-02	.279	100.000			

Extraction Method: Principal Component Analysis.

Scree Plot



Component Matrix

	Component								
	1	2	3	4	5	6	7	8	9
The activity is too costly	.721								
I'm not skilled enough	.713								
Lack of social contacts	.706								
No enough facilities along the trail	.675		.382						

I have no one to go with	.671		-.317						
I don't feel confident	.661	-.370							
Loss of interest	.654							-.380	
No leader available	.642			.331					
My family and friends are not interested in going	.617		-.454						
The weather is too bad	.612								
Low energy	.606	-.334							
I participated and did not like	.601							-.406	
Poor quality of the TCT	.597		.469						
my family and friends do not have time	.595	.351	-.411						
i don't feel safe or secure	.593								.378
The activity is too physically demanding	.593	-.325							
Health Problems	.586	-.432		-.336					
Injury or handicap	.564	-.482							
Transportation takes time	.546	.364							
Having children	.493	.376					.342		
I don't know where I can get information	.477								
Being married	.466				.429		.358		
Time spend on working or studying	.397	.680							
Time spend on domestic commitments	.450	.671							
Time spend on other interests	.423	.622		-.333					
Trail is too crowded	.522		.544						
I am not aware of the trail				.710		.303			
I never think about it				.522	.352	.475			
My family or friends don't approve	.431				.507	-.378			
I prefer other trails					.477		-.511		
i prefer other activities	.385				.340		-.401		
i consider it not appropriate	.337	-.349	-.336					.441	
I don't have transportation	.475								-.586

Extraction Method: Principal Component Analysis.

a 9 components extracted.

Rotated Component Matrix

	Component								
	1	2	3	4	5	6	7	8	9
Poor quality of the TCT	.811								
No enough facilities along the trail	.741								
Trail is too crowded	.694								
The activity is too costly	.587								.302
The weather is too bad	.544								
i don't feel safe or secure	.530	.335						.358	
I participated and did not like	.484		.386		.455				
I don't know where I can get information	.466								.374
i don't feel confident	.443	.317	.401					.431	
my family and friends are not interested in going		.814							
i have no one to go with		.787							
my family and friends do not have time		.752		.401					
Lack of social contacts		.630							.374
No leader available		.629							
Health Problems			.856						
Injury or handicap			.815						
low energy			.676						.314
The activity is too physically demanding			.534						
I'm not skilled enough		.313	.414		.318				
Loss of interest	.319	.303	.400				.315	-.372	
Time spend on domestic commitments				.848					
Time spend on working or studying				.838					
Time spend on other interests				.784			.313		
having children				.584					
Transportation talkes time	.323			.432					.356
My family or friends don't approve					.794				

being married				.330	.697				
I never think about it						.839			
i am not aware of the trail						.808			
I prefer other trails							.750		
i prefer other activities				.349			.691		
i consider it not appropriate			.348					.723	
I don't have transportation									.667

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.

a Rotation converged in 13 iterations.

2. Factor Analysis with four factors (4 items deleted)

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.839
Bartlett's Test of Sphericity	Approx. Chi-Square	2429.243
	df	406
	Sig.	.000

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	9.324	32.153	32.153	9.324	32.153	32.153	5.128	17.683	17.683
2	3.158	10.890	43.043	3.158	10.890	43.043	4.379	15.100	32.783
3	1.947	6.713	49.756	1.947	6.713	49.756	4.321	14.899	47.682
4	1.654	5.705	55.461	1.654	5.705	55.461	2.256	7.779	55.461
5	1.310	4.518	59.979						
6	1.120	3.862	63.841						
7	1.033	3.561	67.402						
8	.883	3.046	70.448						
9	.871	3.004	73.452						
10	.785	2.708	76.160						
11	.708	2.441	78.601						
12	.699	2.409	81.010						
13	.623	2.147	83.157						
14	.561	1.933	85.089						
15	.527	1.816	86.905						
16	.487	1.678	88.583						
17	.461	1.590	90.174						
18	.411	1.417	91.591						
19	.366	1.262	92.852						
20	.345	1.189	94.041						
21	.309	1.066	95.107						
22	.263	.905	96.013						
23	.234	.808	96.821						
24	.215	.740	97.560						
25	.182	.628	98.189						
26	.173	.597	98.786						
27	.134	.462	99.247						
28	.120	.414	99.661						
29	9.830E-02	.339	100.000						

Rotated Component Matrix

	Component			
	1	2	3	4
Health Problems	.727		.301	
Injury or handicap	.708		.337	
low energy	.702			
i don't feel confident	.639		.400	
The activity is too physically demanding	.628			
I'm not skilled enough	.602		.360	
i consider it not appropriate	.598			
Lack of social contacts	.528	.316		.470
i have no one to go with	.522	.449		
i don't feel safe or secure	.456		.420	
Time spend on domestic commitments		.826		
Time spend on working or studying		.822		
Time spend on other interests		.798		
my family and friends do not have time	.430	.640		
my family and friends are not interested in going	.528	.560		
having children		.543		
Transportation talkes time		.517	.329	
i prefer other activities		.473		
Poor quality of the TCT			.805	
Trail is too crowded			.765	
No enough facilities along the trail			.731	
The activity is too costly	.358		.589	
I participated and did not like	.348		.589	
The weather is too bad		.333	.548	
I don't know where I can get information		.352	.448	.369
Loss of interest	.355		.444	
i am not aware of the trail				.756
I never think about it				.684
No leader available	.481			.513

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.

a Rotation converged in 7 iterations.

Appendix C Profile

Age and trail usage Crosstabulations

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
AGE3 * use of the trail	391	94.7%	22	5.3%	413	100.0%

Age and trail usage Crosstabulations

			use of the trail				Total
			current users	ceasing users	potential users	non users	
AGE	18-45	Count	28	17	83	40	168
		Expected Count	25.4	17.6	71.3	53.7	168.0
		% within AGE3	16.7%	10.1%	49.4%	23.8%	100.0%
		% within use of the trail	47.5%	41.5%	50.0%	32.0%	43.0%
		% of Total	7.2%	4.3%	21.2%	10.2%	43.0%
	>45	Count	31	24	83	85	223
		Expected Count	33.6	23.4	94.7	71.3	223.0
		% within AGE3	13.9%	10.8%	37.2%	38.1%	100.0%
		% within use of the trail	52.5%	58.5%	50.0%	68.0%	57.0%
		% of Total	7.9%	6.1%	21.2%	21.7%	57.0%
Total		Count	59	41	166	125	391
		Expected Count	59.0	41.0	166.0	125.0	391.0
		% within AGE3	15.1%	10.5%	42.5%	32.0%	100.0%
		% within use of the trail	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	15.1%	10.5%	42.5%	32.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	10.009	3	.018
Likelihood Ratio	10.161	3	.017
Linear-by-Linear Association	3.450	1	.063
N of Valid Cases	391		

a 0 cells (.0%) have expected count less than 5. The minimum expected count is 17.62.

2. Gender and trail usage Crosstabulations

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
gender * use of the trail	382	92.5%	31	7.5%	413	100.0%

Gender and trail usage Crosstabulations

		Use of the trail				Total
		Current users	Ceasing users	Potential users	Non users	
Female	Count	33	19	77	52	181
	Expected Count	27.5	19.0	76.8	57.8	181.0
	% within gender	18.2%	10.5%	42.5%	28.7%	100.0%
	% within use of the trail	56.9%	47.5%	47.5%	42.6%	47.4%
	% of Total	8.6%	5.0%	20.2%	13.6%	47.4%
Male	Count	25	21	85	70	201
	Expected Count	30.5	21.0	85.2	64.2	201.0
	% within gender	12.4%	10.4%	42.3%	34.8%	100.0%
	% within use of the trail	43.1%	52.5%	52.5%	57.4%	52.6%
	% of Total	6.5%	5.5%	22.3%	18.3%	52.6%
	Count	58	40	162	122	382
	Expected Count	58.0	40.0	162.0	122.0	382.0
	% within gender	15.2%	10.5%	42.4%	31.9%	100.0%
	% within use of the trail	100.0%	100.0%	100.0%	100.0%	100.0%
	% of Total	15.2%	10.5%	42.4%	31.9%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3.216	3	.360
Likelihood Ratio	3.220	3	.359
Linear-by-Linear Association	2.919	1	.088
N of Valid Cases	382		

a 0 cells (.0%) have expected count less than 5. The minimum expected count is 18.95.

3. Marital status and trail usage Crosstabulations

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
MARITAL3 * use of the trail	390	94.4%	23	5.6%	413	100.0%

Marital status and trail usage Crosstabulations

		use of the trail				Total
		current users	ceasing users	potential users	non users	
Single (single, separated, divorced, widowed)	Count	41	30	117	88	276
	Expected Count	41.0	29.0	117.5	88.5	276.0
	% within MARITAL3	14.9%	10.9%	42.4%	31.9%	100.0%
	% within use of the trail	70.7%	73.2%	70.5%	70.4%	70.8%
	% of Total	10.5%	7.7%	30.0%	22.6%	70.8%
Married or with a partner	Count	17	11	49	37	114
	Expected Count	17.0	12.0	48.5	36.5	114.0
	% within MARITAL3	14.9%	9.6%	43.0%	32.5%	100.0%
	% within use of the trail	29.3%	26.8%	29.5%	29.6%	29.2%
	% of Total	4.4%	2.8%	12.6%	9.5%	29.2%
	Count	58	41	166	125	390
	Expected Count	58.0	41.0	166.0	125.0	390.0
	% within MARITAL3	14.9%	10.5%	42.6%	32.1%	100.0%
	% within use of the trail	100.0%	100.0%	100.0%	100.0%	100.0%
	% of Total	14.9%	10.5%	42.6%	32.1%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	.129	3	.988
Likelihood Ratio	.131	3	.988
Linear-by-Linear Association	.022	1	.881
N of Valid Cases	390		

a 0 cells (.0%) have expected count less than 5. The minimum expected count is 11.98.

4. Correlations (Education)

Correlations

		Use of the trail	education
NEW43	Pearson Correlation	1.000	.137
	Sig. (2-tailed)	.	.006
	N	409	400
education	Pearson Correlation	.137	1.000
	Sig. (2-tailed)	.006	.
	N	400	404

** Correlation is significant at the 0.01 level (2-tailed).

5. Correlations (household income)

Correlations

		Use of the trail	household income
NEW43	Pearson Correlation	1.000	.111
	Sig. (2-tailed)	.	.036
	N	409	360
household income	Pearson Correlation	.111	1.000
	Sig. (2-tailed)	.036	.
	N	360	364

* Correlation is significant at the 0.05 level (2-tailed).

6. Ethnicity and trail usage Crosstabulations

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
ethnicity * use of the trail	245	59.3%	168	40.7%	413	100.0%

Ethnicity and trail usage Crosstabulation

		use of the trail				Total
		current users	ceasing users	potential users	non users	
oceanian	Count	0	1	0	0	1
	Expected Count	.1	.1	.5	.3	1.0
	% within ethnicity	.0%	100.0%	.0%	.0%	100.0%
	% within use of the trail	.0%	3.7%	.0%	.0%	.4%
	% of Total	.0%	.4%	.0%	.0%	.4%
asian-canadian	Count	1	1	16	7	25
	Expected Count	3.7	2.8	11.3	7.2	25.0
	% within ethnicity	4.0%	4.0%	64.0%	28.0%	100.0%
	% within use of the trail	2.8%	3.7%	14.4%	9.9%	10.2%
	% of Total	.4%	.4%	6.5%	2.9%	10.2%
european-canadian	Count	35	24	89	59	207
	Expected Count	30.4	22.8	93.8	60.0	207.0
	% within ethnicity	16.9%	11.6%	43.0%	28.5%	100.0%
	% within use of the trail	97.2%	88.9%	80.2%	83.1%	84.5%
	% of Total	14.3%	9.8%	36.3%	24.1%	84.5%

african-canadian	Count	0	0	3	2	5
	Expected Count	.7	.6	2.3	1.4	5.0
	% within ethnicity	.0%	.0%	60.0%	40.0%	100.0%
	% within use of the trail	.0%	.0%	2.7%	2.8%	2.0%
	% of Total	.0%	.0%	1.2%	.8%	2.0%
south american	Count	0	0	2	0	2
	Expected Count	.3	.2	.9	.6	2.0
	% within ethnicity	.0%	.0%	100.0%	.0%	100.0%
	% within use of the trail	.0%	.0%	1.8%	.0%	.8%
	% of Total	.0%	.0%	.8%	.0%	.8%
aboriginal	Count	0	1	1	3	5
	Expected Count	.7	.6	2.3	1.4	5.0
	% within ethnicity	.0%	20.0%	20.0%	60.0%	100.0%
	% within use of the trail	.0%	3.7%	.9%	4.2%	2.0%
	% of Total	.0%	.4%	.4%	1.2%	2.0%
	Count	36	27	111	71	245
	Expected Count	36.0	27.0	111.0	71.0	245.0
	% within ethnicity	14.7%	11.0%	45.3%	29.0%	100.0%
	% within use of the trail	100.0%	100.0%	100.0%	100.0%	100.0%
	% of Total	14.7%	11.0%	45.3%	29.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	21.703	15	.116
Likelihood Ratio	21.403	15	.124
Linear-by-Linear Association	.376	1	.540
N of Valid Cases	245		

a 18 cells (75.0%) have expected count less than 5. The minimum expected count is .11.

Appendix D Non-response Survey Analysis

1. Gender and Survey response Crosstabulation

			Respondents	Non-respondents	Total
gender	female	Count	190	18	208
		% within gender	91.3%	8.7%	100.0%
		% within survey response	48.1%	46.2%	47.9%
		% of Total	43.8%	4.1%	47.9%
	male	Count	205	21	226
		% within gender	90.7%	9.3%	100.0%
		% within survey response	51.9%	53.8%	52.1%
		% of Total	47.2%	4.8%	52.1%
Total		Count	395	39	434
		% within gender	91.0%	9.0%	100.0%
		% within survey response	100.0%	100.0%	100.0%
		% of Total	91.0%	9.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.054(b)	1	.816		
Continuity Correction(a)	.004	1	.949		
Likelihood Ratio	.054	1	.816		
Fisher's Exact Test				.868	.475
Linear-by-Linear Association	.054	1	.817		
N of Valid Cases	434				

a Computed only for a 2x2 table

b 0 cells (.0%) have expected count less than 5. The minimum expected count is 18.69.

2. Age and Survey response Crosstabulation

			Survey response		Total
			Respondents	Non-respondents	
Age	18-45	Count	172	23	195
		% within age	88.2%	11.8%	100.0%
		% within survey response	42.5%	56.1%	43.7%
		% of Total	38.6%	5.2%	43.7%
	>45	Count	233	18	251
		% within age	92.8%	7.2%	100.0%
		% within survey response	57.5%	43.9%	56.3%
		% of Total	52.2%	4.0%	56.3%
Total		Count	405	41	446
		% within age	90.8%	9.2%	100.0%
		% within survey response	100.0%	100.0%	100.0%
		% of Total	90.8%	9.2%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	2.810(b)	1	.094		
Continuity Correction(a)	2.284	1	.131		
Likelihood Ratio	2.784	1	.095		
Fisher's Exact Test				.101	.066
Linear-by-Linear Association	2.804	1	.094		
N of Valid Cases	446				

a Computed only for a 2x2 table

b 0 cells (.0%) have expected count less than 5. The minimum expected count is 17.93.

3. Marital Status * survey response Crosstabulation

			Survey response		Total
			Respondents	Non-respondents	
Marital Status	Married or with a partner	Count	284	27	311
		% within marital status	91.3%	8.7%	100.0%
		% within survey response	70.3%	65.9%	69.9%
		% of Total	63.8%	6.1%	69.9%
	Single (single, separated, divorce, widowed)	Count	120	14	134
		% within marital status	89.6%	10.4%	100.0%
		% within survey response	29.7%	34.1%	30.1%
		% of Total	27.0%	3.1%	30.1%
Total		Count	404	41	445
		% within marital	90.8%	9.2%	100.0%
		% within survey response	100.0%	100.0%	100.0%
		% of Total	90.8%	9.2%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.349(b)	1	.555		
Continuity Correction(a)	.170	1	.680		
Likelihood Ratio	.342	1	.559		
Fisher's Exact Test				.593	.334
Linear-by-Linear Association	.348	1	.555		
N of Valid Cases	445				

a Computed only for a 2x2 table

b 0 cells (.0%) have expected count less than 5. The minimum expected count is 12.35.

4. Correlations (Education)

		Survey response	education
Survey response	Pearson Correlation	1	-.010
	Sig. (2-tailed)		.834
	N	450	441
education	Pearson Correlation	-.010	1
	Sig. (2-tailed)	.834	
	N	441	445

5. Correlations (income)

		Survey response	household income
Survey response	Pearson Correlation	1	.012
	Sig. (2-tailed)		.815
	N	450	398
household income	Pearson Correlation	.012	1
	Sig. (2-tailed)	.815	
	N	398	402

6. Ethnicity * Survey response Crosstabulation

			Survey response		Total
			Respondents	Non-respondents	
ethnicity	oceanian	Count	1	0	1
		% within ethnicity	100.0%	.0%	100.0%
		% within nonresponse	.4%	.0%	.3%
		% of Total	.3%	.0%	.3%
	Asian Canadian	Count	25	6	31
		% within ethnicity	80.6%	19.4%	100.0%
		% within nonresponse	9.8%	16.2%	10.7%
		% of Total	8.6%	2.1%	10.7%
	European Canadian	Count	216	28	244
		% within ethnicity	88.5%	11.5%	100.0%
		% within nonresponse	85.0%	75.7%	83.8%
		% of Total	74.2%	9.6%	83.8%
	African Canadian	Count	5	2	7
		% within ethnicity	71.4%	28.6%	100.0%
		% within nonresponse	2.0%	5.4%	2.4%
		% of Total	1.7%	.7%	2.4%
	south American	Count	2	0	2
		% within ethnicity	100.0%	.0%	100.0%
		% within survey response	.8%	.0%	.7%
		% of Total	.7%	.0%	.7%
	Aboriginal	Count	5	1	6
		% within ethnicity	83.3%	16.7%	100.0%
		% within survey response	2.0%	2.7%	2.1%
		% of Total	1.7%	.3%	2.1%
Total		Count	254	37	291
		% within ethnicity	87.3%	12.7%	100.0%
		% within survey response	100.0%	100.0%	100.0%
		% of Total	87.3%	12.7%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3.677(a)	5	.597
Likelihood Ratio	3.561	5	.614
Linear-by-Linear Association	.021	1	.885
N of Valid Cases	291		

a 7 cells (58.3%) have expected count less than 5. The minimum expected count is .13.